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THE EFFECTS OF ANALYST FOLLOWING ON MARKET RESPONSE  
TO BANK LOAN ANNOUNCEMENTS

A Dissertation

Submitted to the Graduate Faculty of the  
Louisiana State University and  
Agricultural and Mechanical College  
in partial fulfillment of the  
requirements for the degree of  
Doctor of Philosophy

in

The Department of Accounting

by  
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## DEDICATION

My best friend and greatest source of strength and encouragement did not live to see the completion of this dissertation, but his memory continues to inspire me. This dissertation is dedicated to the memory of my brother, John Noble Brumm.

## ACKNOWLEDGMENTS

I first wish to express my gratitude to the members of my committee: Donald Deis (Chairman), Nicholas Apostolou, Michael Luehlfing, and Myron Slovin (Finance). I am indebted to them for their helpful comments and guidance.

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## ABSTRACT

A number of theories have been developed that attempt to explain the role of bank loans and public debt in corporate financing. Research suggests that banks may have a comparative advantage in performing at least two valuable functions, information gathering and monitoring. The primary responsibility of analysts is also to gather and disseminate information on firms. However, it is not known how analysts following affects market response to bank loan announcements. The purpose of this study was to 1) determine whether financial analyst following affects market response to bank loan announcements and 2) to determine whether firms receiving bank loans actively seek the attention of analysts less than firms not receiving bank loans.

Results indicate that there is an analyst following effect that is not accounted for by firm size alone. In addition, the reputation of the analyst or brokerage is significant for portfolios of favorable loan announcements. Finally, the importance of both following and reputation measures seems to vary depending on the type of loan announcement (favorable or unfavorable) and firm size.

Contrary to expectations, firms announcing bank loans have lower share prices and make more

presentations to the NYSSA after controlling for size than other firms within the same industry. These results indicate that firms announcing bank loans are actively seeking the attention of analysts more than other firms.

Finally, other variables which banking theory suggests may influence market response to bank loan announcements are found to be significant for particular loan type by firm size portfolios of firms. Significant variables include industry classification, the relative size of the loan, the number of banks participating in the loan, and the length of time firm data has been available on the CRSP tapes.

CHAPTER ONE  
OVERVIEW OF THE STUDY

A number of theories have been developed that attempt to explain the role of bank loans and public debt in corporate financing (Fama 1985; Diamond 1991; Easterwood and Kadapakkam 1991). These theories suggest that there is something unique about bank loans that other types of debt cannot provide. Fama (1985, 34) states that "the monitoring services purchased from banks can help explain the comparative advantage of bank loans for some borrowers." Easterwood and Kadapakkam (1991, 49) observe that evidence gathered from examining stock price reactions to various types of debt is "consistent with a unique role for private debt in resolving informational asymmetries." Thus, research suggests that banks may have a comparative advantage in performing at least two valuable functions: (1) information gathering and (2) monitoring.

The primary responsibility of analysts is to gather and disseminate information on firms. They also monitor management performance. Moyer, Chatfield, and Sisneros

(1989) find empirical support for the suggestion that the demand for the monitoring activities of security analysts is influenced by the information demands of investors. Technological developments have increased the amount of information analysts are able to gather. A recent article in *Institutional Investor* states that "until the mid-1980s, one of an analyst's goals was to be first to reach a company after its quarterly earnings announcement. Now, with multiple faxing and conference calls, Wall Streeters all get the same information at the same time" (1991, 82). Many suggest that the tools analysts have acquired have improved the quality of analysts' services. Edward Schollmeyer (1991, 82), a consultant and former leading analyst, contends that "analysts today know more about some companies than the companies themselves do." Consequently, increased information production and monitoring by analysts result in reduced information asymmetry. James Balog (1991, 81), Chairman of the 1838 Investment Advisors Corp., states that "overall, analysts today are doing a better job, the American investor is better informed than ever before."

#### Research Questions

Both banks and financial analysts monitor and gather information about firms. It is not known,

however, how analyst following affects market response to bank loan announcements. If analysts are partial substitutes for the information gathering and monitoring services of banks, then increased analyst following should reduce the information content of bank loan announcements beyond that associated with firm size alone. This question is important for several reasons. First, analysts are among the primary users of financial accounting information. It is important, therefore, for accountants to understand the role analysts play in financial markets (Schipper, 1991). Second, research suggests that banks may provide unique services that are not replicated by the market.

Research Question 1: Does analyst following affect market response to bank loan announcements beyond that associated with firm size alone?

To answer this question the effects of analyst following on the information content of bank loan announcements will be separated from firm size effects. There is a substantial amount of theoretical and empirical evidence indicating that the reputation of information providers is important (Klein and Leffler 1981; Titman and Trueman 1986; Slovin, Sushka, and Hudson 1990; Stickel 1992). Therefore, the effects of analyst and brokerage reputation on market response to the bank loan announcements will also be examined.

This study also has implications for leveraged firms. Moyer, Chatfield, and Sisneros (1989, 503) state that "analysts play the role of monitors of managerial performance as a means of reducing agency costs of debt and equity." Therefore, firms may try to attract the attention of analysts as a means of reducing agency costs of debt. Alternatively, firms may choose bank monitoring. Diamond (1991, 716) suggests that if moral hazard is sufficiently widespread, then some borrowers will begin their reputation acquisition by being monitored by banks and later switch to issuing publicly placed debt.

Research Question 2: Do firms receiving bank loans seek the attention of analysts less actively than firms not receiving bank loans?

Through an examination of corporate presentations to the New York Security Analysts Association (NYSSA) and share price, this study will provide insight into whether firms receiving bank loans seek the attention of analysts less actively than firms not receiving bank loans.

The answer to this research question has important regulatory implications. Concern is often expressed over the welfare of uninformed traders. For this reason, the Securities Exchange Commission (SEC) prohibits the use of inside information. However, security analyst

research is an important aspect of the current information dissemination process. Beaver (1978, 33) states that "from the onset, the SEC has implicitly relied upon the existence of a professional community in order to justify its apparatus as an effective means of disclosure." Insight into whether firms receiving bank loans seek the attention of analysts less actively than firms not receiving bank loans may help regulators "balance between allowing effective information dissemination and avoiding giving an unfair advantage to particular investor groups" (Walmsley, Yadav, and Rees, 1992, 571).

#### Research Hypotheses

Hypotheses one and two examine the first research question: Does analyst following affect market response to bank loan announcements beyond that associated with firm size alone? If analysts are partial substitutes for the information gathering and monitoring services of banks, then increases in the number and reputation of analysts and brokerages following a firm should reduce the information content of bank loan announcements beyond that associated with firm size alone.

H01: Analyst following does not reduce market response to bank loan announcements beyond that associated with firm size alone.

Ha1: Analyst following reduces market response to bank loan announcements beyond that associated with firm size alone.

Ho2: Higher reputation brokerage and analyst following does not reduce market response to loan announcements more than lower reputation brokerage and analyst following.

Ha2: Higher reputation brokerage and analyst following reduces market response to bank loan announcements more than lower reputation brokerage and analyst following.

Hypotheses three and four examine the second research question: Do firms receiving bank loans seek the attention of analysts less actively than firms not receiving bank loans? If firms receiving bank loans do seek the attention of analysts less actively than firms not receiving bank loans, then significantly higher share prices and significantly fewer presentations to the NYSSA would be expected for these firms.

Ho3: The share prices of firms receiving bank loans are equal to or less than share prices of firms not receiving bank loans.

Ha3: Share prices of firms receiving bank loans are higher than share prices of firms not receiving bank loans.

Ho4: The number of presentations made to the New York Society of Securities Analysts by firms receiving bank loans is equal to or greater than the number of presentations made by firms not receiving bank loans.

Ha4: The number of presentations made to the New York Society of Securities Analysts by firms receiving bank loans is lower than the number of presentations made by firms not receiving bank loans.

### Research Method

To answer the research questions, a sample of firms receiving bank loans will be obtained by searching the *Dow Jones News Wire* for the period 1987 through 1992 for announcements of bank loan agreements. For hypotheses one and two, firms will be retained if there are no other major firm announcements in the five-day period surrounding the loan announcement<sup>1</sup>. For hypotheses three and four, firms will be retained if there are no other equity or public debt issues within the year.

Loans will be classified as either: (1) initial loans, (2) favorable renewals, or (3) unfavorable renewals on the basis of information contained in the announcement. Loan agreements will be classified as new if the announcement indicates it is new (or does not indicate it is a renewal) and a search of the borrower's annual Form 10-k confirms that it is not a revision of an existing bank loan. Unfavorable loan renewals include cancellations, reductions in lending limits, or a tightening of loan restrictions.

Empirical evidence indicates that the industry to which a firm belongs influences a number of events. Industry membership has been found to influence both the

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<sup>1</sup> Major firm announcements include earnings and dividend announcements, debt and equity issues, acquisitions, and management changes.

information content of earnings announcements (Bhushan 1989b) and analyst following (Bhushan 1989a; Moyer, Chatfield, and Sisneros 1989). Bhushan (1989a, 271) states that "the nature of the industry affects the cost of acquiring information: for some industries, information may be inexpensive to acquire, while for others one may have to spend considerable resources to get any information." Foster (1986) notes that industry forecasts and conditions also enter into the analysis of bank loan decisions. Therefore, the control sample for tests of hypotheses three and four will consist of firms within the same industry that do not receive a bank loan.

Standard event study methodology will be used to determine share price response to bank loan announcements. The market model will be used to calculate expected returns in the absence of a bank loan announcement for individual firms. Abnormal returns are the difference between the actual returns observed at the time of the loan announcement and the returns predicted by the market model regression. The abnormal returns will then be standardized to reflect statistical error in the determination of expected returns. Next, the standardized abnormal returns will be aggregated

across firms. Statistical tests of significance will be based on aggregated abnormal returns.

Brown and Warner (1985) find that tests continue to be well-specified as the event period is lengthened, but that the power of these tests decreases dramatically. In order to maintain the power of the statistical tests employed, the shortest possible event period will be used. Peterson (1989) notes that obtaining the date of news releases does not indicate whether the market receives the information during trading hours unless the time of the news releases are also obtained. If news is released after trading hours, market response will occur on the day following the announcement. Therefore, the announcement day is the day the *Dow Jones News Service* reports the announcement or the next day if the announcement is made after the close of trading.

Next, firm specific factors will be examined as a means of explaining the observed abnormal returns. This study will examine four factors: (1) the number of analysts and brokerages following a firm, (2) the reputation of analysts and brokerages following a firm, (3) firm share price, and (4) the number of presentations made to the New York Society of Security Analysts. The observed abnormal returns will be associated with these factors through regression

analysis. Additional controls for firm specific factors found to be significant in previous research will also be included.

#### Expected Contribution

The results of this study will indicate whether banks have some unique advantage in information gathering and monitoring that is not replicated elsewhere in the market or whether financial analysts are partial substitutes for these services. Results will also separate the affects of analyst following and firm size on the information content of bank loan announcements. In addition, the regressions examining share price and presentations to the NYSSA will provide some indication as to whether firms receiving bank loans seek the attention of analysts less actively than firms within the same industry on receiving bank loans.

Certain limitations of the study must be recognized, however. First, in examining whether firms actively seek the attention of analysts only share prices and NYSSA presentations are considered. There may be a number of other steps firms might take to attract analysts' attention. Second, presentations to the NYSSA are only an indirect measure of the amount of contact between analysts and the firm. Presentations are only

the end of a spectrum of possible contacts between the firm and analysts.

The remainder of the paper is organized as follows: Chapter II discusses literature relevant to the proposed research questions, Chapter III describes the data and methodology to be used, Chapter IV discusses the empirical findings of the study, and Chapter V contains a summary and concluding remarks.

CHAPTER TWO  
LITERATURE REVIEW

This chapter reviews the research literature relevant to market response to bank loan announcements and analyst following. Section one reviews the development of loan announcement studies in general and bank loan announcements in particular. The second section reviews studies that have examined: 1) the effects of analyst following on various firm announcements and 2) firm characteristics that influence analyst following. Section Three reviews theoretical and empirical studies of firm share price. The last section reviews research on presentations to the New York Society of Security Analysts (NYSSA).

Loan Announcements

Fama (1985) provides a theoretical analysis of why firms use inside debt versus public debt. Inside debt is defined as "a contract where the debtholder gets access to information from an organization's decision process not otherwise publicly available" (36). His

theory centers around the information requirements for inside and publicly traded debt. Banks, as inside debtholders, have access to a firm's private information. In contrast, holders of publicly traded debt must rely on publicly available data. Therefore, sufficient publicly available information about the firm is necessary for public debt to be a viable means of financing. Fama (1985) suggests that for some firms it is less costly to give one agent (banker) access to the firm's decision process than to produce the range of publicly available information necessary to make public debt a viable means of financing. Thus, bank debt may be more advantageous for firms for which little public information is available.

Fama (1985) also suggests that an analysis of the effects of reserve requirements on certificates of deposit provides evidence that banks provide some unique services. Banks finance loans with certificates of deposit (CD's) that are subject to reserve requirements. This reserve tax is borne by bank borrowers making bank interest rates higher than interest rates on other securities of equivalent risk. Therefore, Fama (1985, 29) concludes that "there must be something special about banks that prevents other intermediaries from

competing to assure that it never pays to finance loans with CD's."

Stronger evidence for the uniqueness of bank loans is provided by studies that examine stock price reactions to various financing announcements. Results indicate that bank loans convey positive information to market participants. Studies consistently find significant positive abnormal returns at the time of bank loan announcements. In contrast, straight public debt issues do not result in any statistically significant market reaction (Mikkelson and Partch 1986; James 1987).

The differences in market response to bank loans and public debt is consistent with the inside-debt argument. However, both Mikkelson and Partch (1986) and James (1987) finds that there are no positive abnormal returns for debt privately placed with institutional investors. James examines 37 private debt placements over the 1974 to 1983 period 70 percent of which are with insurance companies. Mikkelson and Partch examine 80 private placements over the 1972 to 1982 period. In addition, both studies examine whether loan characteristics or characteristics of the borrower can explain the difference in market response to straight

debt, bank loans, and other privately place debt. The stated purpose of the loan, loan size, size of the offering relative to the firm's market value of common stock, loan maturity, borrower size, and borrower default risk do not explain the difference. Mikkelson and Partch (1986, 3) conclude that "the type of security is the only significant determination of the price response." Therefore, the non-positive market response to debt privately placed with institutional investors suggests that the inside-debt argument only partially explains the market's response to bank loans. James (1987, 217) concludes that this evidence indicates "banks provide some special service with their lending activity that is not available from other lenders."

Researchers indicate that banks appear to have a comparative advantage in performing at least two valuable services: 1) information gathering and 2) monitoring. Diamond (1984) develops a theory of financial intermediation which argues that intermediaries such as banks have a cost advantage in the production of information. James (1987, 21) notes that recent theories of intermediation imply that "bank loans are different from publicly placed debt because banks know more about a company's prospects than other

investors do." Diamond (1991) suggests that another important function of banks is the monitoring of their debt contract which alleviates the moral hazard problem. Banks have a cost advantage in monitoring because "the alternative is either duplication of effort if each lender monitors directly, or a free-rider problem, in which case no lender monitors" (Diamond 1991, 393).

Recent studies have expanded the literature by providing empirical support for the theoretical argument that banks have a comparative advantage over other lenders in performing information gathering and monitoring services. These studies separate bank loan announcements into the following three categories: (1) initial loans, (2) favorable renewals, and (3) unfavorable renewals. In the aggregate, favorable renewals of bank loan agreements consistently result in significantly positive abnormal stock price reactions. Best and Zhang (1993, 1511) conclude that these results confirm that "the process of monitoring and evaluation by banks conveys useful information to the market." Unfavorable loan renewals that reduce lending limits or tighten loan restrictions result in negative stock price reactions (Lummer and McConnell 1989; Slovin, Johnson, and Glascock 1992; Best and Zhang 1993).

Evidence regarding market response to initial bank loans is not as consistent as the response to loan renewals. Lummer and McConnell (1989) and Best and Zhang (1993) find no significant abnormal returns for new credit agreements. However, Slovin, Johnson, and Glascock (1992, 1058) find that initial loans are favorable events once firm size is taken into consideration. They conclude that banks provide several elements of financial activity, including "processing of private information and associated monitoring of firm activities" (1065).

In addition to separating the total sample of bank loan announcements according to bank loan type, Slovin, Johnson and Glascock (1992) examine the affects of firm size. Their findings indicate that when a sample of bank loan announcements is grouped according to firm size, positive stock price reactions occur only for the sample of small firms. As a group, large firms experience only normal returns. These results imply that the amount of information regarding a firm which is publicly available may influence market response to the bank loan announcement. The empirical results of previous loan announcement studies are given in Table 1.

Table 2-1 LOAN ANNOUNCEMENT STUDIES Announcement Period Excess Returns (%)					
	Public Debt	Bank Loan	Initial Loans	Favorable Renewals	Unfavorable Renewals
Mikkelson & Partch 1986	NS	.89			
James 1987	NS	1.93			
Lummer & McConnell 1989		.61	NS	.87	-3.96
Slovin, Johnson, Glascock 1992		1.31	1.09	1.55	-2.39
Best & Zhang 1993		.32	NS	.75	-2.92
NS denotes statistically insignificant results					

#### Analyst Following

The amount of information regarding a firm which is publicly available depends to a large extent on the information production and dissemination activities of financial analysts. Due to the important role analysts play in providing information to the public a number of studies attempt to determine which firms analysts will follow. Specific firm characteristics have been identified as influencing analyst following. Early studies focused on one characteristic in particular,

firm size. Bhushan (1989a) and Moyer, Chatfield, and Sisneros (1989) investigate firm characteristics other than size that determine which companies analysts will follow. Before initiating an information search analysts compare search costs with the possible economic value of the information obtained. Findings, reported in Table 2,

Table 2-2  
FIRM CHARACTERISTICS OF ANALYST FOLLOWING

Moyer, Chatfield, Sisneros 1989

1. Size (+)
2. % of Institutional Owners (+)
3. Growth Rate for the Last 5 Years (+)
4. Long Term Debt/Common Equity (-)
5. % Insiders (-)
6. # Owners (+)
7. Industry

Bhushan 1989

1. Size (+)
2. # Institutional Owners (+)
3. Return Variability (+)
4. % Insiders (-)
5. Correlation of Firm Returns with Market Returns (+)
6. # Lines of Business (-)
7. % of Institutional Owners (+)
8. Industry

(+) denotes a positive relation with analyst following  
(-) denotes a negative relation with analyst following

indicate that a number of factors influence analyst activity including ownership structure, return variability, correlation of firm returns with the market return, industry, and firm complexity.

Dempsey (1989) examines market response to 2,466 annual earnings announcements over the 1976 to 1982 period. Results indicate that increased analyst following reduces the information content of earnings announcements. Dempsey controls for firm size since a number of studies find that small firms experience greater security price reactions to earnings announcements than large firms (Atiase 1985; Bamber 1986; Freeman 1987). In univariate regressions both a firm size and an analyst following effect are observed. However, in the multiple regression model analyst following continues to be significant while firm size does not. The results of an off-diagonal analysis with dichotomous firm size and analyst following measures indicate that thinly followed large firms have significantly larger price responses than widely followed small firms. Dempsey (749) states that his findings are "consistent with analysts' use of a multivariate search incentive framework as provided in Bhushan (1989a)." Dempsey's findings are also consistent with Arbel and Strebel (1983) and Carvell and Strebel's (1987) research on the neglected firm effect. Arbel and Strebel (1983) find that after controlling for size, the number of analysts following a firm is negatively

related to the firm's annual return. The authors explain the effect as a premium for information.

Dempsey's findings that analyst following reduces market reaction to earnings announcements beyond that associated with firm size alone is not surprising given that the primary outputs of analysts are earnings forecasts. It is not as obvious whether increased analyst following will reduce market reaction to bank loan announcements. Research suggests that banks may provide unique services that are not replicated by the market. Bank loan announcements not only signal the favorableness of the private information gathered by the bank, but also indicate that the firm will be monitored by the bank during the loan period. However, the firm size effect observed by Slovin, Johnson, and Glascock (1992) indicates the amount of publicly available information regarding a firm may influence market response to bank loan announcements.

#### Reputation

A simplifying assumption made in most studies that examine analyst following is that analysts do not differ in quality. However, there is a substantial amount of theoretical and empirical evidence indicating that the reputation of information providers is important.

Klein and Leffler's (1981) reputation model demonstrates the importance of reputations in providing incentives to assure contract performance in the absence of third-party enforcement. A key point in the model is the value of future business which they refer to as the repeat-purchase mechanism. In order for the repeat-purchase mechanism to work the present discounted value of future income must be greater than the one-time benefit obtained from cheating. The amount invested in nonsalvagable capital costs are the means of signaling to the market that the firm has too much to lose by cheating. In the case of analyst's forecasts, brokerage houses have substantial investments in human capital with specialized expertise which they would not want to jeopardize.

Titman and Trueman (1986) extend the reputation literature by developing a model where the quality of the outside information producers is informative to market participants. Empirical support for the Titman and Trueman model is provided by a number of studies that examine the reputation effects of various information providers. Carter and Manaster (1990) find a significant negative relation between underwriter reputation and the magnitude of initial public offerings

price run-ups. Slovin, Sushka, and Hudson (1990) find evidence that investment banker reputation and the quality of the public accounting firm used are important factors in seasoned equity issues. More prestigious investment bankers and accounting firms lessen the negative response to seasoned equity issues.

The financial press often expresses the opinion that the reputation of analysts is also important. For example, a recent article in *Business Week* states that "sometimes, shares soar when they're recommended by a well-known research analyst" (Spiro, 1993, 87). Stickel's (1992) findings support the argument that there is a significant difference in the forecasts of security analysts. Examination of more than 40,000 earnings forecast revisions per year for the years 1981 to 1985 indicate that forecasts of analysts on the *Institutional Investor All-American Research Team* are superior to those of other analysts in several ways. First, contemporaneous forecasts of the All-American Research Team are more accurate. Secondly, All-Americans supply forecasts more frequently than other analysts. Finally, large upward revisions in earnings forecasts made by All-American Research Team members result in a greater security price response than large revisions by

other analysts (Stickel 1992). The affects of analyst and broker reputation on market response to bank loan announcements has not been examined.

#### Share Price

Moyer, Chatfield, and Sisneros (1989, 503) contend that "analysts play the role of monitors of managerial performance as a means of reducing agency costs of debt and equity." Therefore, firms may try to attract the attention of analysts as a means of reducing agency costs of debt. Alternatively, firms may choose bank monitoring. Diamond (1991, 716) suggests that if moral hazard is sufficiently widespread, then some borrowers will begin their reputation acquisition by being monitored by banks and later switch to issuing publicly placed debt.

Firm characteristics studied by Bhushan (1989) and Moyer, Chatfield, and Sisneros (1989) that influence analyst following are relatively stable and not easily changed. However, there are at least two means by which firms are able to attract analysts' attention without making major firm changes. Research indicates that firms can also attract analyst attention by: 1) increasing the potential economic benefit of information searches by lowering share price and 2) reducing analyst search costs by providing information to analysts through

direct contact. Firms that receive information gathering and monitoring services from banks via bank loans may seek the attention of analysts less actively than firms not receiving bank loans.

There are competing theories as to why firms lower share prices through stock splits. However, "it is clear that firms attempt to manage the unit price of their shares by stock splits and occasional reverse splits and there is a strong relation between the price per share and the size of the firm" (Brennan and Hughes 1991, 1665). It is often suggested that there is an optimal price range for common stock which insures liquidity. This 'liquidity' argument suggests that share prices must be kept sufficiently low to widen the market. Alternatively, Brennan and Hughes (1991) suggest that low share prices provide compensation for financial analysts' information gathering and dissemination activities.

Garbade and Silber (1979) define liquidity as the variance of the difference between realized price and the equilibrium value of an asset at the time a person decides to trade. One of two conditions must be present for an asset to be considered liquid, a relatively stable equilibrium price or frequent trading. For an

asset with a volatile equilibrium price to be liquid it must be traded frequently. Trading frequency reduces the chance of a substantial price change between the time a market participant decides to trade and the time the market ultimately clears. Trading frequency is a function of the number of market participants and is positively related to market size. Equity issues, such as common stock, are considered to have volatile prices. Therefore, a liquid equities market must be large enough to allow for frequent market clearing (trading).

In examining the liquidity effects of stock splits, Copeland (1979) finds that there is an increase in the number of owners providing for a wider market. However, trading volume is proportionately lower after the split, brokerage revenues proportionately higher, and bid-ask spreads are higher as a percentage of the bid price. These factors suggest lower liquidity after the stock split. Copeland concludes that the larger number of owners is more than offset by other factors resulting in an overall reduction in liquidity. Ohlson and Penman (1985) also find that stock splits result in lower liquidity and higher return variances. These findings are inconsistent with the argument that firms lower share prices to increase liquidity.

Brennan and Hughes (1991) provide an alternative theory to the 'liquidity' argument. Managers with good private information want independent third parties to produce information about the firm. Independent parties such as brokers avoid the moral hazard problems associated with direct payment to information producers for certification. Brokers are compensated for their effort by brokerage commissions. Brokers compare the cost of gathering the information necessary to issue an earnings forecast with the commission revenue it will produce for the firm. Coler and Schaefer (1988) find that full service brokerage commissions charged as a proportion of the trade are negatively related to share price. Therefore, lower share prices result in higher full service brokerage commissions thereby compensating brokers for their research expenditures.

Brennan and Hughes (1991) examine the relation between share price and analyst following for the period of 1976 through 1987. A total of 13,285 observations is obtained for firms listed on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and National Association of Security Dealers Automated Quotation Systems (NASDAQ). They find that after controlling for

firm size, the number of analysts following a firm is negatively related to share price.

Brennan and Hughes' empirical research establishes that there is a negative relationship between analyst following and share price. However, it is not known whether firms maintain certain share prices or reduce share prices for strategic purposes. The liquidity argument states that firms maintain share prices within an optimal price range which insures liquidity. Alternatively, Brennan and Hughes (1991) suggest that firms reduce share prices for strategic purposes when they want additional analyst attention.

Theoretical research shows that the amount of publicly available information is an important factor in determining the viability of public debt (Fama 1985; Diamond 1991). Therefore, Brennan and Hughes' (1991) theory would imply that firms relying on public financing may seek the attention of analysts by lowering share prices. However, "it is costly for a firm to reduce its share price by splitting because the structure of brokerage commissions makes it more costly to trade in low priced shares" (Brennan and Hughes 1991, 1665). Therefore, firms receiving banks' information gathering and monitoring services via bank loans may

decide not to incur the cost of attracting additional analyst attention.

Presentations to New York Society of Securities Analysts

An additional method of attracting analysts' attention is through direct contact. The SEC has mandated minimum disclosure standards. However, beyond the minimum requirements firms are allowed considerable latitude in choosing how much to disclose and the venue.

Lang and Lundholm (1993) examine cross-sectional determinants of analyst ratings of corporate disclosures. Their study is based on the *Report of the Financial Analysts Federation Corporate Information Committee (FAF Reports)* which rates three main corporate disclosures: published annual information, other published information, and investor (analyst) relations. These reports are prepared by subcommittees comprising of the leading analysts covering the industry to which a firm belongs. The average committee size is thirteen. Lang and Lundholm (1993, 254) note that "a casual comparison of the analysts included on the subcommittees with those selected for the *Institutional Investor All-American Research Team* suggests a substantial overlap." Their findings demonstrate that of the three categories of disclosure examined by the *FAF Reports* ratings for

the investor relations category varied the most. Published annual information varied the least. These results indicate that "firms can more clearly differentiate their investor relations efforts than their annual report disclosures, perhaps because the former permit more discretion" (Lang and Lundholm 1993, 257). One of the primary considerations in the investor relations rating is the frequency and content of presentations to analysts.

Discussions with a former Vice President in charge of investor relations at a major bank indicate that analyst coverage of a firm often begins when the firm contacts analysts covering their firm's industry. Analysts are given access to information not available to the public, but within legal guidelines. Because brokerage firms earn more commissions on firms they can sell to the public, analysts look for firms they think will do well.

The largest firms make regularly scheduled presentations to analyst associations. Other firms may be invited to make a presentation if they have made a favorable impression on an analyst. Presentations may be made to specific brokerage firms, local or regional analyst associations, or the New York Analyst

Federation. The most prestigious meeting of analysts is the New York Society of Securities Analysts (NYSSA). Senior company officials speak at presentations to the NYSSA. Of the 1,141 presentations listed in the NYSSA calendar for the period from January 1986 to December 1992, 99 percent were made by the corporate chief executive officer (CEO), chairman, or president.

Walmsley, Yadav, and Rees (1992, 572) note that presentations are "the formal, publicly acknowledged end of a spectrum of possible contacts between corporate management and the investment community." Generally, firms that present in New York have already done so at the local or regional level. Consequently, the information in the New York presentations is not new. In fact, interviews with Fortune 500 executives by Sundaram, Ogden, and Walker (1993) indicate that executives specifically refrain from releasing new information at these meetings in order to avoid violating Rule 10b-5 of the Securities Exchange Act. However, the audience at NYSSA presentations is different. Analysts often invite big investors to attend.

There is empirical evidence that the market responds to NYSSA presentations. Sundaram, Ogden, and

Walker (1993) examine market response to 1,502 corporate presentations to the NYSSA for the period from 1984 through 1990. Significant positive abnormal returns are observed on the day of and the day after a firm's presentation to the New York Society of Security Analysts. The authors note that firms are often recommended by analysts in the weeks following their NYSSA presentations. Firm returns for presentations made to Financial Analysts Federation societies outside of New York are not significant.

#### Summary

Chapter Two discusses research relevant to this study. The review covered the following areas: 1) loan announcement studies, 2) analyst following studies, 3) reputation research, 4) firm share price literature, and 5) research on the effects of presentations to the New York Society of Security Analysts.

CHAPTER THREE  
RESEARCH METHOD

The purpose of this chapter is to discuss the research methodology used in this study. Section one discusses the research questions and associated hypotheses. Data sources and collection methods are described in section two. Sections three through six describes the statistical methodology employed for each of the four hypotheses. The final section describes the statistical tests of the combined hypotheses.

Statements of Hypotheses

Hypotheses one and two examine the first research question: Does analyst following affect market response to bank loan announcements beyond that associated with firm size alone?

Ho1: Analyst following does not reduce market response to bank loan announcements beyond that associated with firm size alone.

Ha1: Analyst following reduces market response to bank loan announcements beyond that associated with firm size alone.

Ho2: Higher reputation brokerage and analyst following does not reduce market response to

loan announcements more than lower reputation brokerage and analyst following.

Ha2: Higher reputation brokerage and analyst following reduces market response to bank loan announcements more than lower reputation brokerage and analyst following.

Hypotheses three and four examine the second research question: Do firms receiving bank loans seek the attention of analysts less actively than firms not receiving bank loans?

Ho3: The share prices of firms receiving bank loans are equal to or less than share prices of firms not announcing bank loans.

Ha3: Share prices of firms receiving bank loans are higher than share prices of firms not announcing bank loans.

Ho4: The number of presentations made to the New York Society of Securities Analysts by firms receiving bank loans is equal to or greater than the number of presentations made by firms not announcing bank loans.

Ha4: The number of presentations made to the New York Society of Securities Analysts by firms receiving bank loans is lower than the number of presentations made by firms not announcing bank loans.

#### Sample Data

The sample of bank loan announcements was obtained by searching the *Dow Jones News Service* for the period 1987 through 1992 for announcements of bank loan agreements. This database provides in-depth coverage of companies, industry, and the stock market. In addition to

providing the full text of the loan announcement, the *Dow Jones News Service* gives the date and time the story appeared on the wire. This information provides for a precise assessment of the announcement date.

A number of firm announcements have been found to affect stock prices, including earnings-related announcements, dividend declarations, investment decisions, and lawsuit announcements. Therefore, the *Wall Street Journal Index* was searched for other firm announcements. Firms were retained if there were no other major firm announcements in the five-day period surrounding the loan announcement.

Loans are classified as initial loans, favorable renewals, or unfavorable renewals on the basis of information contained in the announcement. Loan agreements are classified as initial if the announcement indicates it is new (or does not indicate it is a renewal) and a search of the borrower's Form 10-K confirms that it is not a revision of an existing bank loan. Unfavorable loan renewals include cancellations, reductions in lending limits, or a tightening of loan restrictions. The LEXIS/NEXIS database was used to obtain 10-K information.

Daily return data and share prices was obtained from the Center for Research in Security Prices (CRSP) tapes. The proxy for the market is the CRSP equally-weighted market portfolio, including all distributions. According to portfolio theory the market portfolio contains each single risky asset "in proportion to the total market value of that asset relative to the total value of all other assets" (Haugen 1990, 56). However, in comparing the value weighted index and the equally weighted index Brown and Warner (1980) find that under a variety of methods the equally weighted index is more likely to detect abnormal performance than the value weighted index. Peterson (1989, 60) explains that "the reason the equally-weighted index is superior is due to the use of equal-weighting of securities in the aggregation of security returns." Therefore, there is a greater degree of correlation between the equally-weighted index and security returns and greater precision in the estimated parameters.

Various proxies for firm size have been used in research. Foster (1986) examines the correlations and comovements between the following three measures: total assets, sales, and market capitalization. Market capitalization is obtained by multiplying share price by

the number of outstanding shares of the firm. He finds that the correlation of market capitalization with total assets and sales is .86 and .87 respectively. However, the agreement in sign of annual change (comovement) of market capitalization with total assets and sales is only .68 and .67. In theory the market value of common stock is based on the discounted value of expected dividends throughout the life of the firm. Therefore, market capitalization includes market expectations of the firm's future growth. Expectations are not included in either the total assets or sales measures of firm size. This market expectation component of the market capitalization measure may account for the relatively low comovement of this variable with the other firm size proxies.

Therefore, to avoid redundancy in the independent variables the measure for firm size is total assets. Share price is already included in the study as an independent variable of interest. Total asset information to compute firm size was obtained from the COMPUSTAT file. For sample firms not included on either the current or the research file of COMPUSTAT total firm assets was obtained from *Standards and Poors*.

The first and second hypotheses examine the affects of analyst following and reputation on market response to

bank loan announcements. The number of analysts following a particular firm was obtained from *Nelson Directory of Investment Research*. Volume one of the directory covers United States companies and is arranged in seven sections, the largest of which is section two. The data in section two usually includes the firm's ticker symbol, exchange, lines of business, institutional holdings, number of shareholders, shares outstanding, key executives, and market value. Analyst coverage is also provided, including an analyst's name, research firm affiliation, and phone number. "Listings include all public companies headquartered in the United States with research coverage by at least one security analyst" (Nelson's, 1988, p. 107). Bhushan (1989) uses this source in examining firm characteristics and analyst following. The main advantage is that the annual listing provides an accurate count of the number of analysts following a firm.

Reputation is measured by inclusion on the *Institutional Investor's* annual All-American Research Team. Every October the *Institutional Investor* journal publishes a ranking of more than 400 U.S. analysts in 34 firms that "have done the most outstanding work during the past year" (Daniells 1993 p.185). The leading analyst

in each industry and speciality area are referred to as the All American Research Team One. The list is constructed by sending a questionnaire to the director of research of approximately 800 money management organizations and to other managers regarded as important to clients of brokerage firms who rate analysts on stock selection, earnings estimates, service and accessibility, and written reports. *Institutional Investor* reporters then spend about two months going back to the institutions to solicit both positive and negative comments. Final ranking is then made (*Institutional Investor*, 1988). For the sample period of this study the number of analysts on the All-American Research Team One ranged from a low of 59 in 1987 to 70 in 1991.

In addition to the All-American Research Team One, the magazine publishes the names and brokerage affiliations of the second, third, and fourth place analysts for each industry and speciality group. The number of analysts in these categories is approximately 350 per year. In this study, the second, third, and fourth place analysts following a sample firm are classified as high reputation analysts (RAF).

The names of each analyst covering a firm in the year of the loan announcement are compared with the

*Institutional Investor* rankings of analysts for that year. The number of analysts, high reputation analysts, and team one All-American analysts are then computed. Since, *Nelson's Directory* and the *Institutional Investor's* All-American listings contain information for the preceding year analyst following and reputation for 1987 loan announcements are based on the 1988 listings. The same procedure is used for the other sample years.

The *Institutional Investor* also ranks brokerages by the number of individual analysts on any of the four teams as a percentage of the firm's total number of analysts. For this study, brokerages with 20% or more of their analysts earning places on one of the teams are classified as high reputation brokerages (RB). There are approximately twenty brokerages per year that meet this criterion. Eighteen brokerages had 20% or more of their analysts on one of the teams for all six years of the sample period.

As stated in the literature review, evidence indicates that the industry to which a firm belongs influences a number of events including market response to earning announcements (Bhushan 1989b) and analyst following (Bhushan 1989a; Moyer, Chatfield, and Sisneros 1989). Therefore, the control sample for tests of

hypotheses three and four consist of firms within the same industry that do not announce receiving a bank loan. Control firms are obtained from COMPUSTAT and include all firms with the same two digit SIC code as sample firms. Share price and total asset information on the control firms are also obtained from COMPUSTAT.

The fourth hypothesis examines the number of presentations made by sample firms to the New York Society of Security Analysts (NYSSA) versus the number of presentations made by other firms in the same industry. The number of presentations made by both sample firms and control firms for the sample period was obtained by searching the NYSSA calendar for the company name. There are 238 sample firms and 2,413 control firms. The calendar which contains the names and dates of firms making presentations was obtained from the NYSSA for the period from 1986 to 1992.

#### Abnormal Return Calculations

Standard event study methodology is used to determine share price response to bank loan announcements. The total sample of bank loan announcements is then disaggregated to find market response to initial loans, favorable renewals, and unfavorable renewals.

Daily return data is collected for 155 days beginning at day -150 and ending at day +4. The estimation period includes returns for days -150 to -10. Daily returns for individual securities substantially depart from normality. However, Brown and Warner (1984, p. 213) note that "the mean excess return in a cross-section of securities converges to normality as the number of sample securities increases." Simulations results obtained by Brown and Warner indicate that standard parametric tests for significance of mean excess returns are well-specified.

The market model is used to calculate expected returns for individual firms. The market model takes into consideration both market-wide factors and the systematic risk of each sample security.

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \epsilon_{jt} \quad (1)$$

where:  $R_{jt}$  = return on security  $j$  on day  $t$ ;  
 $R_{mt}$  = CRSP equally-weighted index of returns on AMEX and NYSE stocks on day  $t$ ;  
 $\alpha_j$  = the market model intercept term,  
 $\beta_j$  = the market model slope estimated by ordinary least squares regression;  
 $\epsilon_{jt}$  = a random error term.

The abnormal return for firm  $j$  on day  $t$  is calculated as follows:

$$AR_{jt} = R_{jt} - \alpha_j - \beta_j R_{mt} \quad (2)$$

where:  $AR_{jt}$  = abnormal return on security  $j$  on day  $t$ ;

$R_{jt}$  = return on security  $j$  on day  $t$ ;  
 $\alpha_j$  = the market model intercept term;  
 $\beta_j$  = the market model slope estimated by  
 ordinary least squares regression;  
 $R_{mt}$  = CRSP equally-weighted index of returns  
 on AMEX and NYSE stocks on day  $t$ .

Brown and Warner (1985) find that tests continue to be well-specified as the event period is lengthened, but that the power of these tests decreases dramatically. In order to maintain the power of the statistical tests employed, the shortest possible event period is used. Peterson (1989) notes that obtaining the date of news releases does not indicate whether the market receives the information during trading hours unless the time of the news releases are also obtained. If news is released after trading hours, market response will occur on the day following the announcement. Therefore, the announcement day is the date the *Dow Jones News Service* reports the announcement or the next trading day if the announcement is made after the close of trading for the particular exchange. The announcement day is defined as day 0.

Tests of significance of the abnormal returns are based on standardized abnormal returns. The one-day standardized abnormal return for firm  $j$  is calculated as follows:

$$SAR_j = \sum (AR_{jt} / s_j) \quad (3)$$

where:  $SAR_j$  = standardized abnormal return for firm  $j$ ;  
 $s_j$  = the standard error of the estimation period;  
 $AR_{jt}$  = abnormal return on security  $j$  on day  $t$ .

Portfolios are then formed based on the type of loan announcement. The average standardized abnormal return for the portfolio is defined as follows:

$$ASAR = 1/N \sum (SAR_j) \text{ for } j=1 \text{ to } N \quad (4)$$

Assuming the individual abnormal returns are cross-sectionally independent and normally distributed, the following  $t$ -statistic can be computed:

$$t = \text{square root of } N \text{ times } ASAR.$$

The expected values of  $SAR$  and  $ASAR$  are positive for initial bank loans and favorable renewals, negative for unfavorable renewals and cancellations. To control for this difference in total sample tests that include both favorable and unfavorable loan announcements, whenever an announcement is for a cancellation or an unfavorable bank loan revision, the control variables are multiplied by negative one.

One-day abnormal returns are calculated for the entire sample and the sample disaggregated by size, loan type, exchange, time on CRSP files, one-digit SIC code, security, structure of the agreement, loan maturity, and the number of participating banks.

Tests of Hypothesis One

Hypothesis one examines whether analyst and brokerage following reduces market reaction to bank loan announcements. The first test of this hypothesis employed the following univariate regression analysis:

$$SAR_j = \beta_0 + \beta_1(\# \text{ analysts}_j) + \epsilon_j \quad (6)$$

Where:

$SAR_j$  = the standardized abnormal return of firm j calculated above;  
 $\# \text{ analysts}_j$  = the number of analysts following firm j;  
 $\epsilon_j$  = a random error term.

The total sample of bank loan announcements is then disaggregated based on whether the loan is an initial loan, a favorable renewal, or an unfavorable renewal. Separate regressions are run for each portfolio. Similar regressions are run for the number of brokerages following a firm. The number of analysts and brokerages researching a company was obtained from Nelson's Directory of Investment Research in the year of the loan announcement. A significant negative coefficient would indicate that increased analyst and brokerage following decreases market response to bank loan announcements. Under the null hypothesis the coefficient is expected to be insignificant.

Next, multivariate regressions are conducted for the total sample of bank loan announcements and each

portfolio separately to determine the relative explanatory power of analyst following and firm size on market response to the bank loan announcements. Multivariate regressions also test the relative explanatory power of brokerage following and firm size.

$$SAR_j = \beta_0 + \beta_1(\lnsize_j) + \beta_2(\# \text{ analysts}_j) + \epsilon_j \quad (7)$$

Where:  $SAR_j$  = the standardized abnormal return of firm j calculated above;  
 $\lnsize_j$  = the natural logarithm of firm j total assets;  
 $\# \text{ analysts}_j$  = the number of analysts researching firm j;  
 $\epsilon_j$  = a random error term.

Foster (1986) notes that the distribution for the variable firm size is fat tailed and shows evidence of substantial positive skewness. This departure from normality makes a transformation of the data necessary. The commonly used natural logarithmic transformation for a positively skewed distribution is used. Type II sum of squares is obtained for this regression equation. The SAS Type II sum of squares corresponds to the partial sums of squares in which each effect is adjusted for all other effects possible (SAS, 1992). The partial R squared obtained indicates the additional impact of each variable beyond that portion of the variance explained by the other variable.

Tests of Hypothesis Two

The second hypothesis examines whether the reputation of analysts and brokerages following a firm influences market reaction to the loan announcements. The first test of this hypothesis employs the following univariate regression analysis:

$$SAR_j = \beta_0 + \beta_1(\# \text{ All-American Analysts}_j) + \epsilon_j \quad (6)$$

Where:

- $SAR_j$  = the standardized abnormal return of firm j calculated above;  
 $\# \text{ analysts}_j$  = the number of analysts following firm j;  
 $\epsilon_j$  = a random error term.

Univariate regressions are also used to test the following independent variables: number of high reputation analysts (RAF), number of brokerages following a firm (B), and the number of high reputation brokerages following a firm (RB). Initial loans and favorable renewals form one portfolio while unfavorable renewals and terminations of loans form the second. The portfolios are then disaggregated based on firm size. Separate regressions will be run for each portfolio of loan type by firm size.

The final tests of the reputation hypothesis examine the effect of the proportion of analysts and brokerages following a firm and the percent of high reputation analysts, All-American Team One analysts, and high

reputation brokerages on market reaction to bank loan announcements. The variables are calculated as follows:

Proportion of analyst following:

$$(PAF) = \frac{\text{the number of analysts following a firm}}{\text{the highest case of analyst following} + 1}$$

Percent of All-American Team One analysts:

$$(PAAF) = \frac{\text{number of All-American Team One Analysts}}{\text{total number of analysts following the firm}}$$

Percent of high reputation analysts:

$$(PRAF) = \frac{\text{number of high reputation analysts}}{\text{total number of analysts following the firm}}$$

Proportion of brokerage following:

$$(PB) = \frac{\text{the number of brokerages following a firm}}{\text{the highest case of brokerage following} + 1}$$

Percent of high reputation brokerages:

$$(PRB) = \frac{\text{number of high reputation brokerages}}{\text{total number of brokerages following the firm}}$$

The following univariate regression is used for all the above variables:

$$SAR_j = \beta_0 + \beta_1 (PAF_j) + \epsilon_j$$

Where:

- $SAR_j$  = the standardized abnormal return of firm j;
- $PAF_j$  = the number of All-American analysts researching firm j;
- $\epsilon_j$  = a random error term.

Again, the regressions are run for portfolios based on bank loan classification and firm size.

Tests of Hypothesis Three

Hypothesis three examines whether firms receiving bank loans have higher share prices than firms not announcing bank loans. This hypothesis is tested using the following regression.

$$P_j = \beta_{c_j} + \beta_1(\lnsize_j) + \beta_2(\text{firm type}_j) + \epsilon_j \quad (9)$$

Where:

- $P_j$  = the share price of firm  $j$  at the time of the loan announcement for sample firms and the mean share price over the sample period for other industry firms;
- $\lnsize_j$  = the natural logarithm of total firm assets;
- $\text{firm type}_j$  = 0 for industry control firms and 1 for firms receiving bank loans;
- $\epsilon_j$  = a random error term.

Share prices for sample firms are for the day of the loan announcement. Share price for control firms is calculated as the mean share price obtained from COMPUSTAT files over the sample period.

Brennan and Hughes (1991, p. 1677) suggest that "a smaller firm must choose a lower share price in order to gain the same analysts following as a larger firm." To control for this firm size effect a size variable is included in the model. The natural logarithm of total firm assets is included as the measure of firm size rather than market capitalization to avoid redundancy in the independent variables.

Total assets of sample firms are measured for the year of the loan announcement. The total asset measure for control firms is the mean firm total assets for the sample period obtained from COMPUSTAT. A separate regression is run for each one digit SIC industry group.

#### Tests of Hypothesis Four

Hypothesis four examines whether firms receiving bank loans make fewer presentations to the New York Society of Securities Analysts than firms not announcing bank loans. The following regression will be used to test this hypothesis.

$$\#P_j = \beta_{0j} + \beta_1(\ln\text{size}_j) + \beta_2(\text{firm type}_j) + \epsilon_j \quad (10)$$

Where:

- #P<sub>j</sub> = the number of presentations made at the NYSSA during the current and preceding year;
- size<sub>j</sub> = the natural logarithm of total firm assets;
- firm type<sub>j</sub> = 0 for industry control firms and 1 for firms receiving bank loans.

Anecdotal evidence suggests that the number of presentations to the NYSSA is also sensitive to firm size. To control for a possible firm size effect a size variable is included in the model. The same total assets measure of firm size that was used for tests of hypothesis three is used in this model. A separate regression is run for each one digit SIC industry group.

The number of presentations made each year to the NYSSA decreased significantly over the sample period. Table 3-1 indicates the combined number of presentations made by sample firms and control firms for each year.

Table 3-1  
Number of presentations to the NYSSA by year

Year	# Presentations
1986	108
1987	105
1988	85
1989	64
1990	84
1991	57
1992	37

Due to the significant decrease in the number of presentations made over the sample period a second test is performed. To facilitate year-to-year comparability restated number of presentations are calculated. Regressions are then run using the restated number of presentations. First, each firm's annual number of presentations is scaled by the mean number of presentations for the year to obtain the relative number of presentations.

$$\text{Relative \#P} = \#P / \text{mean}(\#P)$$

Next, the relative measure is multiplied by the mean number of presentations for 1989, the mid year of the sample.

$$\text{Restated \#P} = \text{Relative \#P} \times \text{mean}(\#P)$$

Comprehensive Tests

The final tests combine the various components of hypotheses one through four. A number of studies show that there is a significant difference in market response to public debt issues and bank loan announcements [Mikkelson and Partch (1986) and James (1987)]. Hypotheses three and four test whether firms announcing bank loans have significantly different share prices and number of presentations to the NYSSA as compared to firms in the same industry not announcing bank loans. Stickel (1992) shows that share price influences the number of analysts following a firm. Hypotheses one and two examine whether the number and reputation of analysts following a firm affect market response to bank loan announcements. These relationships are summarized below:

share price and NYSSA presentations	>	number and reputation of analysts	>	return
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The following regression combines the variables of hypotheses one through four:

$$SAR_j = \beta_0 + \beta_1(\lnsize_j) + \beta_2(NYSSA_j) + \beta_3(P_j) + \beta_4(PAAF_j) + \beta_5(PAF_j) + \beta_6(PB_j) + \epsilon_j$$

Where:

SAR <sub>j</sub>	=	the standardized abnormal return of firm j;
lnsize <sub>j</sub>	=	the natural logarithm of firm j total assets;

NYSSA	=	the number of presentations made at the NYSSA during the preceding year;
$P_j$	=	the share price of firm $j$ at the time of the loan announcement;
$PAAF_j$	=	the number of All-American analysts following firm $j$ divided by the total number of analysts following the firm;
$PRAF_j$	=	the number of high reputation analysts following firm $j$ divided by the total number of analysts following the firm;
$PAF_j$	=	the proportion of analysts following firm $j$ ;
$PB_j$	=	the proportion of brokerages following firm $j$ .
$PRB_j$	=	the number of high reputation brokerages following firm $j$ divided by the total number of brokerage following the firm;
$\epsilon_j$	=	a random error term.

The final test combines the variables tested in hypotheses one through four and industry dummy variables with variables banking theory suggests may influence market response to the loan announcement.

#### Summary

Chapter Three discusses the methods used to answer the research questions: 1) Does analyst following affect market response to bank loan announcements beyond that associated with firm size alone? and 2) Do firms receiving bank loans seek the attention of analysts less actively than firms not receiving bank loans? The method of obtaining the sample and the techniques used to test the hypotheses are discussed.

## CHAPTER FOUR

### RESULTS

Chapter four reports the analyses and results of the study. The first section discusses sample selection procedures. The second section reports results of the tests of hypotheses. The final section summarizes study results.

#### Sample Selection

##### Sample Selection Procedures

To obtain a sample, the *Dow Jones News Service*, also known as the broadtape, is searched for the period 1987-1992 for announcements concerning credit agreements between nonbank corporations and banks. The date, time of the announcement, and full text of the announcement was obtained. Only firms with stock returns on the Center for Research in Security Prices (CRSP) daily files of the New York and American Stock Exchanges and the NASDAQ are included in the sample.

The event date is defined as precisely as possible. The closing price on the CRSP stock file for a particular

date is the last trading price for that day on the exchange that the security traded last. If a stock trades on both the NYSE and the Pacific Stock Exchange (PACX), and the last trade occurs on the Pacific Stock Exchange, the closing price on that day represents the closing price on the PACX, not the NYSE. CRSP obtains price data for NASDAQ securities directly from the National Association of Securities Dealers (NASD) with the close of the day being at 4:00 Eastern Time (CRSP Stock File Guide, 1991). For this study the announcement day is defined as the date the *Dow Jones News Service* reports the announcement or the next trading day if the announcement is made after the close of trading for the particular exchange. The announcement day is noted as day 0.

The *Wall Street Journal Index* (WSJ) was searched for other major corporate announcements around the time of the bank loan announcement. Observations are deleted from the sample if other news announcements are reported on the day of the bank loan announcement or two days before or after the announcement.

#### Sample Selection Results

The *Dow Jones News Service* search produced a sample of 765 announcements. Of this sample 378 had return data on CRSP and were uncontaminated by other major news. Fifty

of these were loans by banks to other financial institutions or public utilities, leaving a final sample of 328. A search of the borrowing firms' annual reports indicates that there are 158 new loans, 116 favorable renewals or revisions of existing credit agreements, 46 unfavorable renewals or revisions, and 8 cancellations.

#### Characteristics of the Sample Firms

Table 4-1 reports descriptive statistics for the full sample and portfolios disaggregated by size for the following firm characteristics: total firm assets, size of credit agreement, maturity of agreement, and the number of participating banks. Firms are classified as small if total firm assets are in the bottom third of all firms listed on the NYSE and OTC COMPUSTAT files ranked according to total assets. Firms are classified as large if they are in the upper third of the COMPUSTAT firms and medium if they are within the middle third.

Table 4-2 presents descriptive statistics for analyst following, number of high reputation analysts, number of All-American First Team analysts, brokerage following, and the number of high reputation brokerages disaggregated according to firm size. The mean number of analysts following a firm is 4.9 for the total sample. The mean is 1.5, 4.7, and 15.9 for small, medium, and large firms

Table 4-1

Descriptive statistics for total firm assets, loan agreement amount, maturity of agreement and number of participating banks for the full sample and portfolios dissagregated according to firm size for 328 uncontaminated bank loan announcements.

Variable	N	Mean	Standard Deviation	Range
<b>Total assets (\$ millions)</b>				
full sample	328	817	4218	2 - 65,219
small firms <sup>a</sup>	183	32	22	2 - 87
medium firms <sup>a</sup>	86	191	101	58 - 481
large firms <sup>a</sup>	59	4163	9294	335 - 65,219
<b>Loan amount (\$ millions)</b>				
full sample	318	67	127	1 - 850
small firms <sup>a</sup>	177	14	21	1 - 235
medium firms <sup>a</sup>	84	75	104	2 - 850
large firms <sup>a</sup>	57	221	202	2 - 820
<b>Maturity (years)</b>				
full sample	230	2.9	2.3	1 - 15
small firms <sup>a</sup>	125	2.3	1.7	1 - 10
medium firms <sup>a</sup>	66	3.2	2.2	1 - 10
large firms <sup>a</sup>	39	4.3	3.3	1 - 15
<b>No. of participating banks:<sup>b</sup></b>				
full sample	280	2.9	5.6	1 - 63
small firms <sup>a</sup>	172	1.3	.6	1 - 4
medium firms <sup>a</sup>	73	2.6	2.1	1 - 9
large firms <sup>a</sup>	35	11.8	12.6	1 - 63

<sup>a</sup> Firms are classified as small if total firm assets are in the bottom third of all firms listed on the NYSE and OTC COMPUSTAT files ranked according to total assets. Firms are classified as large if they are in the upper third of the COMPUSTAT firms and medium if they are within the middle third.

<sup>b</sup> Firms receiving a loan from a group of banks often list only the lead bank in the 10-K.

Table 4-2

Descriptive statistics for analyst following, number of high reputation analysts, number of All-American analysts, brokerage following, and the number of high reputation brokerages disaggregated according to firm size for 328 uncontaminated bank loan announcements.

Variable	N	Mean	Standard Deviation	Range
Analyst following:				
full sample	328	4.9	7.3	0 - 47
small firms <sup>a</sup>	183	1.5	2.1	0 - 9
medium firms <sup>a</sup>	86	4.7	4.6	0 - 20
large firms <sup>a</sup>	59	15.9	10.1	0 - 47
High Reputation analyst following:				
full sample	328	.92	1.95	0 - 11
small firms <sup>a</sup>	183	.11	.47	0 - 4
medium firms <sup>a</sup>	86	.70	1.14	0 - 5
large firms <sup>a</sup>	59	3.75	2.92	0 - 11
Team 1 All-American Analysts:				
full sample	328	.10	.34	0 - 2
small firms <sup>a</sup>	183	.02	.14	0 - 1
medium firms <sup>a</sup>	86	.09	.33	0 - 2
large firms <sup>a</sup>	59	.37	.58	0 - 2
Brokerage following:				
full sample	328	4.41	6.39	0 - 38
small firms <sup>a</sup>	183	1.42	1.91	0 - 10
medium firms <sup>a</sup>	86	4.23	4.13	0 - 19
large firms <sup>a</sup>	59	13.93	8.57	0 - 38
High Reputation brokerage following:				
full sample	328	1.42	2.72	0 - 14
small firms <sup>a</sup>	183	.19	.52	0 - 3
medium firms <sup>a</sup>	86	1.20	1.87	0 - 8
large firms <sup>a</sup>	59	5.53	3.71	0 - 14

<sup>a</sup> Firms are classified as small if total firm assets are in the bottom third of all firms listed on the NYSE and OTC COMPUSTAT files ranked according to total assets. Firms are classified as large if they are in the upper third of the COMPUSTAT firms and medium if they are within the middle third.

respectively indicating a strong correlation between firm size and analyst following. However, the range of analyst following demonstrates that there are large firms with no following and small firms receiving considerable analyst attention. The mean number of brokerages following the firms is similar to the mean number of analysts indicating that brokerages usually have only one analyst following a firm.

Table 4-3 contains the one-day abnormal returns for the entire sample and the sample disaggregated by size and loan type. As expected, small firms experienced a larger market reaction to loan announcements than medium or large firms. Neither the medium nor the large firms experienced a significant market response for the full sample of loan announcements. When disaggregated according to loan type new loans and favorable renewals both experienced significantly positive abnormal returns for every size group while unfavorable renewals and terminations experienced significantly negative abnormal returns.

Previous research indicates that firm size and loan type may be the main explanatory factors in the market response to loan announcements (Lummer and McConnell, 1989; Slovin, Johnson, and Glascock, 1992). However, firms and loans differ on a number of dimensions. Table 4-4

Table 4-3

Average one-day announcement period excess returns for the full uncontaminated sample of 328 firms.

Type of of Announcement	Number of Observations	One-day excess return	z statistic	Percent positive excess returns
<b>Panel A: Sample Disaggregated by Firm Characteristics</b>				
By exchange				
NYSE/AMEX	143	.0123	2.13**	54.5
NASDAQ	185	.0101	2.62*	47.5
By time on CRSP files				
Less than 1 year	37	.0201	3.14*	54.1
More than 1 year	269	.0094	2.45*	51.3
Removed within 1 yr	22	.0163	0.35	50.0
By 1-digit SIC code				
1-Mining	26	-.0013	-0.12	42.3
2-Manufacturing	33	.0007	0.09	54.5
3-Manufacturing	113	.0178	3.01*	56.6
4-Transportation	20	.0245	2.58*	65.0
5-Trade	66	.0139	2.13**	53.0
7-Services	43	.0049	0.95	34.9
8-Services	27	.0003	-0.54	48.1
<b>Panel B: Sample Disaggregated by Loan Characteristic</b>				
By Security				
Unsecured	194	.0100	1.34	50.5
Secured	52	.0062	1.07	59.6
Security Unknown	82	.0166	3.83*	48.8
By Structure of Agreement				
Revolving	282	.0142	4.18*	53.2
Term	29	.0036	0.04	37.9
Unknown	17	-.0280	-2.28**	47.1
By Maturity of Loan				
1 Year	87	.0049	0.16	47.2
Over 1 year	142	.0174	4.33*	54.9
Unknown	99	.0073	1.26	50.5
By Number of Participating Banks				
1 bank	185	.0158	3.49*	54.6
2-5 banks	70	.0042	0.86	55.7
5 or more	64	.0019	0.29	35.9
Unknown	9	.0314	1.30	66.6
* significant at the .01 level				
** significant at the .05 level				

Table 4-4

Average one-day announcement period excess returns for announcements of initial bank loans, favorable renewals, unfavorable renewals, and loan terminations.

Type of of Announcement	Number of Observations	One-day excess return	z statistic	Percent positive excess returns
Panel A: full sample of uncontaminated loans				
All announcements	328	.0111	3.37*	51.5
By firm size				
small	183	.0161	3.92*	56.8
medium	86	.0068	0.21	48.8
large	59	.0017	0.80	38.9
By loan type				
initial	158	.0201	5.64*	56.9
favorable renewal	116	.0312	6.12*	60.3
unfavorable renewal	46	-.0486	-8.33*	15.2
terminations	8	-.1315	-6.79*	25.0
Panel B: loan announcements disaggregated by firm size				
Small firms				
initial	89	.0283	5.69*	62.9
favorable renewal	70	.0370	4.87*	61.4
unfavorable renewal	18	-.0637	-5.63*	16.6
terminations	6	-.1696	-7.17*	33.3
Medium firms				
initial	40	.0164	1.61***	52.5
favorable renewal	28	.0265	3.12*	64.2
unfavorable renewal	17	-.0471	-5.87*	17.6
terminations	1	-.0114	-0.58	00.0
Large firms				
initial	29	.0041	1.30***	44.8
favorable renewal	18	.0161	2.02**	50.0
unfavorable renewal	11	-.0262	-2.53*	10.1
terminations	1	-.0229	-1.04	0.0
*	significant at the .01 level			
**	significant at the .05 level			
***	significant at the .10 level			

presents the one-day abnormal returns for the sample disaggregated by various firm and loan characteristics.

Lummer and McConnell (1989, 115) suggest four dimensions on which loans can differ: 1) relative size calculated as loan amount/firm size 2) maturity 3) whether the loan is secured or unsecured and 4) whether the loan is a term loan or a revolving credit agreement. Revolving credit agreements exhibit a significant positive one-day abnormal return while market response to term loans is insignificant. In addition, market response to loans which mature in one year or less is insignificant while loans with maturities longer than one year exhibit significant positive abnormal returns.

Research indicates that the exchange and industry to which a firm belongs are important firm characteristics (Bhushan, 1989a; Moyer, Chatfield, and Sisneros, 1989). The sample firms in this study did respond differently according to industry affiliation. Only three SIC classifications experienced significant abnormal returns. The three significant industry groups were manufacturing (which includes the majority of the sample firms), transportation, and trade.

Diamond (1991) contends that there is a "life cycle effect in the use of borrowing through intermediaries. New

borrowers borrow from banks initially but may later issue debt directly" (p. 690). Therefore, firms may differ depending on where they are in the borrowing 'life cycle'. Firms for which there is relatively little public information available would tend to use bank debt. Whether CRSP carries information on a firm is one possible indication of the amount of public information available. Therefore, the length of time CRSP reports information on a firm is examined. Results indicate that firms whose beginning data on the CRSP files is less than one year from the time of the loan announcement experience the largest one-day abnormal returns. These results are consistent with the theory that 'new' firms receive greater benefits from the prestige of receiving a bank loan.

Researchers suggest that monitoring of firms is one of the most important services performed by banks. Therefore, the number of banks monitoring the firm may also influence market reaction to loan announcements. When sample firms are classified by the number of banks participating in the loan the only group experiencing significant market responses are firms for which there is only one bank.

### Results of the Tests of Hypotheses

This section presents the results of the analysis of the research hypotheses. Univariate and multivariate regressions are employed.

#### Hypothesis One

Hypothesis one examines whether analyst following reduces market response to bank loan announcements beyond that associated with firm size alone. Table 4-5 presents the results of regressions of standardized excess returns on analyst following, brokerage following, firm size, and combinations of these variables. As noted in Table 4-3 initial loans and favorable renewals exhibit positive abnormal returns at the time of the loan announcement while unfavorable renewals and loan terminations exhibit a negative market response. To control for this difference in the total sample test, whenever the announcement is for an unfavorable renewal or loan cancellation the control variables are multiplied by -1.

Panel A of Table 4-5 indicates that for the entire sample only the size variable is individually significant. When combined, analyst following and firm size are both insignificant and the sign on the coefficient of analyst following becomes negative.

Table 4-5

Results of regressions of standardized excess returns on analyst following, brokerage following and firm size for the whole sample (probability and partial R2 in parentheses).

	Analyst Following	Brokerage Following	Ln(Firm Size)	Intercept	Adj R2	F
<b>Panel A: Total Sample<sup>a</sup></b>						
(1)	-0.0142 (.1659)			0.7185 (.0001)	.0028	1.928 (.166)
(2)		-0.0189 (.1100)		0.7314 (.0010)	.0048	2.568 (.110)
(3)			-0.0845 (.0413)	1.0237 (.0001)	.0097	4.200 (.0413)
(4)	0.0049 (.7584)		-.1002 (.1267)	1.0684 (.0001)	.0069	2.140 (.1193)
(5)		-0.0005 (.9792)	-0.0832 (.2050)	1.0200 (.0001)	.0066	2.09 (.1250)
<b>Panel B: Favorable Renewal and New Loans</b>						
(1)	-0.1476 (.1678)			0.5713 (.0001)	.0033	1.913 (.168)
(2)		-0.0184 (.1324)		0.5799 (.0001)	.0047	2.278 (.1324)
(3)			-0.0581 (.1664)	0.7551 (.0002)	.0034	1.926 (.166)
(4)	-0.0082 (.6336)		-0.0330 (.6244)	0.6844 (.0061)	.0005	1.074 (.343)
(5)		-1.0133 (.4999)	-0.0222 (.7428)	0.6555 (.0086)	.0014	1.189 (.301)
<b>Panel C: Unfavorable renewals and loan terminations</b>						
(1)	0.0172 (.5124)			-1.495 (.0001)	-	0.435 (.512)
(2)		0.0226 (.4666)		-1.5054 (.0001)	-	0.538 (.467)
(3)			0.2278 (.0479)	-2.4657 (.0001)	.0553	4.105 (.048)
(4)	-0.0504 (.1936)		0.3987 (.0238)	-2.9916 (.0001)	.0685	2.949 (.062)
(5)		-0.0526 (.2493)	0.3768 (.0311)	-2.9215 (.0001)	.0618	2.746 (.074)

<sup>a</sup> For tests involving the total sample of firms whenever an announcement is unfavorable the control variables are multiplied by negative one.

Similar results are obtained when brokerage following and firm size are combined in a model.

Panel B of Table 4-5 presents the results of regressions for the sample of favorable renewals and initial loans. For this sample brokerage following achieves the highest level of significance at .13. When combined, the significance of both analyst following and firm size decrease greatly while the coefficients on both variables remain negative. The same results are observed with brokerage following and firm size. These results differ from previous studies where firm size has been found to be significant. However, studies that have found a significant size effect for portfolios of favorable loan announcements have used the market capitalization measure.

Results of regressions for the sample of unfavorable renewals and loan terminations are given in Panel C of Table 4-5. Results indicate that firm size is the only individually significant variable. However, when either analyst following or brokerage following is included with the size variable the adjusted  $R^2$  of the model increases. The analyst and brokerage following coefficients are negative while the firm size coefficient is positive.

Decreases in the probability of both firm size and analyst following in the combined models indicates that the firm size and analyst following measures are somewhat redundant. However, increase in the  $R^2$  of some models demonstrates that there is an analyst following effect beyond that associated with firm size alone. The analyst and brokerage following effect is shown more clearly in the next section where firms are disaggregated according to firm size.

#### Hypothesis Two

The second hypothesis examines whether the reputation of the analysts and brokerages following a firm influence market response to bank loan announcements. Table 4-6 compares the results of regressions of standardized abnormal returns on the proportion of analyst and brokerage following with various measures of reputation. Results indicate that while analyst and brokerage following is insignificant for the sample as a whole, the reputation variables are significant.

The total sample is then divided into portfolios of favorable or unfavorable loan announcements. Table 4-7 presents results of regressions of standardized abnormal returns on various measures of analyst and brokerage

Table 4-6

Results of regressions of standardized excess returns on various reputation variables for the TOTAL LOAN SAMPLE of favorable and unfavorable bank loan announcements. (Probability in parentheses).

Variable	Intercept	Coefficient	Adjusted R <sup>2</sup>
Panel A: Analysts			
Proportion Analyst (PAF)	0.71852 (.0001)	-0.68253 (.1659)	.0028
Percent of high reputation analysts (PRAF)	0.74186 (.0001)	-1.15470 (.0130)	.0158
Percent of All-American Team 1 analysts (PAAF)	0.66999 (.0001)	-1.97630 (.0908)	.0057
Panel B: Brokerages			
Proportion Brokerages (PB)	0.73139 (.0001)	-0.73767 (.1100)	.0048
Percent high reputation brokerages (PRB)	0.74202 (.0001)	-0.61090 (.0520)	.0085

Table 4-7

Results of regressions of standardized excess returns on various variables for INITIAL LOANS and FAVORABLE RENEWALS.

Independent Variables	Full Sample (273)	Small Firms (158)	Medium Firms (67)	Large Firms (46)
Ln(firm size)	-.0581	-.0801	.3386	-.0072
Probability	(.166)	(.552)	(.211)	(.953)
Adjusted R2	-	-	-	-
Analyst Following (AF)	-.0147	-.0136	-.0618	.0102
Probability	(.167)	(.784)	(.033)	(.521)
Adjusted R2	-	-	(.052)	-
Reputable Analysts (RA)	-.0484	-.2143	-.1652	.0264
Probability	(.206)	(.308)	(.135)	(.602)
Adjusted R2	-	-	(.018)	-
Team 1 All-Americans (AA)	-.0842	-.775	-.283	.3443
Probability	(.688)	(.254)	(.458)	(.136)
Adjusted R2	-	-	-	(.027)
Brokerage Following (B)	-.0184	-.0212	-.0728	.0115
Probability	(.132)	(.698)	(.023)	(.539)
Adjusted R2	-	-	(.062)	-
Reputable Brokerages (RB)	-.0321	-.1393	-.1085	.0309
Probability	(.243)	(.484)	(.141)	(.439)
Adjusted R2	-	-	-	-
PAF Proportion AF	0.7086	0.6549	2.9668	-0.4909
Probability	(.168)	(.784)	(.033)	(.521)
Adjusted R2	-	-	(.052)	-
PRAF (RA/AF)	-0.9214	-1.4858	-0.5192	0.0897
Probability	(.038)	(.081)	(.475)	(.921)
Adjusted R2	(.012)	(.013)	-	-
PAAF (AA/AF)	-1.6050	-1.9392	-0.9127	2.4022
Probability	(.126)	(.131)	(.732)	(.459)
Adjusted R2	(.005)	(.008)	-	-
PB Proportion B	-0.7173	-0.8296	-2.8422	0.4493
Probability	(.132)	(.698)	(.023)	(.539)
Adjusted R2	(.005)	-	(.062)	-
PRB (RB/B)	-0.5152	-0.6611	-0.3149	0.2319
Probability	(.091)	(.253)	(.530)	(.759)
Adjusted R2	(.007)	-	-	-

\* Firms are classified as small if total firm assets are in the bottom third of all firms listed on the NYSE and OTC COMPUSTAT files ranked according to total assets. Firms are classified as large if they are in the upper third of the COMPUSTAT firms and medium if they are within the middle third.

following and reputation for the full sample of initial loans and favorable renewals and for portfolios based on firm size. Panel A provides regression results based on the number and reputation of analysts and brokerages following a firm. Panel B contains the results of regressions based on proportion and percentage variables of analyst and brokerage following. Medium size firms are the only group where analyst and brokerage following explains a significant portion of market response to the loan announcement. For favorable renewals and new loan announcements by medium size firms results indicate a significant negative relationship between market response and either the number of analysts or the number of brokerages following the firm.

Again, results presented in Panel B indicate that there is a significant negative relationship between market response and the proportion of analyst and brokerage following for medium size firms. In addition, market response to favorable loan announcements by small firms is significantly reduced as the percentage of high reputation analysts and All-American Team One analysts increases. None of the variables are significant for large firms. Therefore, results indicate that analyst and

brokerage reputation may be more important to small firms than either medium or large firms.

Table 4-8 presents the results of regressions of standardized abnormal returns on various measures of analyst and brokerage reputation for the sample of unfavorable renewals and loan terminations. The only significant variable for this portfolio is firm size. The insignificance of analyst and brokerage following for this portfolio of loans may be partially due to the practice of sell-side analysts to follow and comment on firms that are doing well.

#### Hypothesis Three

The third hypothesis examines whether share prices of firms receiving bank loans are significantly higher than share prices of firms not announcing bank loans after controlling for firm size. Table 4-9 presents descriptive statistics for share prices and total firm assets by one-digit SIC codes. Most of the sample firms have a one-digit SIC code of three. As expected, there is considerable variation in the mean share prices of the various industry groups.

Table 4-10 presents the results of regressions of share price on the natural logarithm of total firm assets and a dummy variable indicating if the firm announced

Table 4-8

Results of regressions of standardized excess returns on various variables for UNFAVORABLE RENEWALS and TERMINATIONS of BANK LOANS.

Independent Variables	Full Sample	Small Firms	Medium Firms	Large Firms
	(53)	(23)	(17)	(11)
Ln(firm size)	.2278	.708	.522	-.117
Probability	(.047)	(.146)	(.407)	(.253)
Adjusted R2	.055	-	-	-
Analyst Following (AF)	-.0171	.205	-.062	-.009
Probability	(.512)	(.456)	(.393)	(.294)
Adjusted R2	-	-	-	-
Reputable Analysts (RA)	.0788	.659	-.056	-.043
Probability	(.510)	(.784)	(.890)	(.253)
Adjusted R2	-	-	-	-
Team 1 All-Americans (AA)	.792	a	1.034	.047
Probability	(.346)		(.515)	(.857)
Adjusted R2	-		-	-
Brokerage Following (B)	.022	.223	-.052	-.011
Probability	(.466)	(.479)	(.558)	(.314)
Adjusted R2	-	-	-	-
Reputable Brokerages (RB)	.0447	.579	-.118	-.0329
Probability	(.601)	(.569)	(.500)	(.266)
Adjusted R2	-	-	-	-

<sup>a</sup> There were no small firms receiving an unfavorable renewal or termination that were followed by a Team-1 All-American analyst.

<sup>b</sup> None of the variables PAF, PRAF, PAAF, PB, or PRB were significant for the sample as a whole or disaggregated according to firm size.

<sup>c</sup> Firms are classified as small if total firm assets are in the bottom third of all firms listed on the NYSE and OTC COMPUSTAT files ranked according to total assets. Firms are classified as large if they are in the upper third of the COMPUSTAT firms and medium if they are within the middle third.

Table 4-9

Descriptive Statistics for share prices and total firm assets by one-digit SIC code. For sample firms share price is the price at the date of the loan and firm size is total assets for the year of the loan. Share price and total assets for control firms are measured as the mean share price and total assets for the firm over the sample period (1987-1992).

	----Share Prices----			-----Total Assets-----		
	N	Mean	Range	N	Mean	Range
<hr/>						
SIC 1						
Sample Firms	26	7.46	.28-43.12	26	366	16- 1721
Industry	141	11.99	.38-48.13	141	757	3-17451
SIC 2						
Sample Firms	33	11.73	.14-47.37	33	559	5- 6254
Industry	430	26.05	.73-87.66	430	2620	1-87498
SIC 3						
Sample Firms	113	8.73	.22-67.12	113	578	2-17381
Industry	802	16.93	.32-91.56	802	891	1-85103
SIC 4						
Sample Firms	20	22.46	1.56-66.50	20	3861	16-22290
Industry	92	29.11	1.71-86.06	92	4512	4-46518
SIC 5						
Sample Firms	66	5.19	.07-38.13	66	1379	2-65219
Industry	315	17.35	.24-78.66	315	681	3-14572
SIC 7						
Sample Firms	43	10.56	.03-57.75	43	324	2- 4045
Industry	190	15.85	.27-64.66	190	408	1- 6630
SIC 8						
Sample Firms	27	6.65	1.35-19.63	27	169	7- 2445
Industry	104	15.26	1.11-52.75	104	404	4-10843

Table 4-10

Results of regressions of share price on the natural logarithm of firm size and firm classification by SIC code. The dummy loan variable classifies firms as either announcing a bank loan or not.

	ln (Firm size)	Loan Dummy	Intercept	Adjusted R <sup>2</sup>	F
Full Sample	5.331 (.0001)	-5.149 (.0001)	-9.041 (.0001)	.4560	986 (.0001)
SIC 1	3.789 (.0001)	-2.843 (.1532)	-8.246 (.0335)	.3242	39 (.0001)
SIC 2	5.897 (.0001)	-8.725 (.0002)	-8.115 (.0001)	.5211	251 (.0001)
SIC 3	5.232 (.0001)	-4.317 (.0002)	-9.005 (.0001)	.4311	341 (.0001)
SIC 4	5.986 (.0001)	-2.784 (.4065)	-9.003 (.0105)	.4803	51 (.0001)
SIC 5	4.629 (.0001)	-6.464 (.0001)	-7.092 (.0001)	.4108	128 (.0001)
SIC 7	4.306 (.0001)	-4.104 (.0245)	-3.244 (.1106)	.3256	54 (.0001)
SIC 8	3.462 (.0001)	-5.003 (.0278)	-0.286 (.9153)	.2881	26 (.0001)

receiving a bank loan (1) or not (0). Contrary to expectations the dummy variable is significantly negative for all SIC codes except one and four where the coefficient is insignificant. These results indicate that the sample of firms announcing bank loans has significantly lower share prices after controlling for firm size than do other firms within the industry.

#### Hypothesis Four

The fourth hypothesis examines whether the number of presentations made to the New York Society of Security Analyst (NYSSA) by firms receiving bank loans is significantly lower than the number of presentations made by firms in the same industry not announcing bank loans. Table 4-11 presents descriptive statistics on the mean number of NYSSA presentations and firm size for both sample firms and other firms within the industry. Again, there is considerable variation in the means between industry groups.

Table 4-12 presents the results of regressions of the number of presentations to the NYSSA on the natural logarithm of total firm assets and a dummy variable indicating whether the firm announced receiving a bank loan (1) or not (0). For the total sample and SIC codes one, three, and seven the dummy coefficient is

Table 4-11

Descriptive statistics for presentations to the NYSSA and total assets by SIC code.

	---# Presentations---			----Total Assets----		
	N	Mean	Range	N	Mean	Range
SIC 1						
Sample Firms	24	.1363	0-1.00	24	365	16- 1721
Industry	186	.0468	0-0.57	154	716	3-17451
SIC 2						
Sample Firms	33	.0312	0-1.00	33	559	5- 6254
Industry	523	.0264	0-0.57	469	2444	1-87498
SIC 3						
Sample Firms	113	.0594	0-1.00	113	580	2-17381
Industry	916	.0286	0-1.00	859	983	1-85103
SIC 4						
Sample Firms	20	.1000	0-1.00	20	3862	16-22290
Industry	114	.0576	0-0.85	99	4242	4-46518
SIC 5						
Sample Firms	66	.0178	0-1.00	66	1392	2-65219
Industry	338	.0278	0-0.85	338	676	3-14572
SIC 7						
Sample Firms	43	.0588	0-1.00	43	324	2- 4045
Industry	214	.0200	0-0.43	205	411	1- 6630
SIC 8						
Sample Firms	27	.0000	-	27	153	7- 2211
Industry	122	.0117	0-0.28	117	372	2-10652

Table 4-12

Results of regressions of number of presentations to the NYSSA on the natural logarithm of firm size and firm classification by SIC code. Firms are classified as either receiving a bank loan(1) or not(0).

	ln (Firm size)	Loan Dummy	Intercept	Adjusted R <sup>2</sup>	F
Full Sample	0.011 (.0001)	0.030 (.0001)	-0.030 (.0001)	.0400	53.0 (.0001)
SIC 1	0.038 (.0001)	0.094 (.0062)	-0.146 (.0003)	.1562	17.0 (.0001)
SIC 2	0.006 (.0003)	0.011 (.488)	-0.009 (.383)	.0224	7.0 (.0013)
SIC 3	0.009 (.0001)	0.035 (.0044)	-0.016 (.1400)	.0242	13.0 (.0001)
SIC 4	0.037 (.0001)	0.054 (.2250)	-0.183 (.0009)	.1607	12.0 (.0001)
SIC 5	0.005 (.0953)	-0.004 (.7650)	0.007 (.9659)	.0033	1.6 (.1937)
SIC 7	0.013 (.0016)	0.042 (.0286)	-0.040 (.0457)	.0494	7.0 (.0009)
SIC 8	0.001 (.3828)	-0.011 (.2391)	0.004 (.6844)	-	1.3 (.2894)

significantly positive indicating that firms announcing bank loans generally make more presentations to the NYSSA than other firms within their industry after controlling for firm size. Restating the number of presentations made by sample firms to 1989 equivalents produces similar results. The dummy coefficient for the full sample of firms is positive (.0272) and significant at the .006 level. Results from tests of hypotheses three and four suggest that firms announcing bank loans are actively seeking the attention of analysts more than other firms within the industry. Results are consistent with Diamonds theory that firms use bank debt to build their reputation in the public debt markets.

#### Comprehensive Tests

When all variables tested in hypotheses one through four are included in a regression model the F statistic for the model as a whole is insignificant. Therefore, stepwise regression procedures were used to determine significant variables. The correlation of the estimates between these variables is given in Table 4-13. The only highly correlated estimates are the proportion of brokerages (PB) and the proportion of analyst following (PAF). Results of the stepwise regressions of standardized abnormal returns on the following

Table 4-13  
Correlation of Estimates

CORRB	LSIZE	PAAF	PRAF	PAF
LSIZE	1.0000	0.0809	-0.0737	-0.0914
PAAF	0.0809	1.0000	-0.3300	-0.0154
PRAF	-0.0737	-0.3300	1.0000	0.1445
PAF	-0.0914	-0.0154	0.1445	1.0000
PB	-0.0184	0.0206	-0.1441	-0.9811
PRB	-0.1500	-0.0329	-0.5972	-0.1211
NYSSA	-0.0821	-0.0329	0.0484	0.2685
PRICE	-0.1476	-0.0097	-0.1238	0.0884

  

CORRB	PB	PRB	NYSSA	PRICE
LSIZE	-0.0184	-0.1500	-0.0821	-0.1476
PAAF	0.0206	-0.0329	-0.0329	-0.0097
PRAF	-0.1441	-0.5972	0.0484	-0.1238
PAF	-0.9811	-0.1211	0.2685	0.0884
PB	1.0000	0.0949	-0.2827	-0.1649
PRB	0.0949	1.0000	-0.0554	0.1161
NYSSA	-0.2827	-0.0554	1.0000	0.0402
PRICE	-0.1649	0.1161	0.0402	1.0000

variables are presented in Table 4-14: firm size, PAAF, PRAF, PAF, PB, PRB, NYSSA presentations, and share price. For the total sample of favorable and unfavorable loan announcements the percent of high reputation analysts (PRAF) and share price are the only significant variables.

When the portfolio is disaggregated according to loan type, results indicate that the coefficient for the percent of high reputation analysts is significantly negative for the portfolio of new loans and favorable renewals as a whole. These results indicate that higher reputation analysts reduce the market's response to bank loan announcements.

Firm size is the only significant variable for the portfolio of unfavorable announcements. After the portfolio is disaggregated according to size none of the variables are significant.

Table 4-15 presents the results of employing stepwise regressions of standardized abnormal returns on variables included in tests of hypotheses one through four and other variables which banking theory suggests may influence market response to the loan announcement.

For the total sample of favorable and unfavorable loan announcements the percent of high reputation analyst

Table 4-14

Results of stepwise regressions of standardized abnormal returns (SAR) on the variables from hypotheses one through four (firm size, proportion analyst following (PAF), % All-American analysts (PAAF), % high reputation analysts (PRAF), proportion of brokerages (PB), percent of high reputation brokerages (PRB), share price, and the number or presentations to the NYSSA).

	Intercept	Ln Size	PRAF	PB	Share Price	Adjusted R <sup>2</sup>	F statistic
<hr/>							
Panel A: Total Sample							
All Announcements	0.8138 (.0001)		-0.8617 (.083)		-0.0110 (.011)	.021	4.42 (.013)
<hr/>							
Panel B: Initial Loans and Favorable Renewals							
Full Sample:	0.576 (.0001)		-0.921 (.038)			.012	4.33 (.038)
Small Firms:	0.6375 (.0001)		-1.486 (.081)			.013	3.08 (.081)
Medium Firms:	-3.211 (.0235)	0.8052 (.0056)		-4.6201 (.0008)		.154	7.10 (.0016)
Large Firms:	no significant models can be formed						
<hr/>							
Panel C: Unfavorable renewals and loan terminations							
Full Sample:	-2.465 (.0001)	0.2278 (.048)				.055	4.11 (.048)
<hr/>							
No significant models can be formed for small, medium or large unfavorable portfolios.							

Table 4-15

Results of stepwise regressions of standardized abnormal returns (SAR) on the variables from hypotheses one through four (firm size, proportion analyst following (PAF), % All-American analysts (PAAF), % high reputation analysts (PRAF), proportion of brokerages (PB), percent of high reputation brokerages (PRB), share price, and the number or presentations to the NYSSA) and other variables banking theory suggests may influence market response (industry classification, loan maturity, security, structure of the loan agreement, the proportion of loan amount to total firm assets, the number of participating banks and the time on the CRSP files).

	Inter- cept	In (size)	PAF	PB	Share Price	SIC2	SIC5	PAMT	----Dummy--- #Banks	Age	Adj R2	F
Panel A: Total Sample												
	-0.332 (.001)		0.792 (.0001)					0.318 (.04)			.201	40.92 (.001)
Panel B: Initial Loans and Favorable Renewals												
Full Sample:	0.536 (.0001)		-0.870 (.053)							0.350 (.135)	.017	3.27 (.039)
Small Firms:	0.668 (.0001)				-0.054 (.03)		0.467 (.07)			0.613 (.06)	.053	3.93 (.01)
Medium Firms:	-3.071 (.029)	0.765 (.008)		-4.591 (.0009)		0.635 (.09)					.181	6.23 (.001)
Large Firms:	1.189 (.002)								-0.858 (.02)		.085	4.00 (.02)
Panel C: Unfavorable Renewals and Loan Terminations												
Full Sample:	-0.736 (.002)					-2.023 (.03)						.208 (.002)
Small Firms:	-0.462 (.22)						1.826 (.09)	-1.257 (.001)			.398	7.28 (.005)
Medium Firms:	-0.948 (.006)					-3.836 (.004)	-2.127 (.022)				.484	8.21 (.004)
Large Firms:	No significant models can be formed											

following and the loan amount as a percent of total assets provides an  $R^2$  of .201. However, the significance of variables varies according to the type of loan (favorable or unfavorable) and firm size. Industry dummy variable coefficients are significant for small and medium firms in both the favorable and unfavorable loan announcement portfolios. In addition, for small firms the share price coefficient is also significantly positive for the portfolio of favorable loan announcements. These results indicate that lower share prices for small firms result in higher market response to the announcement. The coefficient for the proportion of brokerages is significantly negative for medium firms with favorable loan announcements indicating a lower market response as the proportion of brokerages increases. The only significant variable for the portfolio of large firms with favorable loan announcements is the dummy variable for the number of banks. This finding indicates that loans to large firms involving five or more banks result in significantly lower market response than loans involving fewer banks.

Industry classification and the loan amount as a percent of total firm assets are the only significant variables for the portfolio of unfavorable loan

announcements. For the portfolio of small firms with unfavorable loan announcements the relative size of the loan is positively related market response. Therefore, as the loan as a percent of total assets increases market response to an unfavorable loan announcement becomes more negative.

Measures of analyst and brokerage following and reputation are not significant for either the portfolio of unfavorable loan announcements as a whole or portfolio disaggregated according to firm size. Research indicates that analysts may be reluctant to issue negative reports as this might endanger their relationship with firm management. Such reluctance could account for the insignificance of the analyst and brokerage variables for the portfolio of unfavorable loan announcements. Schipper (1991) notes that losing access to management may be costly to sell-side analysts. "Analysts rank company management among the top five sources of information used in making judgements and decisions, so it seems reasonable to expect that they would like to maintain good relations with, and ready access to, managers" (Schipper 1991, 115).

### Summary

Chapter four reports the analyses and results of the study. Section one discusses sample selection procedures and results and presents firm characteristics. The second section presents results of univariate and multivariate regression tests of the hypotheses.

CHAPTER FIVE  
SUMMARY AND CONCLUSIONS

Chapter five summarizes the study and the conclusions reached. Section one provides a brief overview of the study. The second section discusses the expected findings of the study. Results and implications of the study are presented in section three. Finally, study limitations and suggestions for future research are presented.

Overview of the Study

Research suggests that banks may have a comparative advantage in performing at least two valuable functions, information gathering and monitoring. The primary responsibility of analysts is also to gather and disseminate information on firms. However, it is not known how analyst following affects market response to bank loan announcements.

This study examined two research questions: 1) Does analyst and brokerage following affect market response to bank loan announcements beyond that associated with firm size alone? and 2) Do firms receiving bank loans seek the attention of analysts less actively than firms not

receiving bank loans? To answer these questions the following methods were used.

A sample of firms receiving bank loans was obtained by searching the *Dow Jones News Wire* for the period 1987 through 1992 for announcements of bank loan agreements. Loans were classified as initial loans, favorable renewals, unfavorable renewals, or loan cancellations on the basis of information contained in the announcement and the firm's Form 10-K. Standard event study methodology was used to determine share price response to the loan announcements. Next, standardized abnormal returns were aggregated across firms. Finally, firm specific factors were examined as a means of explaining the observed abnormal returns. Factors examined included: (1) the number of analysts and brokerages following a firm, (2) the reputation of the analysts and brokerages, (3) firm share price, (4) the number of presentations made to the New York Society of Security Analysts (NYSSA). In addition, the following variables which banking theory suggests may influence market response to bank loan announcements were examined: (1) relative size of the loan, (2) loan maturity, (3) loan security, (4) structure of the loan agreement, (5) the number of banks

participating in the loan, and (6) the length of time firm data has been carried on CRSP tapes.

### Expectations

Firm size, brokerage and analyst following, and the reputation of the information providers were expected to be negatively related to the market response's response to the bank loan announcement. In addition, sample firms were expected to have higher share prices and make fewer presentations to the New York Society of Security Analysts (NYSSA) than other firms within the same industry after controlling for size. This section presents the theoretical reasons for these expectations.

Slovin, Johnson, and Glascock (1992) find that when a sample of bank loan announcements is grouped according to firm size, positive stock price reactions occur only for the sample of small firms. As a group, large firms experience only normal returns. Market capitalization was the proxy for firm size. These results imply that the amount of information regarding a firm which is publicly available may influence market response to the bank loan announcement. Therefore, firm size was expected to be negatively related to the market's response to the bank loan announcement. However, because share price was a

variable of interest in this study, total firm assets were used as a proxy for firm size.

The amount of publicly available information regarding a firm depends to a large extent on the information production and dissemination activities of financial analysts. Results of Dempsey's (1989) examination of market response to annual earnings announcements indicates that increased analyst following reduces the information content of earnings announcements even after controlling for firm size. Dempsey's findings are consistent with Arbel and Strebel's (1983) finding that after controlling for size, the number of analysts following a firm is negatively related to the firm's annual return. It was hypothesized that increased analyst and brokerage following would also reduce market response to bank loan announcements.

A simplifying assumption made in most studies that examine analyst following is that analysts do not differ in quality. However, there is a substantial amount of theoretical and empirical evidence indicating that the reputation of information providers is important. In addition, the financial press often expresses the opinion that the reputation of financial analysts is important. Therefore, the reputation of analysts and brokerages was

hypothesized to be negatively related to the market's response to bank loan announcements.

Moyer, Chatfield, and Sisneros (1989) contend that analysts reduce the agency costs of public debt and equity through by monitoring managerial performance. Therefore, firms issuing public debt may try to attract the attention of analysts as a means of reducing agency costs of debt. Alternatively, firms may choose bank monitoring. Research indicates that firms can attract analyst attention by: 1) increasing the potential economic benefit of information searches by lowering share price and 2) reducing analyst search costs by providing information to analysts through direct contact. Expectations were that firms receiving information gathering and monitoring services from banks via bank loans would seek the attention of analysts less actively than firms not receiving bank loans.

### Results

Results are presented for tests of hypotheses one through four. Next, results of combined tests of the hypotheses are reported.

Hypothesis one examined whether analyst following reduces market response to bank loan announcements beyond that associated with firm size alone. Support was found

for this hypothesis. Model adjusted  $R^2$  increased when either analyst or brokerage following was included with the size variable for the portfolio of unfavorable loan announcements. However, the analyst and brokerage following effect was strongest for medium size firms making favorable loan announcements.

The second hypothesis examined whether the reputation of analysts and brokerages following a firm influence market response to the bank loan announcement. Results indicate that analyst and brokerage reputation are significant determinates of market response for the portfolio of small firms with favorable loan announcements. In contrast, market response to favorable loan announcements of medium size firms are significantly influenced by analyst and brokerage following only. Neither the analyst and brokerage following variables nor measures of the reputation of the information providers were significant for the portfolio of large firms.

The third hypothesis examined whether share prices of firms receiving bank loans are significantly higher than share prices of firms not announcing bank loans after controlling for firm size. Contrary to expectations, results indicate that the sample of firms announcing bank loans has significantly lower share

prices after controlling for firm size than do other firms in the same industry.

The fourth hypothesis examined whether the number of presentations made to the NYSSA by firms receiving bank loans is significantly lower than the number of presentations made by firms in the same industry not announcing bank loans. Again, results were contrary to expectations. Firms announcing bank loans generally made more presentations to the NYSSA than other firms in their industry after controlling for firm size.

The final test examined variables from the first four hypotheses with variables which banking theory suggests may influence market response to bank loan announcements. Results indicate that the significance of the variables depends on the type of loan announcement (favorable or unfavorable) and firm size. Results indicate that generally increases in the percent of high reputation analysts following a firm reduce market response to loan announcements. Market response to the loan also increases as the relative size of the loan increases.

In addition, market response to the portfolios of favorable loan announcements is significantly influenced by a number of variables which seem to depend on the size

of the firm. Market response to favorable announcements by small firms is influenced by both the firm's share price and the length of time data has been available on the CRSP tapes. For medium size firms the proportion of brokerage following is significant. Finally, the only significant variable for the portfolio of large firms is the number of banks. Results indicate that loans to large firms involving five or more banks result in significantly lower market response.

For the portfolio of unfavorable loan announcements measures of analyst and brokerage following and reputation are not significant. Industry and the relative amount of the loan are the only significant variables for this portfolio of loan announcements. Results indicate that the market responds more negatively to unfavorable loan announcements as the relative size of the loan increases.

#### Conclusions

Support was found for Hypotheses One and Two. Results indicate that there is an analyst and brokerage following effect that is not accounted for by firm size alone. In addition, the reputation of the analyst or brokerage is significant for portfolios of favorable loan announcements. Finally, the importance of both following

and reputation measures seems to vary depending on the type of loan announcement (favorable or unfavorable) and firm size.

Results were contrary to expectations for Hypotheses Three and Four. Firms announcing bank loans have lower share prices and make more presentations to the NYSSA after controlling for size than other firms within the same industry. These results indicate that firms announcing bank loans are actively seeking the attention of analysts more than other firms. Results are consistent with Diamond's suggestion that firms use bank debt as a means of building reputation. Part of the reputation building process may also be lowering share prices in order to provide an economic incentive for analysts and brokerages to gather information and monitor the firm. Direct contact through presentations at the NYSSA is another means of building the firms reputation with analysts and brokerages.

Finally, other variables which banking theory suggests may influence market response to bank loan announcements are found to be significant for particular loan type by firm size portfolios of firms. Industry classification and the relative size of the loan are significant for the portfolio of unfavorable loan

announcements. Finally, industry classification, the number of banks participating in the loan, the length of time firm data has been available on the CRSP tapes, and the relative size of the loan are significant for portfolios of favorable bank loan announcements disaggregated by firm size.

#### Limitations

Certain limitations of the study must be recognized. First, in examining whether firms actively seek the attention of analysts only share prices and NYSSA presentations are considered. Bhushan (1989a) and Moyer, Chatfield, and Sisneros (1989) have identified a number of firm characteristics that influence analyst following. The characteristics they identify are relatively stable and not easily changed. However, there may also be a number of steps firms might take to attract analysts' attention without making major firm changes other than share prices and presentations to the NYSSA.

Second, presentations to the NYSSA are only an indirect measure of the amount of contact between analysts and the firm. Presentations to NYSSA are very formal with senior company officials speaking to a large group of analysts and guests. Informal meetings between individual analysts and the firm occur much more

frequently. Firms also make presentations to specific brokerages and local or regional analyst associations. Therefore, NYSSA presentations are only the end of a spectrum of possible contacts between the firm and analysts.

Finally, various proxies for firm size have been used in research. Market capitalization is the measure most often used in studies examining market response to loan announcements. Market capitalization is obtained by multiplying share price by the number of outstanding shares of the firm. Therefore, to avoid redundancy in the independent variables the firm size measure used in this study was total firm assets. Use of the total asset measure of firm size reduces the problem of redundant variables, but makes the comparability between this study and other bank loan announcement studies more difficult.

#### Suggestions for Future Research

The models developed in this study used only a few of the many possible measures of analyst and brokerage reputation. A number of professional journals rank brokerages according to various performance and size measures. Future researchers could include these alternative measures of analyst and brokerage reputation in models which examine the relative importance of the

amount and reputation of analyst and brokerage following on the information content of bank loan announcements.

In addition, this study focused on the number and reputation of sell side analysts only. Analysis of buy side analysts characteristics may also provide important insights into the relation between the information gathering and monitoring services provided by banks and similar services provided by financial analysts.

Finally, more precise measures on the amount and quality of information flows between financial analysts and firms could be developed. Economic constraints and incentives faced by financial analysts may be influenced by the amount and quality of information supplied to them by the firm.

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## VITA

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DOCTORAL EXAMINATION AND DISSERTATION REPORT

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**Major Field:** Accounting

**Title of Dissertation:** The Effects of Analyst Following on Market Response to Bank Loan Announcements

**Approved:**

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