

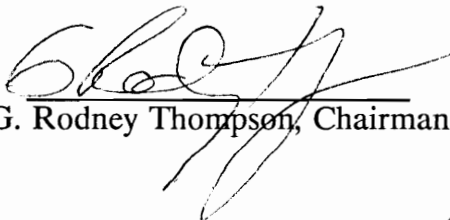
SEASONED DEBT AND EQUITY ISSUES FOR INVESTMENT
AND THE INFORMATION CONTENT OF INSIDER TRADES

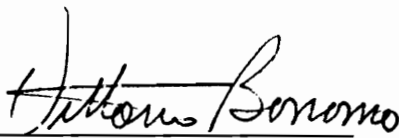
by


Jan Maroney Serrano

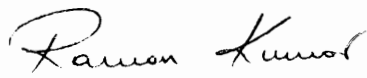
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APPROVED:


G. Rodney Thompson, Chairman


Vittorio A. Bonomo


Arthur J. Keown


Raman Kumar


Dilip K. Shome

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**Seasoned Debt and Equity Issues for Investment
and the Information Content of Insider Trades**

by

Jan Maroney Serrano

G. Rodney Thompson, Chairman

Department of Finance, Insurance, and Business Law

(ABSTRACT)

This dissertation examines the role of insider trading activity in explaining announcement price effects of seasoned debt and equity issues for investment. As has been widely discussed in the finance literature, the announcement of new financing for investment purposes can convey good or bad news depending on the motivation behind the issue, the profitability of the investment, and the stage of firm development. If insider trading can effectively reduce information asymmetry about investment opportunities at the time of corporate financing announcements, markets can be expected to react less negatively to these announcements.

Corporate insiders know more about the expected impact of current earnings

and future investments than anyone else. Consequently, the value and direction of their personal trading should reflect, to some extent, their expectation of the value of the firm in the future. John and Mishra's [1990] signaling model explains how insider trading can act as a joint signal along with a corporate announcement in sending information to the market efficiently.

A cross-sectional analysis is conducted to test the hypothesis that announcements of new financing (debt or equity) for investment that are preceded by insider buying are accompanied by a less negative stock price response than issues that are preceded by insider selling. This analysis is followed by several tests designed to examine the robustness of this relationship.

The results of this study suggest a correlation between trading and announcement period price effects for equity issues that is consistent with this hypothesis, though the effect is more pronounced for smaller firms. There appears to be no connection between insider trading and the announcement period reaction to debt issues, however.

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CHAPTER I

Introduction

This dissertation examines the information content of insider trading around corporate financing announcements for new investment. This study fills a void in the empirical literature in finance dealing with capital market issues. Several well established theoretical arguments in financial economics show how information asymmetry surrounding the firm's investment opportunities can lead to negative valuation effects at announcement of new financing.¹ Significant negative announcement effects of seasoned equity issues and "non-positive" effects of seasoned debt issues are well documented.²

Theoretical models recently developed by John and Mishra [1990] and John and Lang [1991] suggest that insider trading can be an efficient element in conjunction with corporate announcements in reducing information asymmetry about

¹ See, for example, Myers & Majluf [1984] and Jensen [1986].

² For evidence on equity issue announcement effects, see Masulis and Korwar [1986], Asquith and Mullins [1986], Mikkelson and Partch [1986], and Hansen and Crutchley [1990]. For evidence on debt issue announcement effects, see Eckbo [1986], or Hansen and Crutchley [1990].

the firm's investment profitability. Mounting empirical evidence from studies of other types of corporate announcements (share repurchases, dividend announcements, spin-offs, and plant closings) support these theoretical arguments. All of the empirical studies of financing announcement effects, to date, assume management is passive with respect to buying new shares around the financing announcement. Since much of the funds raised by new offers of debt and equity go to new investment, information asymmetry about investment opportunities is likely an important factor in these announcements. Insider trading could be the key to understanding announcement effects for these issues. To the extent that insider trading can effectively reduce such information asymmetry surrounding announcements of new financing, capital markets can be expected to respond less negatively to new issues of debt and equity. In a comprehensive analysis of debt and equity issues covering over a decade, this study examines the effectiveness of insider trading activity in providing information to the market at announcements of new financing for investment purposes. For both debt and equity issues, the primary focus of this analysis is the relationship between insider trading and announcement period price effects. Insider trading activity is measured with several different variable constructions designed to indicate:

- (1) whether net buying or net selling is taking place prior to issue announcement,
- (2) whether any open market or private buying occurred at all, and

- (3) whether trading patterns have changed since the same period in the previous year.

Announcement price effects are measured using market model estimation of abnormal returns. The relationship between insider trading and announcement period effects are examined using cross-sectional OLS analysis. Several additional analyses are performed to determine whether the above relationship is consistent and robust with respect to: other control variables, firm size effects, other measures of firm investment opportunities, other possible causes for the relationship, and post announcement price and earnings performance.

Results of this study indicate that insider trading can be a significant factor in explaining announcement period returns for equity issues designed to fund new investment. The effect is strongest among small firms and consistent with evidence from previous studies (Seyhun [1986], for example) suggesting that insiders in smaller firms are more likely to trade on firm-specific information. For debt issues, however, announcement period price effects were not found to be related to insider trading. These results from debt issues and larger firms issuing equity are not supportive of signaling models like Leland and Pyle [1977] and John and Mishra [1990] and John and Lang [1991] and could be due to inherent differences in insider trading patterns across firms not addressed in these models.

This study provides new evidence on the impact of changes in managerial holdings around debt and equity issues. For equity issues not used for new investment, as well as for all debt issues, insider buying was not consistently related

to announcement period abnormal returns. Contrary to prior studies that assumed managers did not trade in their own firms' securities, this more detailed account of the impact of insider buying does not support the theoretical arguments of Jensen and Meckling [1976].

For the sample of small firms issuing equity, the net effect of buying and selling by managers appeared to be more important than the buying activity of insiders alone, or changes in their trading patterns over time. Throughout the entire analysis, no evidence was found to suggest that the market views the exercise of stock options as bad news. Though evidence suggests a consistent relationship between trading activity and announcement effects for these smaller firms, post-announcement performance measures and other measures of firm investment profitability, suggest that such activity may not be a reliable signal for the marginal investment profitability of the firm.

Chapter II provides a review of the related literature. Chapter III and IV describe the hypothesis tested and methodology followed, respectively. Chapter V describes the data and sampling procedure. The results for equity and debt issues are reported in Chapters VI and VII, respectively. Chapter VIII offers a summary and conclusions.

CHAPTER II

Literature Review

II.A Seasoned Debt and Equity Issues

The Modigliani-Miller '58 propositions suggest that the value of the firm is invariant to its financing decision. In the M&M model, value is found by capitalizing the firm's expected return at a discount rate appropriate to its risk class. Their results are a product of the assumption of perfect, competitive capital markets and the implicit assumption that the market possesses full information about the activities of the firm. That is, the market knows what the future (random) return stream of the firm is, and can therefore value the firm. Ross [1977] points out that it is the perceived value of these return streams upon which firm value is based. Consequently, things that alter these perceptions should have an effect on the market value of the firm. Since the late 70's, a wide body of theoretical literature in finance has been developed based on information asymmetry and signaling arguments. Many of these theories have direct implications for the market reaction to seasoned equity and debt issues.

Recent empirical studies in corporate finance document significant negative

valuation effects for firms announcing seasoned equity offers and insignificant "non-positive" valuation effects for firms announcing new debt issues.³ Many different theories relating share price reaction to such things as changes in adverse selection costs, debt tax benefits, management ownership, or changes in the earnings outlook for the firm have been used to explain announcement period valuation effects. However, none of the existing theoretical literature is entirely consistent with the empirical evidence, and few variables have been identified that provide a robust explanation of announcement period return variation.

Since new issues of debt or equity impact firm leverage, debt tax benefits change for the firm. A leverage decreasing equity issue implies lost tax benefits and negative market reaction at announcement; a hypothesis supported by recent empirical results. A leverage increasing debt issue, on the other hand, implies increased debt tax shields and a positive market response. Existing empirical evidence for debt issues is not consistent with this hypothesis.

Miller and Rock [1985] suggest that, given other information the market has gleaned about the firm's sources and uses of funds (investment plans, dividend policy, and recent earnings reports), an unexpected announcement of external financing plans could reflect management's projections of lower than expected future earnings. This implies a negative market reaction at the announcement of new external

³ See Masulis and Korwar [1986], Asquith and Mullins [1986], Mikkelsen and Partch [1986], Hansen and Crutchley [1990], and Barclay and Litzenberger [1988].

financing. Although earnings patterns around debt and equity offers seem to be consistent with this theory, the announcement effect implied by the Miller and Rock model only appears in empirical results for equity issues. This may be due to timing differences in debt and equity issues relative to the firm's earnings patterns. In their model, the level of insider holdings is fixed exogenously and the dividend and investment policy are known. Information asymmetry revolves around assets in place, not investments, so once financing is announced, investors immediately know that earnings are less than expected and adjust the value of the firm accordingly.

Myers and Majluf's [1984] adverse selection theory is based on information asymmetry with respect to assets in place and investment opportunities. In this model, managers are not allowed to trade on personal account. Given information asymmetry, the market assumes the firm is overvalued if it issues new securities and, consequently, revises its estimate of firm value downward when plans to issue new securities are announced. Because of the residual nature of claims by stockholders, the market reaction should be more negative for new equity issues than new debt issues.

Jensen and Meckling [1976] and Leland and Pyle [1977], motivated by different arguments, both predict negative effects of a decrease in management's percentage ownership of the firm. Jensen and Meckling attribute this effect to increased agency costs. Leland and Pyle suggest that lower management holdings sends a signal to the market about poor investment profitability. Since most studies assume management is passive with respect to buying or selling shares around

corporate announcements, equity issues have until now been viewed as reducing management holdings and debt issues as increasing management holdings. Under conventional assumptions, equity issues, associated with lower management holdings, should elicit a negative market response, while debt issues should lead to positive valuation effects. This is, again, not consistent with the empirical evidence on announcement effects of new debt financing. There is mounting evidence to suggest that managers are not passive with respect to trading on personal account around the time of corporate announcements. A more appropriate approach would involve examining the actual changes in management holding around the time of a debt or equity issue in examining market reaction at announcement. This digression from the assumption of passive management investment and the different implications for passive investment in debt and equity issues has not been addressed to date in the finance literature.

Further, the reported negative, or "non-positive", reaction to new financing announcements is somewhat unusual because much of these funds go to finance profitable new projects. Theoretical and empirical research indicates that capital expenditure increases should elicit a favorable reaction from the market.⁴ As Masulis & Korwar [1986] point out, to the extent that capital expenditure increases are revealed explicitly or implicitly by this financing announcement, negative

⁴ Trueman [1985] provides a signaling model predicting positive stock price response to capital expenditure increases. McConnell and Muscarella [1985] document a positive valuation effect at announcements of increased investment expenditures for most industrial firms.

announcement effects should be reduced or eliminated.

While several authors notice a subtle attenuation of the negative reaction to equity issues when funds are earmarked for investment, the relationship is usually not statistically significant.⁵ One reason for the lack of significant explanatory power for the use of proceeds in previous studies may be due to their failure to control for project profitability and the firm's stage of development. A firm in the growth stage of development still has positive NPV projects available, while a firm in decline may not. Increased investment, therefore, may have different implications for marginal firm value depending on the stage of development of the firm. Jensen [1986] suggests that increased financing by firms with available free cash flow is bad news for investors whose funds are likely to be "misused." Although the McConnell and Muscarella [1985] study documents a positive valuation effect at announcements of increased investment spending for most firms, they find the opposite effect for firms involved in oil and gas exploration and development. Their sample covers the period 1975-1981; a time during which, they propose, firms may have overinvested in such activities. Their results are consistent with the theory that unexpected increases in capital expenditures should elicit positive valuation effects for firms that follow the rule of shareholder wealth maximization. It also brings to light, however, the

⁵ Mikkelson and Partch [1986] report a less negative reaction to equity issue announcements when funds are to be used for capital expenditures as opposed to debt repurchases. Masulis and Korwar [1986] document a less negative reaction to new equity issue announcements than Masulis [1983] reported for announcements of equity for debt exchange offers. Masulis and Korwar attribute this difference to many of the primary equity issues in their 1986 sample being designed to fund investment expenditures whereas none of the exchange offers involved new investment funding.

possibility that some firms may at times deviate from this rule. If information asymmetry with respect to project profitability stems from market uncertainty of managers' objectives, insider trading on personal account should be a good indicator of the type of information managers have; good news that funds are to be well spent, or bad news that cash flows are to be misused. As suggested earlier, Myers and Majluf [1984] suggest that information asymmetry with respect to project profitability imposes adverse selection costs on the firms at announcement of new debt and equity issues. To the extent that this information asymmetry can be resolved, adverse selection costs are reduced, implying a less negative reaction to news of new financing.

The few studies that address the profitability issue deal only with equity issues, and have produced mixed results. These studies suggest a positive relationship between profitability and announcement period returns but their results are not entirely consistent. Dierkens [1991] documents a positive relationship between a firm's market to book ratio and announcement period returns. Denis (1991) reports similar findings, but goes on to show that the results are driven by a small number of high growth firms. Pillote [1990] uses firm dividend policy to attempt to distinguish between growth firms and mature firms. He finds a less negative reaction to equity issue announcements for firms in his "growth" sample. There is some question, however, as to the effectiveness of the various proxies for profitability of marginal investment used in these papers. No study has yet addressed the issue of investment opportunities or profitability as they may affect the response to debt

issues.

This dissertation examines the role of insider trading around announcements of debt and equity issues for investment purposes in disseminating information to the market about the future growth opportunities of the firm. In particular, the relationship of insider trading to announcement period effects and their implications for revealing management objectives and expectations for long run firm value. Based upon the literature in the arena of information asymmetries, one might argue that corporate insiders should know more about the expected impact of future investments than others.⁶ Indeed, as Leland and Pyle point out, it seems reasonable that the value and direction of personal trading by insiders should reflect, to some extent, their expectation of the value of the firm in the future.

II.B Insider Trading

An insider, as defined by the Securities Exchange Commission is any officer, director, or beneficial owner of more than 10% of a company's registered securities. For the purposes of this study, however, only the trades of officers, directors, and others on the management staff are considered since they would possess more knowledge about the investment opportunities available to the firm and its long run growth prospects. Also, in the case of acquisitions, they are more likely to have better information about the quality of that investment. Section 16b of the Securities

⁶ See John and Lang [1991] and John and Mishra [1990].

and Exchange Act of 1934 requires the return to the corporation of all short swing profits that arise from a sale and purchase within six months of each other. Section 16c of the act prohibits short sales by insiders in their own companies' securities. Rule 10-5b prohibits fraud and nondisclosure of material information prior to sales and purchases of securities. Who must abide by these rules? "Anyone in possession of material inside information must either disclose it to the investing public or abstain from trading."⁷ Insiders must file an initial report with the commission and with the exchange on which the stock may be listed showing their holdings of each of the company's equity securities. Additionally, insiders must file a report with the SEC any time they trade in their company's securities. The report must be filed with the SEC no later than ten days after the end of the month in which the trade took place.

It has become increasingly evident that despite SEC regulations against trading on privileged information, many insiders trade around the time of corporate announcements.⁸ John and Mishra [1990] have shown how insider trading can act as a joint signal along with a corporate announcement such as announcements of capital expenditures, in sending information to the market efficiently. Within a Leland and Pyle [1977] type framework, they develop a signaling model with a

⁷ The second circuit court of appeals in the case of the Securities and Exchange Commission v. Texas Gulf Sulphur Co. gives this interpretation to SEC rule 10b-5. See page 1043 of Jennings and Marsh [1987].

⁸ Seyhun [1988], Givoly and Palmon [1985], Karpoff and Lee [1986], and John and Lang [1991].

Spencian equilibrium whereby the interaction of the two signals (the corporate announcement and the degree and direction of insider trading) are most efficient in disseminating information to the market about project profitability conditional on the firm's stage of development or "technology." Their model assumes that the firm's current earnings position is known, so there is no uncertainty with respect to assets in place. In the John and Mishra [1990] signaling equilibrium, the decision to trade by insiders acts as a joint signal to the market indicating the profitability of the investment. In their model, investors do not act on the observed insider trading before the corporate announcement. Rather, they react to the announcement conditional on the direction and magnitude of prior insider trading. An empirical test of this type of model is provided by John and Lang [1991] who use a similar approach to address the joint signal of unexpected dividend announcements and insider trading. In their model, the reaction to dividend policy changes is conditional on the firm's investment opportunities. They find that insider trading in the immediate pre-announcement period plays an important role in explaining announcement period effects and that the magnitude and direction of this response is dependent on the investment opportunities available to the firm. They report announcement day returns that are significantly lower for firms with net insider selling than for firms with no trading or net buying prior to announcement. This evidence is consistent with their theory of announcement and trading acting as joint, rather than substitute, signals. Investors seem to be reacting to the announcement conditional on the nature of insider trading taking place just prior to announcement.

As Karpoff and Lee [1991] point out, if insider trading and corporate announcements were substitute signals, investors would react to the inside trading before rather than in conjunction with the announcement.

Karpoff and Lee [1991] examine insider trading around announcements of all equity issues without controlling for use of proceeds. They find that, in general, abnormal selling occurs before announcements of equity issues. By aggregating across firms and over all uses of proceeds, however, they do not address the relationship between the direction of insider trading and the corresponding announcement period reaction. They do not find any unusual activity around debt issues. The financing announcement provides a complicated setup for studying announcement period effects. Issue induced changes in capital structure and leverage may be occurring at the same time there is some uncertainty with respect to managerial objectives for what the funds are to be used for (profitable projects or misuse of free cash flow) or for the motivation for the issue itself (profitable projects vs. earnings declines). Most likely, a combination of factors come together in producing the observed announcement period effect. Insider trading may be able to help market participants distinguish the direction of the valuation impact of this event on the firm, i.e. whether this financing is a 'good news' event or a 'bad news' event.

CHAPTER III

Hypotheses

III.A Announcement Period Effects

The Leland and Pyle [1977] and Miller and Rock [1986] models and the joint signaling models of John and Mishra [1990] and John and Lang [1991] provide a theoretical backdrop for examining the role of insider trading in providing information to the market around the time of new financing. In the case of financing for new investment, raising more funds could be good news or bad news depending on the opportunity set available to the firm (whether it is in a state of growth, maturity, or decline). This is not to say that there is no asymmetry with respect to assets in place as well. There may be uncertainty as to whether these funds are being raised to support a higher level of profitable investment or to maintain expected investment in the face of earnings declines. The theoretical papers discussed above (Leland and Pyle [1977], John and Mishra [1990], and John and Lang [1991]), all suggest that in the face of some degree of uncertainty about investment profitability, insider trading can provide information to the market. The John and Lang [1991] study provides empirical evidence suggesting this is the case

for one type of corporate announcement (dividend change announcements). To the extent that any amount of information asymmetry exists with respect to a firm's investment opportunities and investment profitability, if insider trading reduces this information asymmetry, the observed reaction should reflect this. This dissertation focuses on new issues of debt and equity for investment purposes. The likelihood that some degree of information asymmetry is present around a financing issue is higher for those firms that are raising the funds for financing newly adopted projects than for issues where funds are being used to refund maturing debt, for example. Secondly, by focusing only on new issues of debt and equity explicitly raised for investment purposes, the analysis attempts to circumvent some of the effects of other capital structure issues that may have different implications for issues of debt and equity. For example, when an issue of equity is to be used for investment as opposed to repurchasing debt, capital structure change considerations are not as important. Of course, to the extent that the firm's capital structure does change, these factors may impact announcement period returns to some extent, making the financing-investment relationship less obvious.

In the aforementioned signaling models, management intentionally signals the superior quality of projects they have available by investing more in their firm's stock. This equilibrium model meets the Riley conditions for a dissipative signaling equilibrium where the cost incurred by management is the loss of diversification in their personal portfolio. This loss of diversification is less costly for managers of high quality firms whose expected return from investment in their firm is higher than that

for low quality firms. If management is passive with respect to purchasing shares, insider percentage holdings will fall with a new issue of equity, sending a negative signal to the market. Likewise, if management is passive, insider ownership will rise at new debt issues management, sending a positive signal to the market.

Expected costs may be too high for management to be passive. If they have bad news about the profitability of investment projects (firm growth in the future) they may find it optimal to reduce their holdings. Although these negative signals may reflect poorly on the managers' performance, information asymmetry with respect to the current state of affairs is bound to be resolved eventually. Therefore, if the manager holds shares and does not signal correctly when he has bad news, the chosen strategy is personally very costly in terms of lower share values once the negative information is revealed. Likewise, if the manager has favorable information and chooses a strategy that signals bad news, his decision is very costly due to lost opportunities in his personal portfolio. This leads to the following testable hypotheses concerning announcement period effects.

HYPOTHESIS I: Buying or Selling By Insiders

When announcements of Debt and Equity issues for investment purposes are preceded by insider buying, they are accompanied by a less negative (or positive) stock price response than that for announcements that are preceded by insider selling.

To the extent that adverse selection costs are lower for debt issues than equity issues, less signaling activity (insider trading) should be observed around debt issues, due to the costly nature of the signal.

III.B Firm Performance

If insider trading around announcements of new financing allows the market to effectively characterize this event as "good news" or "bad news" the results should be reflected in the long run performance of the firm. If insider buying prior to a financing announcement is indicative of good investment opportunities, one would expect these firms to exhibit higher earnings in the years following the announcement. Alternatively, if unfavorable information is revealed through insider selling just prior to announcement, a decline in profitability should be observed subsequent to the financing announcement, the magnitude of which should be positively correlated to the degree of inside selling taking place.

HYPOTHESIS II: Firm Performance

Firms that exhibit insider buying prior to announcements of new financing have a higher level of price performance and earnings growth following the financing announcement than firms that exhibit insider selling prior to announcement.

CHAPTER IV

Methodology

IV.A Announcement Period Abnormal Returns

To examine the hypothesized relationship between insider trading and announcement period price response, the abnormal returns for each firm will be constructed using market model estimation procedures. Information from the Center for Research in Security Prices (CRSP) daily returns tape is used to estimate the parameters for the standard market model as follows:

$$R_{jt} = \hat{\alpha} + \hat{\beta}R_{mt} + \epsilon_{jt},$$

where R_{jt} = the return on firm j stock over day t,
 $\hat{\alpha}$ = the estimated intercept parameter,
 $\hat{\beta}$ = the estimated slope parameter,
 R_{mt} = the CRSP value weighted market index on day t, and
 ϵ_{jt} = the error term.

The parameters are estimated over the period +50 to +250 relative to the event date. This period was chosen to avoid run-up effects typically associated with seasoned equity issues and preannouncement price effects that may be associated

with debt issues.⁹ The expected return for firm j 's stock for day t is then computed as: $E(R_{jt}) = \hat{\alpha} + \hat{\beta}R_{mt}$. The abnormal return on firm j 's stock for day t , (AR_{jt}) is then computed as: $AR_{jt} = R_{jt} - E(R_{jt})$. The abnormal return for each firm is computed for an event period consisting of each of days -5 to +5 relative to the event date.

Next, a cross-sectional average of all of the sample firms' abnormal returns for each day -5 to +5 relative to the event date is computed:

$$MAR_t = \frac{1}{N} \sum_{j=1}^N AR_{jt}.$$

The following t-statistic is used to test whether the daily MAR_t is significantly

different from zero:

$$t = \frac{MAR_t}{\hat{\sigma}}$$

where

$$\hat{\sigma} = \left[\frac{1}{199} \sum_{t=-51}^{+250} (\hat{\epsilon}_t)^2 \right]^{1/2}.$$

The cross-sectional mean abnormal returns for each sample are examined to determine for which days surrounding event date 0 the abnormal returns are significantly different from 0. A cumulative return over these days serves as the abnormal return measure, AR_0 , in the following analysis.

⁹ For evidence of runup prior to announcement and offer of equity issues, see Mikkelsen and Partch [1986]. For evidence of preannouncement price effects for debt, see Hansen and Chaplinsky [1992].

IV.B. Insider Trading Measures

Since it is not clear at this point how the market interprets insider trading activity, several different constructions of this variable are examined.

IV.B.1 Dichotomous Net Insider Trading Variable

The first construction of the insider trading variable (ITV) is assigned a value of one if insiders are buying prior to the financing announcement and zero if insiders are selling prior to announcement. The first specification of this variable follows John and Lang's [1991] construction of such a dichotomous variable based on net trading. In this first construction, the ITV, ($ITV_{netshrs}$) is assigned a value of one if the number of shares bought exceeds the number of shares sold, and assigned a value of zero otherwise.

Some authors have questioned the use of number of shares, since large stockholders and beneficiaries tend to have larger transactions than officers or directors.¹⁰ For the purposes of this study, however, insiders are defined as officers, directors, and managers of the firm, making this an irrelevant concern.

A second construction of this net trading ITV is based on the number of insider buys and sells. The number of buys and sells are reported in widely read insider trading publications such as *Insiders' Chronicle* and *Insider Indicator*. Moreover, Karpoff and Lee [1991] point out that the number of buys and sells may

¹⁰ See Lorie and Niederhoffer [1968].

be a more important indicator of insider trading because the trades may be smaller to avoid the large fines and penalties associated with big trades. This second ITV, (ITV_{netnum}) is assigned a value of one if the number of buys exceeds the number of sells, and is assigned a value of zero otherwise.

An additional consideration involves the time frame for evaluating these trades prior to the financing announcement. Insiders are required by the SEC to record trades within ten days of the end of the month in which their trade took place. Some may choose to record their trades as they take place. In any case, there should be no longer than a forty day lag between the time these trades occur and when they are recorded. It turns out, however, that many of these trades are registered late, sometimes as late as five or six years later, thus introducing the problem of whether the transaction date itself or the record date is more important. This study focuses only on trades which took place and were reported to the SEC in the four month period prior to the announcement.

John and Lang [1991] examine the sensitivity of the insider trading ratio to the length of time over which insider trading is measured prior to the corporate announcement. They examine the relationship between insider trading and capital expenditure announcements three months at a time (all trades taking place three months prior to announcement, all trades taking place six months prior to announcement, etc). They find that using a period longer than the first quarter prior to the announcement adds little to the explanation of announcement period effects. These two constructions of the net insider trading variable will focus on trades

occurring during the four month period prior to the event date.

Consistent with the Leland and Pyle [1977] and John and Mishra [1990] signaling models, equity issues for which prior net trading is equal to zero are treated as net selling. Management's percentage ownership automatically declines with a new issue of equity if they do not buy shares. Accordingly, issues where management is passive or net insider selling occurs prior to announcement are expected to experience a more negative market reaction at announcement than issues where net insider buying occurs.

For debt issues, as in the case of equity issues, buying should signal good news, and selling should signal bad news. If, however, management is passive with respect to buying new shares, insiders' holdings will rise automatically with issues of debt. A passive strategy in the face of new debt issues could therefore be construed as positive information by the market, eliciting a favorable response from investors.

For the purposes of this study, debt issues for which prior net trading is equal to zero are treated as net buying. According to the hypothesis presented in this paper, a more negative market response to debt issues should be observed for issues preceded by net insider selling as opposed to net buying or no trading.

IV.B.2 Buy Variable

In considering the factors that may motivate insider buying and selling, one must account for many managers already owning stock in their company or regularly receiving shares through some compensation plan. Chances are, they are holding

these shares at the expense of better diversification. Indeed, for most managers, their firm's value is a minute portion of the total market portfolio, and they would very rarely have to purchase more shares to achieve a value weighted balance of shares in the market portfolio. On the other hand, liquidity reasons motivate many decisions to sell shares. If managers receive compensation packages that involve shares of stock or stock options as a part of their salary package, the only way to access these funds is to sell the stock. Tax considerations also could motivate some selling. So while buying should be an indication of confidence in firm performance, selling does not necessarily reflect a loss of confidence. Therefore, an additional specification of the insider trading variable is examined. Again, the insider trading variable, (ITV_{buy}) , is a dichotomous variable. It is assigned a value of one if there are any buys taking place through private purchase or in the open market in the four months prior to announcement, and a value of zero otherwise.

IV.B.3 Abnormal Trading Variables

A final specification of the insider trading variable is designed to measure "abnormal" trading activity. Seyhun[1990] and Karpoff and Lee [1991] use measures of abnormal trading rather than straight buys and sells. Insiders who normally purchase shares may delay doing so based on the information they have, or likewise, those who exhibit established patterns of selling (compensation related, etc.) may choose not to sell. Empirical evidence suggests that cross-sectionally, the pattern of insider trading just prior to an announcement of new financing differs from the

pattern of insider trading observed over the normal course of business for most firms.¹¹ These subtleties may be more important than observable trading activity because of the reduced risk of violating SEC trading regulations.

Several approaches have been adopted by others for determining the extent of abnormal trading. One approach involves comparing the insider trading activity in the event firms with that of a matched control sample or the entire balance of NYSE-AMEX firms.¹² Since different firms have different compensation packages and number of insiders, a comparison across firms may not be a very effective way to measure abnormal trading activity. A more appropriate measure of abnormal buying or selling activity involves a time series analysis of insider trading activity to determine what is abnormal for this particular firm. To control for possible seasonal effects, the insider trading in the four month period prior to the financing announcement (referred to as period 1) is compared to the trading activity in the same four month period one year earlier (hereafter referred to as period -1). To measure changing patterns of buying, the first of these variables, ITV_{incbuy} , is assigned a 1 if insider buying increased from time $t=-1$ to time $t=1$, and a zero otherwise. The next variable, $ITV_{decsell}$ designed to measure changes in selling patterns, is assigned a 1 if insider selling decreased from time $t=-1$ to time $t=1$, and a zero otherwise.

¹¹ See Karpoff and Lee [1991] for evidence of abnormal selling across all firms just prior to announcements of new equity issues.

¹² See Seyhun [1990] and Karpoff and Lee [1991].

IV.B.4 Abnormal Returns and Trading Variables

A t-test is used initially to determine whether the mean abnormal return of firms experiencing insider buying is significantly different from the mean abnormal return of firms experiencing insider selling before the announcement. The t-statistic for testing the hypothesis that the means of two independent samples with n_1 and n_2 observations is:

$$t = \frac{(\bar{x}_1 - \bar{x}_2)}{\left[\sigma_p^2 \left(\frac{1}{n_1} + \frac{1}{n_2} \right) \right]^{1/2}},$$

where σ_p^2 is the pooled variance:

$$\sigma_p^2 = \frac{[(n_1 - 1)\sigma_1^2 + (n_2 - 1)\sigma_2^2]}{(n_1 + n_2 - 2)},$$

and σ_1^2 and σ_2^2 are the sample variances of the two groups. This t-statistic is based on the assumption that the two groups are normally distributed with equal variances. A folded form F test is used to test for equality of variance across samples

where the folded form F, (F') = $\frac{\text{larger of } \sigma_1^2 \text{ or } \sigma_2^2}{\text{smaller of } \sigma_1^2 \text{ or } \sigma_2^2}$.

This is a two-tailed F-test. If, according to this F test, the hypothesis of equal variances is rejected, an approximate t-statistic is computed which is based on the

assumption of unequal variances, where:

$$t' = \frac{\bar{x}_1 - \bar{x}_2}{(\alpha_1 + \alpha_2)^{1/2}},$$

where:

$$\alpha_1 = \frac{\sigma^2_1}{n_1}, \quad \text{and} \quad \alpha_2 = \frac{\sigma^2_2}{n_2}.$$

Under the assumptions of unequal variances, Satterwaite's approximation for the degrees of freedom is appropriate for computing p-values, where:

$$df = \frac{(\alpha_1 + \alpha_2)^2}{\left[\frac{\alpha^2_1}{(n_1 - 1)} + \frac{\alpha^2_2}{(n_2 - 1)} \right]},$$

where α_1 and α_2 are as defined above.¹³

These tests will be performed for each construction of the insider trading variable to determine whether there is a significant difference in mean abnormal return when insiders are buying versus selling. Each of the insider trading constructions for which abnormal returns differ significantly across buy and sell groups are examined in more detail using cross-sectional regression analysis.

¹³ See Freund, Littell, and Spector [1986].

IV.C Cross-Sectional Regression

The following regression model is used as a basis for the analysis:

$$AR_0 = \beta_0 + \beta_1 ITV + e,$$

where, AR_0 is the announcement period return, and ITV is a variable designed to measure insider trading activity prior to announcement.¹⁴ The announcement period abnormal returns represent the abnormal returns for each firm. The insider trading variable, taking one of the constructions described in Section IV.B, measures the direction of insider trading activity prior to the financing announcement. While these results will mirror the t-test results from section IV.B, the basic model results are presented to facilitate comparison of coefficients with those estimated with the extended models that follow.

To further examine the relationship between inside trading and announcement day reaction, a second regression model is utilized based on a continuous measurement of the net insider trading variable as in John and Lang [1991]. Specifically, the following regression will apply:

$$AR_0 = \beta_0 + \beta_1 BUY + \beta_2 SELL + e,$$

where AR_0 is the announcement period abnormal return. The BUY variable is assigned a value equal to $[(buys - Sells)/(Buys + Sells)]$ if the value of $(Buys - Sells)$

¹⁴ Previous studies examining announcement period effects of equity issues have encountered problems with heteroskedasticity in cross-sectional OLS regressions. To address this issue, a White test for heteroskedasticity will be employed to determine the necessity of using a weighted least squares analysis instead of OLS. In the presence of heteroskedasticity, observations will be weighted by the inverse of the estimation period standard errors for each firm.

is greater than zero, and assigned a value of zero otherwise. Similarly, if the value of (Buys-Sells) is less than zero, the SELL variable is assigned a value equal to $(-1)[(\text{Buys-Sells})/(\text{Buys} + \text{Sells})]$, and a value of zero otherwise. The intercept in this regression represents the average abnormal return of firms with an insider trading ratio of zero, that is, the case where either no insider trading took place or the buys just equalled the sells. The differences between the constants and the coefficients for BUY and SELL represent the marginal returns for firms that have positive or negative insider trading ratios, respectively.

This model is used to examine the importance of buying as opposed to selling in explaining announcement returns. As indicated earlier, selling may not be a strong indicator of bad news due to the many other factors that may motivate managers to sell (tax effects, liquidity needs, etc.). While some power may be lost by splitting the variable, this model may provide some indication of the relative importance of buying versus selling as an informative event.

The basic regression model is then extended to incorporate variables found in prior studies to be important in explaining the market reaction to debt and equity issues.¹⁵ This comprehensive model takes the following form:

$$AR_0 = \beta_0 + \beta_1ITV + \beta_2PIV + \beta_3EA + \beta_4RIS + \beta_5SO + \beta_6BD + \beta_7MRUN + \beta_8FRUN + e.$$

The event period abnormal return used in previous models will again serve as the

¹⁵ Results of each estimation of the expanded models are examined for evidence of multicollinearity problems. Variance inflation factors and variance proportions are examined for each estimation.

dependent variable. The following variables will be included as independent variables:

ITV = Insider Trading Variable
PIV = Prior Issue Variable
EA = Days to Last Earnings Announcement
RIS = Relative Issue Size
SO = Percentage of Offer that is Secondary
BD = Level of Bank Debt
MRUN = Business Cycle Variable, Market Run Up
FRUN = Firm Runup

The insider trading variable, ITV, is the primary focus of this study and will include a measure of insider trading around announcement. According to the hypotheses presented in this paper, one would expect to observe a positive coefficient on this variable (regardless of the construction), indicating a less negative reaction to issues where insiders are buying prior to the issue announcement.

The prior issue variable, PIV, is a measure of the number of times this firm was in the market with a new financing in the last 5 years. Masulis and Korwar use a similar variable in their 1986 study of equity issues.¹⁶ The market reaction to an equity issue announcements should be smaller when the market expects the company to issue equity. Additionally, Easterbrook [1984] suggests that monitoring problems and risk aversion problems of managers are less serious for firms that are constantly

¹⁶ An alternative specification for this variable used in previous studies would involve a dichotomous variable assigned a value of 1 if the firm had an issue of debt or equity within the 12 months prior to the issue and a zero otherwise. The sign of the coefficient for this specification is uncertain. In light of the high costs associated with new issues of securities, particularly equity, most firms follow a policy of fewer, larger financing issues rather than several, more frequent, smaller issues. Thus, if a firm has already had one issue of stock or debt within the last 12 months, investors may not be expecting another one so soon. In this case, a negative sign for this variable may reflect their surprise.

in the market for new capital. Therefore, one would expect to observe a positive coefficient on this variable for debt or equity.

Variable EA, the number of days to the last earnings announcement, has been shown by Korajczyk, Lucas, and McDonald [1991] to be significant in explaining announcement period returns for equity issues. They contend that information asymmetry is lower just after the announcement of earnings, thus lowering adverse selection costs. To the extent that adverse selection costs also exist for debt issues, this variable should be related to announcement effects for debt as well, although perhaps somewhat attenuated since adverse selection costs should be lower for debt. To estimate this earnings announcement effect, the Dow Jones News Retrieval system is searched for each issue to determine the closest earnings announcement prior to the issue announcement. The earnings announcement variable is measured as the number of days between this earnings announcement and the earliest announcement of the equity issue. It is expected that the larger the number of days since an earnings announcement, the more negative the reaction, hence a negative coefficient is expected.

A relative issue size variable, RIS, is included to measure several possible effects. Miller and Rock [1985] argue that larger issues of debt and equity are associated with greater expected earnings declines in the future. According to this theory, a relative size variable should exhibit a negative coefficient for debt or equity issues. Debt tax arguments suggest a positive relationship between leverage increasing debt issue size and market reaction. Alternatively, the size of leverage

decreasing equity issues is predicted to be negatively related to announcement effect. Similarly, arguments by Jensen and Meckling [1976] and Leland and Pyle [1977], although motivated by different arguments, both suggest that larger equity issues lead to a greater degree of share dilution for passive managers, which is received as bad news by the market. Debt issues increase ownership which should be good news to investors. Thus, all of these theoretical arguments suggest that the reaction to equity issues should be more negative, the larger the size of the issue. Asquith and Mullins [1986] provide evidence supporting this. The relative size variable for equity issues is measured as the number of shares in the new issue relative to the number of shares outstanding before the new issue. The coefficient estimated for this variable is expected to have a negative coefficient.

The implications for debt issues is not clear cut. The relative issue size variable for debt issues is measured as the dollar value of the debt issue relative to total assets. There is no clear indication of which sign the estimated coefficient of this variable should exhibit. Eckbo finds no significant relationship between issue size and announcement effect in his 1986 study of debt issues.

The secondary offer variable, SO, measures the number of shares in the offer that were secondary. The firm will not be able to use these funds, suggesting the market reaction should be weaker the larger the secondary offering is as a percentage of the total issue. On the other hand, if the selling parties, large blockholders, insiders, etc. have information superior to the market, their selling may send a negative signal to the market. According to this hypothesis, the coefficient

of this variable is predicted to exhibit a negative coefficient. This variable is not relevant in the regressions for the debt sample.

The bank debt variable, BD, used in this model accounts for the role of outside agents in monitoring the firm. The level of bank debt is measured using the Slovin, Sushka, Hudson construction of 'debt in current liabilities' minus 'long term debt due in one year' scaled by the 'market value of the firm's equity'. Slovin, Sushka, and Hudson [1989] show that stock price reaction to seasoned equity offerings are directly related to the level of bank debt held by the firm. They provide empirical evidence supporting their hypothesis that the presence of outside monitors like commercial banks reduces moral hazard problems and uncertainty related to new security issues. To the extent that these same moral hazard problems and uncertainty surround seasoned debt offerings, this variable should be useful in explaining debt issue reaction as well. One would expect to observe, as did Slovin, Sushka, and Hudson, a positive coefficient on this variable.

Two other variables are considered for this regression for the equity sample. First, Choe, Masulis, and Nanda [1991] suggest that equity issues that take place during a period of economic growth experience a less negative reaction. NBER indicators of peaks and troughs through 1990 were obtained from the 1990 issue of *Business Cycles, Inflation, and Forecasting* and compared with issue dates in equity and debt samples. Since the issues in this sample took place at different points in the business cycle, a variable was constructed to capture such market condition effects. Choe, Masulis, and Nanda [1991] find that preannouncement market run-up

can be efficient in capturing market condition effects. Masulis and Korwar [1986] also document a positive significant relationship between market price run-up and equity issue announcement effects. CRSP value weighted returns are cumulated over the the seventy five day trading period prior to announcement to measure the market run-up variable, MRUN. To the extent that market runup reflects overall economic growth and positive market conditions, negative announcement valuation effects should be lessened. According to this theory, the observed coefficient on this variable is expected to be positive. The Choe, Masulis, Nanda study failed to find a significant difference in debt issues across different phases of the business cycle, so a market condition variable will not be used in regressions for the debt issues.

Finally, both the Masulis and Korwar [1986] and Choe, Masulis, Nanda [1991] studies have shown that preannouncement runup in individual firm returns are significant in explaining announcement period effects. Masulis and Korwar [1986] suggest that high preannouncement price runup lowers leverage, making a new (leverage reducing) equity issue even more of a surprise to investors. Lucas and McDonald [1990] suggest that firms wait to issue equity to take advantage of overvaluation. At a minimum, they wait until their equity is correctly valued before issuing. Since firms are either correctly valued or overvalued at issue, the average firm is overvalued, and the market adjusts its estimate of firm value. From either theory, a negative coefficient is expected for this variable. The firm runup variable is constructed from CRSP returns for each firm cumulated over the 100 day window just prior to the event date.

Size effects for all issues are examined to measure possible differences in the insider trading relationship across firms of different sizes. Seyhun [1986] and [1988] suggests that, while insiders of small firms trade primarily on firm-specific information, insiders of large firms trade more on the basis of economywide factors. In this case, insider trading may only be an effective signaling tool for managers of small firms. To examine this possibility, the comprehensive model will be extended to the following form:

$$AR_0 = \beta_0 + \beta_1 ITVS + \beta_2 ITVL + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8 MRUN + \beta_9 FRUN + \epsilon.$$

Variable ITVS is assigned a value equal to the dichotomous net insider trading variable if the firm is small and assigned a value of zero otherwise. Variable ITVL is assigned a value equal to the net insider trading variable if the firm is large and assigned a value of zero otherwise. Firms will be classified as "small" or "large" according to whether they fall below or above the median firm size. Firm size is measured in terms of the book value of firm assets, the market value of the firm's equity, and the size of the firm's dividend. According to Seyhun's [1986] and [1988] results, the coefficient on ITVS could be significant, while the coefficient on ITVL is not. There is no reason to believe that the sign of the coefficient should be negative for either group.

IV.D Insider Trading and the Direction of Announcement Period Returns

An alternative approach to examining the relationship between insider trading and market reaction to financing announcements involves splitting the samples

according to the direction of the market reaction to the financing announcement and analyzing the insider trading for these two groups. This will be done for each of the specifications of the inside trading variable constructed in section IV.C.1. According to the hypotheses presented in this study, one would expect to observe a greater instance of insider buying for issues with the most positive announcement period returns and a greater instance of insider selling for issues with the most negative announcement period returns.

Announcement period returns are also examined according to the firm's market to book ratio. As John and Mishra suggest, for firms with high Tobin's Q new investment is good news and should be accompanied by a higher level of insider buying than low Q firms. Likewise, new investment is bad news for low Q firms and as such, a higher level of insider selling should be observable for these firms. Additionally, announcement period abnormal returns should be less negative for issues by high Q firms with insider buying than for other issues. Announcement period abnormal returns should be more negative for issues by low Q firms with insider selling than for other issues. These issues are examined according to the firm's market to book ratio which is used to approximate Tobin's Q. Barclay and Litzenberger [1988] suggest that to the extent that market-to-book is correlated with marginal firm productivity, the market-to-book ratio can provide information about firm investment opportunities. By this interpretation, one would expect any kind of financing issue to be bad news for firms with low marginal investment opportunities or Tobin's Q, reflected in a low market-to-book ratio. However, if insiders are better

informed than the market about the firm's investment opportunities, the market's perception of value reflected in its market to book ratio cannot be a perfect measure of marginal profitability. Hence additional insights may be obtained from looking at both factors.¹⁷

Abnormal returns are also examined according to the degree of runup in the firm's price over the 100 day period preceding the financing announcement. Insider trading patterns may be driven by the run-up in the firm's price in the period prior to announcement. Hence, one might expect to observe more buying in cases where run-up is low because the firm may be undervalued. On the other hand, more buying may take place in firms experiencing higher run-up, since prices in general do not fall back to pre-run-up levels. Issues in each sample for firms with high-runup and low-runup relative to the median for the sample are examined to determine whether the patterns of inside buying and selling differ across groups.

IV.E Measuring Firm Performance

Hansen and Crutchley [1990] find evidence that earnings, on average, decline for firms announcing new financing of either type, lending support to cash flow signaling models. If the insider trading variable proposed does reflect better quality or increased quantity of positive value investments rather than an expected future shortfall of cash, one would expect to see a less drastic earnings decline following the

¹⁷ See John and Mishra [1990] who suggest the use of Tobin's Q measures and insider trading, and Gombola, Shih, Tsetsekos [1993] for the benefits of analyzing these combined measures of profitability.

issue, or perhaps none at all, for those firms with more profitable investments or as opposed to other issuers of equity or debt. To examine the relationship between insider trading prior to a financing announcement and subsequent firm performance, four different measures of firm performance are constructed. The first, a stock return performance measure is calculated as the cumulative market model abnormal return for the firm over the 40 day period just following the issue announcement. The second stock return performance measure is computed as the cumulative market model abnormal return over the trading period from day +250 to +500 relative to the event date. Market model parameters were estimated over day +51 to +250, preventing the use of market model abnormal returns for this period. Market adjusted returns may be inappropriate for this group of firms, as the average beta across firms that issue new equity or debt may not be equal to one. To measure firm performance for the year following the event date, CRSP beta excess returns are cumulated over day +1 to +250 relative to the event date. The return measure is computed by CRSP as the return of each firm minus the average return of all firms in its beta portfolio on day t . Earnings patterns following the event are measured as the change in net operating income from the year end just following the event date to the next year divided by the value of the firms assets measured at the end of the year in which the event occurred. This earnings measure is adjusted for industry effects by subtracting the average standardized earnings change for that particular year of all firms with the same two digit SIC code as the issuing firm. This standardized earnings change measure is based on a similar measure used by

Weisbach [1988].

Once "buying" and "selling" groups have been identified according to the insider trading variables specified in section IV.B, firm earnings are examined to determine if patterns are consistent with Hypothesis II presented in chapter three. According to this hypothesis, firms in the "sell" group should exhibit a much larger incidence of earnings and stock return decline than the "buy" group, the magnitude of which should be correlated with the direction of insider trading activity taking place. This is measured using OLS estimation.

CHAPTER V

Data And Sampling Procedure

V.A Identifying Announcements of Seasoned Debt and Equity Issues for Investment

Firms issuing seasoned equity and debt are identified for the period between June 1979 and May 1988 on the SEC's Registrations and Offering Statistics (ROS), and for the period between May 1988 and December 1990 are identified in the *Investment Dealers Digest* and Dow Jones News Retrieval Service. The twelve year sample period used in this study allows for a detailed analysis of the impact of investment considerations on the reaction to new financing. Utilities, financials, and communication firms are excluded from the analysis due to the unique nature of these industries. Shelf registered Equity issues are not included. Dual primary and secondary equity offerings are included if the secondary portion of the offering does not exceed 50% of the offer. The Dow Jones News Retrieval Service is used to search for the earliest announcement of the issue using the registration date as a starting point. The wire date of the announcement is defined as the event date, and in cases where the news came across the wire after 3:50 p.m., the next trading day

is used.¹⁸ The use of proceeds is identified for each issue from the financing announcement. The samples are restricted to those debt and equity issues that can be identified using the Dow Jones News Retrieval, have CRSP return data available to estimate the market model parameters as outlined in Chapter IV., and do not exhibit contemporaneous confounding events (stock splits, etc.). A total of 562 equity issues and 729 debt issues meeting these criteria were identified over the entire sample period.¹⁹ Table V.A.1 provides a breakdown of these equity and debt issues by the use of proceeds. Some announcements list no use of proceeds. Others may list a variety of intended uses for the funds. This study focuses on issues for investment purposes.

V.A.1 Equity Issues

The equity issues are initially partitioned into three groups: an investment group, a group with no investment listed, and a group of issues mentioning a combination of investment and repayment of debt or other uses.²⁰ Equity

¹⁸ See Allen and Thompson [1991] and Bonomo, Johnson, Thompson [1992] for evidence on the appropriateness of using this procedure and the use of the wire date as opposed to the *Wall Street Journal* news date.

¹⁹ A total of 693 seasoned equity issues were identified. Of this 693 total, forty-seven did not have sufficient CRSP return data available, eight could not be found on DJNR, and seventy-six experienced confounding events that could cloud the analysis or bias the parameter estimation. A total of 798 seasoned straight debt issues over 30 million dollars were identified. Of these 798 issues, thirty six issues did not have sufficient CRSP return data available, and thirty three could not be found on the DJNS.

²⁰ The "other" uses include funds used in connection with an ongoing merger or acquisition or other confounding event not useful in this analysis.

TABLE V.A.1
SAMPLE DESCRIPTION
EQUITY

FULL INVESTMENT	Capital Expenditures	93
	Acquisitions	48
NO INVESTMENT	No Purpose Listed	54
	General Corporate Purposes	21
	Working Capital	6
	Repayment of Debt	118
	Combination (General Purposes, Working Capital, or Debt Repayment)	87
OTHER (Not Used in Analysis)	Investment and Repayment of Debt	94
	Current Mergers, Extenuating Events	41

DEBT

FULL INVESTMENT	Capital Expenditures	134
	Acquisitions	80
NO INVESTMENT	No Purpose Listed	53
	General Corporate Purposes	72
	Working Capital	2
	Repayment of Debt	104
	Combination (General Purposes, Working Capital, or Debt Repayment)	152
OTHER (Not Used in Analysis)	Investment and Share Repurchase	33
	Current Mergers, Extenuating Events	84

announcements mentioning repayment of debt of any kind are excluded from the "investment" group in order to circumvent, as much as possible, capital structure and leverage effects. Issuing equity to repay debt may involve large changes in firm leverage which brings in new considerations not addressed in this study.

Since comparisons of results for the investment versus non-investment purposes may provide some insight into the importance of insider trading for issues as a whole, it is analyzed as well. The third group includes issues containing information that could cloud the analysis, and is not utilized in this study.

Two very different types of investment frequently appear in these announcements: possible acquisitions, and firm-wide capital expenditures. Recent empirical evidence suggests that the market response to acquisitions for bidder firms may differ significantly from the market reaction documented at announcements of increases in firm-wide capital expenditures.²¹ To the extent that the financing announcement is the first indication of the firm's intentions, the market reaction to the financing announcement may differ across the different types of investment. Therefore, the full investment sample is split to reflect the different types of investment. The capital expenditures sample includes issues for which firm-wide investment in capital expenditures is listed as a use of proceeds, but no acquisitions. This would include issues listing only capital expenditures, capital expenditures and

²¹ McConnell and Muscarella [1985] document a positive response to announcements of increases in capital expenditures, while Mitchell and Lehn [1990], and Morck, Schleifer, and Vishney [1990] suggest acquisitions can be value reducing to shareholders.

general purposes, capital expenditures and working capital, or capital expenditures, general purposes, and working capital. The acquisition sample includes the balance of issues from the full investment sample. These issues mention possible acquisitions as a use of proceeds. Cases where the target firm is identified or funds are to be used in conjunction with an acquisition already taking place are not included. This procedure results in the following four groups to be studied. The full investment sample includes 141 equity issues, of which 93 fall into the capital expenditures sample, and 48 fall into the acquisition sample. Ninety-two issues are included in the no investment control sample.²²

V.A.2 Debt Issues

The debt issues are similarly split initially into three separate groups. The full investment sample includes 134 issues for capital expenditures and 80 issues for possible acquisitions, and no mention of share repurchase. The second group with no mention of any type of investment as a use of proceeds includes 383 issues. The balance of issues mentioning repurchase of stock or involving current takeovers and other extenuating circumstances are not used in the analysis. The full investment sample is broken down into a capital expenditures sample and an acquisition sample similar to the equity issues.

²² A random sample of one third of the total 276 issues involving no investment resulted in a no investment control sample of 92 issues.

V.B Insider Trading

Information on insider trading for the equity issues was collected from *The Official Summary of Securities Transactions and Holdings* published by the SEC. For the bond sample, insider trading data was collected from the SEC tapes, which contain the same information as the *Official Summary* but in machine readable form. Trades that were recorded after the event date were eliminated. A total of 18 issues in the investment samples did not have any information on the tapes. Insider trading information for these firms was collected from the Official Summary. Of the 398 debt issues in the no-investment group, 15 had no information on the tapes. The remaining 383 issues were used in the debt no-investment control sample.

As stated above, only the trades of officers, directors, and other management officials of the firm are examined. For each firm, the name of the person trading, nature of ownership, transaction date, number of shares, and transaction type are recorded.²³ Shares owned by the reporting person are reported as direct ownership. According to the General Instructions for filing the SEC form 3 Initial Statement of Beneficial Ownership of Securities, "a person may be the indirect beneficial owner of securities held in the name of a spouse, relative, or other person if such person may obtain therefrom benefits substantially equivalent to those of ownership."²⁴ These instructions go on to say that "a person may also be the

²³ Information on share price is not consistently available from this data source, making an examination of total dollar volume impossible.

²⁴ See Securities and Exchange Act Release 7824.

indirect beneficial owner of securities held in the name of a partnership, corporation, trust, or other entity if such person ... may exercise a controlling influence over the purchase, sale, or voting of such securities." Thus, even to be considered indirect ownership, the reporting person must have "benefits substantially equivalent to those of ownership" and have the power to "exercise a controlling influence" over those shares. Under these circumstances, a transaction under indirect ownership conditions has the same implications for this study as those reported under direct ownership. Therefore, both direct and indirect ownership trades are utilized for the purposes of this study.

For each transaction, the person reporting the trade must fill in one of the following codes for transaction type:

- (1) Initial Statement of Ownership - 3
- (2) Shares Accrued Through a Plan - B
- (3) Stock Dividend - D
- (4) Exercise of Rights - F
- (5) Acquired by Gift - G
- (6) Disposed of by Gift - H
- (7) Private Purchase - J
- (8) Private Sale - K
- (9) Acquisition by Exchange or Conversion - M
- (10) Disposed of by Exchange or Conversion - N
- (11) Open Market Purchase - P
- (12) Disposition by Exercise of Option - Q
- (13) Redeemed (Called, Matured, or Retired) - R
- (14) Open Market Sale - S
- (15) Other Acquisition - T
- (16) Other Disposition - U
- (17) Disposition of Warrants by Exercise - V
- (18) Acquisition by Exercise of Warrants - W
- (19) Acquisition by Exercise of Options - X
- (20) Reverse Stock Split - Y
- (21) Stock Split - Z

Type (1) transactions were not utilized because they do not represent a trading of securities. Shares purchased through a plan, type (2), were not considered as a "buy" trade because such a trade does not represent an attempt by the manager himself to increase his stake in the firm. All firms exhibiting this code for any trade in the sample are identified, however. Managers who receive shares of stock through some type of plan may tend to sell more shares simply for liquidity or portfolio balancing reasons, than managers who do not. Likewise, shares acquired through stock dividends (3), stock splits (20) and (21), shares acquired by gift (5), and those shares redeemed (13) are not initiated by the trader himself, and therefore are not considered in the trade data.

Three different groups of trading data are utilized based on an assemblage of different types of transactions. In the first collection of trades, shares acquired through private purchase (7), exchange or conversion (9), open market purchase (11), other acquisition (15), acquisition by exercise of warrants (18), or options (19), are treated as buys. The sell group within this first collection of data includes those shares disposed of by gift (6), private sale (8), exchange or conversion (10), open market sale (14), warrants (17), or other (16). This first collection of trade data is hereafter referred to as Group A.

A modification of the treatment of stock options is made for Group B. Group B is identical to Group A, except for the treatment of shares acquired through exercise of options (19). In Group B, these trades are treated as a sell rather than as a buy. This alternative definition of exercise of stock options stems from the

notion that the stock option would not be exercised (shares purchased) if the price of the stock were expected to rise. Managers who have negative information about the firm's future performance would rationally exercise before a fall in price. On the other hand, if stock options make up a part of managers' compensation package, they may tend to exercise them often to reap part of their compensation.

The last group of trading data, labeled Group C, provides a more narrow approach for defining buys and sells. This group contains only shares acquired through a private or open market purchase (7 or 11), or disposed of through private or open market sale (8 or 14). These three different groups of buy and sell transactions allow for a more detailed examination of the market reaction to specific types of transactions.

V.C Firm Characteristics

Data relating to firm size, number of shares outstanding, bank debt, and earnings is collected from the COMPUSTAT tapes. Other issue specific variables such as the number of days to the last earnings announcement were collected for each firm from Dow Jones News Service. Information on prior issues was collected from ROS tapes and a search for firm information on DJNR for the year prior to the issue. Data on issue size was verified in the earliest filing announcement obtained from DJNR.

Firm size measures reported in Table V.A.2. indicate that, in general, firms issuing debt tend to be much larger than those issuing equity. This is consistent with

Table V.A.2**Average Firm Size Measures
Equity Issues**

SAMPLE	AVE. ASSET SIZE (millions)	AVE MKT. VAL. EQUITY (millions)	AVE DIVIDEND SIZE
FULL INV.	Mean: 1023.48 Median: 179.82	Mean: 484.18 Median: 160.53	Mean: .55 Median: .24
CAP. EXP.	Mean: 1248.08 Median: 197.81	Mean: 487.63 Median: 163.27	Mean: .52 Median: .15
POSS. ACQUIS.	Mean: 558.31 Median: 166.21	Mean: 477.48 Median: 143.97	Mean: .60 Median: .31
NO INVEST.	Mean: 1174.49 Median: 227.19	Mean: 490.20 Median: 120.67	Mean: .99 Median: .29

**Average Firm Size Measures
Debt Issues**

SAMPLE	AVE. ASSET SIZE (Millions)	AVE MKT. VAL. EQUITY (Millions)	AVE. DIV. SIZE
FULL INV.	Mean: 5231.25 Median: 2242.8	Mean: 4948.68 Median: 1622.56	Mean: 1.20 Median: 1.02
CAP. EXP.	Mean: 5988.53 Median: 2344.52	Mean: 3675.06 Median: 1690.99	Mean: 1.34 Median: 1.12
POSS. ACQUIS.	Mean: 4048.64 Median: 1842.00	Mean: 2855.18 Median: 1513.99	Mean: 1.06 Median: .96
NO INVEST.	Mean: 7222.41 Median: 2857.52	Mean: 3777.78 Median: 1820.82	Mean: 1.38 Median: 1.2

several capital structure arguments. Scott [1976], for example, derives a valuation formula for which the optimal level of debt is an increasing function of firm size and the liquidation value of the firm's assets. Bradley, Jarrell, and Kim [1984] provide empirical results consistent with this argument that firms with more tangible assets that can be liquidated tend to have higher debt ratios. These firms can borrow more easily than smaller firms that have fewer assets to act as security for their debt. Mikkelson and Partch [1986] and Hansen and Crutchley [1990] also note that firms in their debt issue samples tend to be larger than firms in their equity issue sample.

Another common argument stems from larger firms being better diversified, with different divisions having less than perfectly correlated returns. The variance in total firm returns is lower than that for individual divisions, lowering bankruptcy costs and increasing debt capacity. Smith and Watts [1992] present empirical evidence supporting this theory.

Seyhun [1986] suggests that insider trading may be more informative for small firms than for large firms. If this is the case, insider trading should be more important for the equity issues than the debt issues before controlling for firm size.

Mean values of other firm specific variables are reported in Tables V.A.4. and V.A.5. According to the signaling hypothesis tested in this study, one would expect to observe less insider trading surrounding debt issues, where adverse selection costs are lower and the need for costly signaling should be reduced. However, the percent of each sample with no trading is higher for the equity samples than for the debt samples. Perhaps regulatory authorities more closely scrutinize insider trading

Table V.A.3**Average Variable Sizes
Equity Issues**

SAMPLE	% OF SAMPLE W/PRIOR	AVE. DTEA	AVE. RELSIZE	AVE. SEC	% OF SAMPLE W/SEC
FULL INV.	30%	34	18%	4%	15%
CAP. EXP.	32%	34	18%	4%	15%
POSS. ACQUIS.	25%	35	19%	3%	15%
NO INVEST.	14%	37	22%	3%	13%

SAMPLE	AVE. BD	% OF SAMPLE with BD < .001	AVE. INDCUM	AVE. FRMCUM	% OF SAMPLE W/NO TRADES
FULL INV.	4.6%	56%	8.6%	29.35	18%
CAP. EXP.	4.5%	59%	9.5%	29.3%	18%
POSS. ACQUIS.	4.8%	48%	6.6%	29.1%	19%
NO INVEST.	8.6%	36%	7.8%	28.7%	16%

Table V.A.4**Average Variable Sizes
Debt Issues**

SAMPLE	% OF SAMPLE W/PRIOR	AVE. DTEA	AVE. RELSIZE
FULL INV.	31%	43	1.2%
CAP. EXP.	40%	41	1.0%
POSS. ACQUIS.	22%	45	1.6%
NO INVEST.	27%	37	1.1%

SAMPLE	AVE. BD	% OF SAMPLE with BD < .001	% OF SAMPLE W/NO TRADES
FULL INV.	6%	33%	9%
CAP. EXP.	6%	35%	8%
POSS. ACQUIS.	8%	33%	11%
NO INVEST.	11%	25%	14%

the notion that adverse selection costs are lower for debt issues. For debt issues there is less need to issue at points where information asymmetry is lower. Firms activity prior to equity announcements due to documented run-up effects. In any case, this difference in trading for debt and equity samples is not consistent with the implications of a signaling argument.

Also noticeable is the difference in the time to the last earnings announcement, which seems to be smaller for equity issues. This is consistent with issuing debt also appear to have higher levels of short-term credit than equity issuers. This is probably due to the larger firms' ability to issue debt more easily than small firms. If smaller firms have a more difficult time issuing long-term debt, they must turn to alternative sources, short-term credit and equity. Relative issue size is measured differently for debt and equity issues and so is not comparable across the two samples.

Within the equity and debt groups, most of the firm specific variables are similar in size for the four sub-samples. There is no reason to believe that these firm specific variables should perform any differently across the four sub-samples.

CHAPTER VI

Results for Equity Issues

VI.A Abnormal Returns

The average cross-sectional abnormal returns for each sample are presented in Table VI.A.1 for days $t = -1, 0,$ and $+1$ relative to the event date.²⁵ For the acquisition sample and the no-investment sample the abnormal return is statistically significant only on the announcement day ($t=0$). For the capital expenditures sample and the full investment sample, however, the abnormal return on day $t=0$ and $t=-1$ are statistically significant. Since there appears to be some leakage on day -1 for some of the samples, the announcement period market reaction is measured for all samples as the cumulative return over day $t=-1$ and $t=0$ for each firm and will serve as the dependent variable in tests of market reaction presented in the following section. The announcement day abnormal return of -2.1% for the full investment sample is not statistically different from that for either of the sub-samples or the no-

²⁵ Market model parameters were also estimated over the period -300 to -100 relative to the event date to test for significant differences in pre and post event parameter calculations. There were no significant differences in parameters estimated over pre and post periods.

TABLE VI.A.1

Announcement Period Abnormal Returns for Each Sample

SAMPLE	N	DAY	AR (Mkt.Model)	T
Full Sample	141	-1	-.0048	- 2.28
		0	-.0207	- 9.74
		+1	-.0029	- 1.38
Capital Expenditures	93	-1	-.0068	- 2.62
		0	-.0215	- 8.36
		+1	-.0017	- 0.65
Possible Acquisitions	48	-1	-.0012	- 0.36
		0	-.0194	- 5.84
		+1	-.0054	- 1.62
No Investment	92	-1	-.0017	- 0.65
		0	-.0217	- 8.34
		+1	-.0039	- 1.53

Capital Expenditures Sample: Contains those issues listing investment in capital expenditures; investment in capital expenditures and working capital; capital expenditures and general corporate purposes; or capital expenditures, general corporate purposes and working capital.

Acquisition Sample: Includes the issues that mention acquisitions as one of the use of proceeds, but no debt repayment.

Full Investment Sample: Contains all of the issues in the capital expenditures and acquisitions samples.

No Investment Sample: Contains a group of issues with no mention of investment.

investment sample, consistent with the results of previous studies that find use of proceeds insignificant in explaining announcement period returns.

At this point, the firm's stage of development or marginal profitability have not been accounted for. To the extent that insider trading provides market participants with some of that information, abnormal returns should differ according to the insider trading activity taking place around the time of the issue announcement. Sample statistics for investment and no-investment issues partitioned according to net trading activity are presented in Table VI.A.2.

For the investment sample, the mean abnormal return for firms experiencing no insider trading prior to announcement is significantly lower ($\alpha=10\%$) than that for firms experiencing net insider buying prior to announcement, but is not significantly different from those experiencing net selling. This is true for both constructions of the insider trading variables ('number of shares' or 'number of trades') and for both data groups A and B. The issues where no trading occurred seem to be viewed by the market as similar to selling, as suggested by the signaling literature. Likewise, when grouped together, the abnormal return for issues where net insider selling or no trading occurred are significantly lower ($\alpha=.05$) than that for the group of issues which experienced net buying when the number of shares is used. Net trading appears to have some information content for investors, even before controlling for firm size. This variable will be examined in more detail in the following section.

TABLE VI.A.2

**Abnormal Returns
Group A Data - Net Trading Variable**

Sample	Sample Statistics	Abnormal Returns- Shares			Abnormal Returns- Trades		
		BUY	SELL	NONE	BUY	SELL	NONE
Full Inv. Sample	N	45	67	29	47	61	33
	Mean	-.017	-.029	-.029	-.019	-.027	-.031
	Median	-.018	-.030	-.030	-.019	-.028	-.031
No Inv. Sample	N	31	38	23	26	40	26
	Mean	-.021	-.022	-.028	-.027	-.023	-.027
	Median	-.027	-.027	-.025	-.032	-.027	-.031

**Abnormal Returns
Group B Data- Net Trading Variable**

Sample	Sample Statistics	Abnormal Returns- Shares			Abnormal Returns- Trades		
		BUY	SELL	NONE	BUY	SELL	NONE
Full Inv. Sample	N	22	93	27	20	89	33
	Mean	-.012	-.030	-.029	-.018	-.026	-.028
	Median	-.013	-.027	-.030	-.017	-.027	-.023
No Inv. Sample	N	17	51	24	14	52	26
	Mean	-.023	-.022	-.026	-.029	-.021	-.022
	Median	-.035	-.026	-.026	-.049	-.026	-.026

"Buy" group includes issues for which Buys exceeded Sells in the four month period prior to the announcement.

"Sell" group includes issues for which sells exceeded buys in the four month period prior to announcement.

"None" group includes issues for which no trading occurred in the four month period prior to announcement or where buys just equaled sells.

Group A - shares acquired through exercise of stock options is treated as a buy.

Group B -acquisition of shares through exercise of stock options treated as a sell.

Abnormal returns do not differ significantly across different types of insider trading activity for the group of issues where no investment is involved. This is consistent with the hypotheses presented in this study. The insider trading variable is expected to contain information in cases where information asymmetry exists with respect to firm investment opportunities. To the extent that there is more information asymmetry with respect to investment opportunities for the investment issues, one would expect to observe a stronger effect for this group as opposed to the no-investment group. The net trading variable was constructed using the last grouping of trading data (Group C) which includes only those shares acquired or disposed of through private or open market transactions. For this construction, however, only seven of the 93 issues in the capital expenditure sample and only six of the 48 issues in the possible acquisitions sample had more shares bought than sold. Nine of the 93 capital expenditure issues and 6 of the 48 acquisition issues experienced a larger number of buys than sells. This is perhaps due to the fact that regardless of the method of acquiring shares, almost all of the selling takes place through open market transactions. This makes the use of the net trading variable for this grouping inappropriate.

The second insider trading variable construction (ITV_{buy}) is designed exclusively for this group of trades. The equity issue is placed in the "Buy" group if there are any buys taking place through private purchase or open market transactions in the four month period preceding the equity issue announcement. Otherwise, it is

placed in the "No Buy" group. Results are presented in Table VI.A.3. There is no significant difference in the mean abnormal returns for the buy and no-buy groups for the investment sample. The no-investment sample, produces results suggesting that buying for these firms is associated with a significantly more negative market reaction at announcement than for the no-buy firms. This is not consistent with any of the theoretical models on insider trading, or the empirical evidence for any of the other insider trading variable constructions.

Finally, abnormal returns are examined according to the time series abnormal trading measurements for each of the trading data groups A, B, and C. The first category identifies firms for which insider buying in the four months prior to announcement is higher than that for the same four month period one year earlier. As discussed earlier, the use of this four month period lagged one year adjusts for possible seasonal trading effects. The second construction identifies firms for which insider selling decreased during this same one year span.

Results of these partitions, found in Table VI.A.4 and VI.A.5 indicate that, in general, there is no significant connection between the incidence of "abnormal" buying or selling as measured above and the announcement period market reaction. The ITV_{incbuy} variable is the only one of the twelve abnormal trading constructions that is significant. It is significant only at $\alpha = 10\%$, however, and so does not appear to be as strongly related to announcement effects as the net trading variable. This abnormal trading concept is also extended to examine the reaction of firms experiencing both an increase in insider buying and a decrease in insider selling in

Table VI.A.3
Abnormal Returns
Group C - ITV_{buy}

Sample	Sample Statistics	Abnormal Returns		
		BUY	NOBUY	P-Value
Full Inv. Sample	N	45	96	.40
	Mean	-.025	-.026	
	Median	-.019	-.028	
No Inv. Sample	N	29	63	.04
	Mean	-.035	-.017	
	Median	-.039	-.022	

The "Buy" group includes issues where insiders were buying shares through open market transactions or private purchases during the 4 month period prior to announcement.

The "Nobuy" group includes issues for which there were no open market or private purchases during this period.

TABLE VI.A.4

**Abnormal Returns- ITV_{incbuy}
Abnormal Trading Variable Measuring Increased Buying**

Sample	Sample Stats	Abnormal	Returns-	Shares	Abnormal	Returns-	Trades
		Increased Buying	No Increase	Prob > t	Increased Buying	No Increase	Prob > t
Group A Inv. Sample	N	78	63		64	77	
	Mean	-.021	-.031	.09	-.023	-.027	.53
	Median	-.021	-.030		-.020	-.029	
Group A No Inv. Sample	N	57	35		31	61	
	Mean	-.023	-.024	.39	-.017	-.026	.22
	Median	-.027	-.025		-.029	-.026	
Group B Inv. Sample	N	62	79		52	89	
	Mean	-.024	-.026	.73	-.027	-.024	.53
	Median	-.025	-.026		-.028	-.023	
Group B No Inv. Sample	N	47	45		29	63	
	Mean	-.024	-.022	.41	-.016	-.026	.20
	Median	-.032	-.022		-.029	-.026	
Group C Inv. Sample	N	60	81		57	84	
	Mean	-.023	-.027	.48	-.023	-.027	.54
	Median	-.021	-.028		-.019	-.028	
Group C No Inv. Sample	N	30	62		24	68	
	Mean	-.035	-.017	.04	-.027	-.022	.31
	Median	-.037	-.023		-.031	-.025	

Group A - Shares acquired through exercise of stock options is treated as a buy.

Group B - Shares acquired through exercise of stock options is treated as a sell.

Group C - Only shares purchased and sold through private purchase or in the open market are considered.

TABLE VI.A.5

**Abnormal Returns- $ITV_{decsell}$
Abnormal Trading Variable Measuring Decreased Selling**

Sample	Sample Stats	Abnormal	Returns-	Shares	Abnormal	Returns-	Trades
		Decreased Selling	No Decrease	Prob > t	Decreased Selling	No Decrease	Prob > t
Group A Inv. Sample	N	29	112		30	111	
	Mean	-.021	.026	.41	-.018	-.027	.19
	Median	-.018	.046		-.016	-.030	
Group A No Inv. Sample	N	28	64		21	71	
	Mean	-.022	-.024	.37	-.019	-.024	.28
	Median	-.022	-.030		-.021	-.030	
Group B Inv. Sample	N	34	107		29	112	
	Mean	-.023	-.026	.68	-.021	-.026	.47
	Median	-.026	-.028		-.019	-.028	
Group B No Inv. Sample	N	28	63		24	68	
	Mean	-.018	-.026	.64	-.018	-.025	.22
	Median	-.022	-.032		-.022	-.031	
Group C Inv. Sample	N	28	113		28	113	
	Mean	-.020	-.027	.33	-.018	-.027	.28
	Median	-.016	-.029		-.016	-.030	
Group C No Inv. Sample	N	27	65		21	71	
	Mean	-.021	-.024	.38	-.021	-.024	.35
	Median	-.022	-.031		-.016	-.028	

Group A - Shares acquired through exercise of stock options is treated as a buy.

Group B - Shares acquired through exercise of stock options is treated as a sell.

Group C - Only shares purchased and sold through private purchase or in the open market are considered.

the four month period just prior to announcement as opposed to the four month period one year before. However, of the full investment sample, only 12 of the 141 issues experienced both an increase in buying and a decrease in selling over this time. Since there was no statistical difference in abnormal returns for firms classified according to the ITV_{buy} variable or the "Abnormal" trading measures, the initial cross-sectional regression analysis in Section VI.B will focus on the net trading variable initially utilized. Since insider trading may be more informative for small firms, the significance of these variables increase once size is considered. Therefore, these variables are re-examined in later cross-sectional estimations where firm size is taken into account.

VI.B Cross-Sectional Analysis

To further assess the impact of insider trading on the stock price reaction to equity announcements, several different linear regression models are estimated for announcement period stock returns. The individual firm's abnormal announcement period stock return serves as the dependent variable, while measures of net insider trading activity and other firm specific characteristics serve as independent variables based on the various theoretical considerations reviewed in section IV.C²⁶

²⁶ A white (1980) test for model misspecification is performed for each of these OLS regressions. Heteroskedasticity was not found to be significant in any of these estimations, eliminating the need for weighting procedures.

VI.B.1 Basic Regression Model: Dichotomous Net Trading Variable

Results of the simple OLS estimation of the relationship between net trading and announcement effects for all samples are presented in Table VI.B.1. The coefficient of the insider trading variable exhibits the hypothesized sign for all of the investment samples, and is statistically significant for the full investment sample. As reported in section A, the insider trading variable is not significant for the no-investment group. For group B trades, the results are essentially the same. Although significance increases for some samples, it decreases for others, and coefficients remain, for the most part, unchanged. It does not appear from these initial results that the market views the exercise of stock options as bad news. This will be examined in more detail in the following section.

VI.B.2 Basic Regression Model: Continuous Net Trading Variable

This model affords a closer examination of whether it is the buying or selling, or both, that is driving the results of the previous regression. For this regression model, the BUY variable is predicted to have a positive coefficient, indicating that firms which experience net buying prior to announcement have marginally higher announcement period reactions than firms with no trading. The SELL variable is

TABLE VI.B.1
Cross-sectional Regressions of Abnormal Returns
Insider Trading Variables Net_{shr} and Net_{num}

$$AR_0 = \beta_0 + \beta_1 ITV + e$$

Group A	Intercept	ITV _{netshr}	Adj R ²	Intercept	ITV _{netnum}	Adj R ²
Full Inv. Sample	-.0292 (.0001)	.0109 (.05)	.02	-.0286 (.0001)	.0080 (.11)	.01
Capital Exp. Sample	-.0313 (.0001)	.0106 (.16)	.009	-.0310 (.0001)	.0082 (.28)	.002
Acquisition Sample	-.0250 (.0001)	.0117 (.20)	.013	-.0241 (.0001)	.0091 (.32)	.0001
No Inv. Sample	-.0248 (.0001)	-.0024 (.77)	-.010	-.0218 (.0001)	-.0139 (.13)	.014

Group B	Intercept	ITV _{netshr}	Adj R ²	Intercept	ITV _{netnum}	Adj R ²
Full Inv. Sample	-.0281 (.0001)	-.0155 (.04)	.02	-.0268 (.0001)	.0084 (.29)	.001
Capital Exp. Sample	-.0300 (.0001)	.0170 (.08)	.024	-.0292 (.0001)	.0078 (.45)	-.004
Acquisition Sample	-.0225 (.0001)	.0105 (.35)	-.003	-.0219 (.0001)	.0081 (.50)	-.011
No Inv. Sample	-.0235 (.0001)	-.0122 (.26)	.003	-.0222 (.0002)	.0239 (.04)	-.012

Prob > |t| in parenthesis

AR_0 = Announcement Period Abnormal Return.

ITV_{netshr} = 1 if (num. shares bought) > (num. shares sold), 0 otherwise.

ITV_{netnum} = 1 if (num. buys) > (num. sells), 0 otherwise.

Group A - shares acquired through exercise of stock options is treated as a buy.

Group B - shares acquired through exercise of stock options is treated as a sell.

predicted, likewise, to have a negative coefficient.²⁷

From table VI.B.2.a for the group A trading data, the BUY variable is significant for the full investment sample whether the number of shares or the number of trades is examined. The capital expenditures sample appears to be the driving force behind this result as neither of the variables is significant for the possible acquisition sample. The SELL variable is not significant for any of the samples and in most cases does not exhibit a negative sign. These results indicate that, while the market views net buying as good news, it does not necessarily view net selling as bad news. This is most probably due to portfolio re-balancing and liquidity pressures that naturally lead to a higher level of selling. The presence of these considerations biases the results against finding any significance for the net trading variable. For group B trades, none of the variables were significant, reinforcing the idea that the market does not particularly view the exercise of stock options as a negative signal. If exercise were viewed as bad news, the significance of both the BUY and SELL variable should be higher for Group B than Group A. It is not. This does not occur. It seems that managers would only exercise their option to purchase stock if they intended to sell it. However, many of these options are acquired by managers as a part of their compensation package. Some companies

²⁷ Two other versions of the continuous net insider trading variable were also examined which better reflect the magnitude of insider trading. The net insider trading ratio was treated as one variable, standardized by the total trades, and not standardized by the total trades. Results of these regressions were not significant for either measure, or for either group of trading data. This is probably due to inherent differences in trading patterns for firms of different sizes addressed later in the study.

TABLE VI.B.2.a
OLS Regression of Announcement Day Abnormal Returns
on Continuous Insider Trading Variables

$$AR_0 = \beta_0 + \beta_1 \text{BUY} + \beta_2 \text{SELL} + e$$

Group A	Net _{shr}				Net _{num}			
	Intercept	BUY	SELL	Adj R ²	Intercept	BUY	SELL	Adj R ²
Full Inv.	-.0307 (.0001)	.0165 (.04)	.0038 (.59)	.016	-.0307 (.0001)	.0171 (.04)	.0048 (0.52)	-.006
Capital Exp.	-.0343 (.0001)	.0186 (.11)	.0065 (.46)	.006	-.0366 (.0001)	.0263 (.02)	.0128 (.16)	.038
Poss. Acquis	-.0243 (.002)	.0119 (.32)	.0003 (.97)	-.016	-.0160 (.04)	-.0023 (.85)	-.0145 (.27)	-.01
No Inv.	-.0282 (.0007)	-.0080 (.53)	.0085 (.51)	-.02	-.0262 (.0005)	.0048 (.72)	.0066 (.62)	-.019
Group B	Net _{shr}				Net _{num}			
	Intercept	BUY	SELL	Adj R ²	Intercept	BUY	SELL	Adj R ²
Full Inv.	-.0276 (.0001)	.0143 (.19)	.0007 (.91)	.001	-.0279 (.0001)	.0120 (.28)	.0022 (.74)	-.006
Capital Exp.	-.0273 (.0004)	.0074 (.64)	.0024 (.78)	-.016	-.0343 (.0001)	.0201 (.21)	.0084 (.33)	-.002
Poss. Acquis.	-.0217 (.002)	.0204 (.17)	.0071 (.51)	-.01	-.0167 (.03)	-.0004 (.97)	-.0082 (.47)	-.03
No Inv.	-.0276 (.001)	.0089 (.56)	.0056 (.62)	-.02	-.0285 (.0004)	.0061 (.70)	.0102 (.39)	-.014

$$\text{BUY} = \frac{(\text{Buys} - \text{Sells})}{(\text{buys} + \text{sells})} \text{ if } (\text{Buys} - \text{sells}) > 0, 0 \text{ otherwise.}$$

$$\text{SELL} = -1 \left[\frac{(\text{Buys} - \text{Sells})}{(\text{Buys} + \text{Sells})} \right] \text{ if } (\text{Buys} - \text{Sells}) < 0, 0 \text{ otherwise.}$$

Group A - Shares acquired through exercise of stock options is treated as a buy.
 Group B - Shares acquired through exercise of stock options is treated as a sell.
 Prob > |t| in parenthesis

may have limits on the number of options an executive may hold at one time, so in order to acquire more, they may have to exercise options they already hold. Also, the options may expire, forcing managers to exercise if they want to acquire the shares. Therefore, managers may be exercising their stock options because they want to acquire more shares or more options, not because they intend to sell in the near future. From this point forward, only results for Group A trades will be reported.

VI.B.3 Comprehensive Model

The basic regression model is extended in this section to include additional firm specific variables having a theoretical and empirical basis for explaining announcement period returns. Results for the "number of shares traded" and "number of trades" constructions for each sample, are shown in Tables VI.B.3.a and VI.B.3.b. The significance of the insider trading variable is not dampened by the addition of these other variables and the estimated value of the coefficient of the insider trading variable remains the same.

The prior issue variable is negative and insignificant. This does not support the notion that the market is expecting the issue (Masulis & Korwar [1986]) or that monitoring problems are reduced (Easterbrook [1984]). The earnings announcement variable is statistically significant in only one of the estimated models, for the no-investment group. There is no obvious reason why this variable should be more important for this group. According to Korajczyk, Lucas, and McDonald [1991], this effect should be more dramatic for issues with a greater degree of information

TABLE VI.B.3.a

Comprehensive Model, Number of Shares Traded

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + e$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) Pr > T	-.0239 (.001)	-.0319 (.0007)	-.0016 (.90)	-.0292 (.008)
ITV _{NETSHR} (β_1) Pr > T	.0111 (.05)	.0103 (.20)	.0146 (.15)	-.0035 (.69)
PRIOR (β_2) Pr > T	-.0030 (.32)	-.0023 (.54)	-.0063 (.28)	-.0034 (.55)
DTEA (β_3) Pr > T	-.00001 (.88)	.00005 (.66)	-.0002 (.25)	-.0001 (.08)
RELSIZE (β_4) Pr > T	-.0061 (.73)	.0084 (.71)	-.0325 (.36)	-.0164 (.81)
SEC (β_5) Pr > T	-.0475 (.06)	-.0539 (.09)	-.0176 (.69)	.0445 (.39)
BD (β_6) Pr > T	-.0101 (.63)	-.0128 (.59)	-.0698 (.33)	-.0243 (.32)
MRUN (β_7) Pr > T	.0386 (.36)	.0286 (.60)	.0890 (.19)	-.1069 (.10)
FRUN (β_8) Pr > T	-.0098 (.45)	-.0023 (.89)	-.0365 (.12)	.0364 (.03)
ADJ R ²	.017	-.014	-.001	.04
F	1.30	.84	.99	1.47

β_1 = ITV, ITV_{netshr}

β_2 = PIV, Prior Issue Variable

β_3 = EA, Days to Last Earn. Ann.

β_4 = RIS, Relative Issue Size

β_5 = SO, Percentage of Issue that is Secondary

β_6 = BD, Level of Bank Debt

β_7 = MRUN, Market Run-up

β_8 = FRUN, Firm Run-up

Group A - shares acquired through exercise of stock options is treated as a buy.
Prob > |t| in parenthesis

TABLE VI.B.3.b.
Comprehensive Model, Number of Trades

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + e$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.0234 (.001)	-.0313 (.0009)	-.0013 (.92)	-.0243 (.03)
ITV _{NETNUM} (β_1) P > T	.0100 (.08)	.0087 (.27)	.0167 (.10)	-.0131 (.16)
PRIOR (β_2) P > T	-.0026 (.38)	-.0019 (.62)	-.0064 (.27)	-.0035 (.53)
DTEA (β_3) P > T	-.00001 (.88)	.00006 (.58)	-.0002 (.14)	.0001 (.13)
RELSIZE (β_4) P > T	-.0056 (.75)	.0078 (.73)	-.0298 (.39)	-.0104 (.70)
SEC (β_5) P > T	-.0475 (.06)	-.0549 (.09)	-.0143 (.74)	.0501 (.33)
BD (β_6) P > T	-.0144 (.50)	-.0180 (.45)	-.0761 (.28)	-.0211 (.38)
MRUN (β_7) P > T	.0461 (.25)	.0343 (.53)	.1199 (.09)	-.1178 (.06)
FRUN (β_8) P > T	-.0138 (.29)	-.0060 (.72)	-.0435 (.07)	.0351 (.04)
ADJ R ²	.01	-.019	.016	.06
F	1.19	.78	1.09	1.74

β_1 = ITV, ITV_{netnum}

β_2 = PIV, Prior Issue Variable

β_3 = EA, Days to Last Earn. Ann.

β_4 = RIS, Relative Issue Size

β_5 = SEC, Percentage of Issue that is Secondary

β_6 = BD, Level of Bank Debt

β_7 = MRUN, Market Run-up

β_8 = FRUN, Firm Run-up

Prob > |t| in parenthesis

Group A - shares acquired through exercise of stock options is treated as a buy.

asymmetry and adverse selection costs. Neither is the sign on this coefficient consistent across groups. In general, the results for these samples are not consistent with the arguments set forth by Korajczyk, Lucas, and McDonald or their empirical results. The coefficient estimated for the relative size variable, though negative for most samples as predicted, is not statistically significant. This is not surprising since other studies have found relative issue size to be insignificant in explaining announcement period returns.²⁸

The SO variable, which represents the proportion of the issue which is secondary, is significant at $\alpha = 10\%$. The sign on this variable is consistently negative, suggesting that secondary sales send a negative signal to the market. This variable is only important for investment samples, perhaps due to the presence of more information asymmetry with respect to investments surrounding these issues.

The coefficient on the bank debt variable, although not significant in any of the samples, is consistently negative. This measure indicates the level of short term renewable credit. To the extent that there is increased monitoring and evaluation by these short term lenders, information asymmetry is reduced and the existence of favorable private information is certified by the granting of this bank and trade credit. This suggests that the larger the level of bank debt, the less negative the announcement return should be. One would expect to observe (as did Slovin, Sushka, and Hudson) a positive coefficient on the bank debt variable. However, the

²⁸ See Barclay and Litzenberger [1988] for example.

estimated coefficients of the bank debt variable are negative in all of the samples in this study. This may be due to the market's realization that firms which have more bank debt have been forced to turn to capital markets for financing, because with already high levels of bank debt, short-term creditors have turned them down. Although one cannot draw any strong conclusions about the negative sign on the coefficient, it is evident that for these issues a higher level of bank debt is not associated with a less negative announcement. Therefore, additional monitoring that comes from carrying high levels of short term credit do not appear to make a difference in market reaction for these NYSE-AMEX firms.

The market run-up variable, MRUN, exhibits the predicted sign across the investment samples, although it is not significant. The market run-up for the no-investment sample is significant at $\alpha=.10$, but the sign is negative. This variable is predicted to have a positive sign because when economic times are good, there is less information asymmetry about assets in place and people perceive firm investment opportunities to be better. Perhaps the market reacts negatively to no-investment issues because in good times investors are expecting the funds to be used for capital expenditures.

The firm run-up variable, FRUN, generates similar conflicting results between investment and no-investment samples. In the presence of information asymmetry about assets in place and investments, one would expect a negative coefficient due to adverse selection costs (Lucas and McDonald [1990]), or surprise at an issue following a leverage decreasing price run-up (Masulis and Korwar [1986]). This

relationship appears to be stronger for the possible acquisition sample than the capital expenditure sample, though the difference in firm run-up for the two groups is not statistically significant. The abnormal returns cumulated over the 100 days prior to announcement appear larger for the acquisition sample as well. This difference is not statistically significant either. The variable may be more important for the acquisition group because higher levels of information asymmetry may be involved for possible acquisitions than for capital expenditures.

The Myers and Majluf [1984] adverse selection theory depends upon information asymmetry with respect to assets in place and investment opportunities. For firms not raising funds for new investment, there may be relatively little information asymmetry with respect to investment opportunities. This may be why this same negative relationship is not observed for the no-investment group. It would not explain, however, why the run-up variable for the no-investment firms is significant and positive. The run-up in abnormal returns does not differ significantly between investment and no-investment firms, so this result is not due to an inherent difference in these run-up patterns. Although these observable differences in run-up variables are interesting, the explanatory power of all of these regressions is quite low. As such, these relationships are not contributing much to our knowledge of market reaction to equity announcements.

For each of these estimations, collinearity diagnostics were performed which indicated no significant multicollinearity problems. The largest variance inflation factor in all of the comprehensive model regressions reviewed in this section was

only 1.59. The variance proportions confirm some connection between the two run-up variables, so these were combined into one variable. The transformation, (Market Run-up minus Firm Run-up) examines whether the firm's price pattern relative to the market is important. The results (reported in Table A.1 of the Appendix) show that this variable does not explain returns as well as the separate run-up variables.²⁹ Although each of the variables included in this regression have a theoretical basis for being included in this model, some of them are not adding to the explanation of announcement period market reaction. This may be due to problems with constructing these variables to accurately reflect its theoretical underpinnings. For each sample, the full regression model is estimated omitting each of the independent variables. The results are reported in Tables 2-5 in the Appendix. If dropping a particular variable does not change the value or significance of other coefficients, that variable is removed from the model. Results for the basic, full, and reduced models are presented in Tables VI.B.3.c and VI.B.3.d. Comparison across models for each sample shows that, with the exception of the no-investment sample, adjusted R²s do not improve much with the addition of the firm specific control variables to the basic model. None of these additional variables consistently contributes to the explanation of returns across all samples. Although explanatory power of the model improves in the reduced models, it remains low. To determine if firm size has an impact on the effectiveness of the insider trading variable, the comprehensive

²⁹ The results presented in Table A.1 of the Appendix are based on the number of shares traded. The number of trades variable, exhibiting essentially the same results, is not reported.

TABLE VI.B.3.c
Model Comparison, Number of Shares Traded

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + e$$

Full Investment Sample

No-Investment Sample

Par.	Basic Model	Full Model	Reduced Model	Basic Model	Full Model	Reduced Model
(β_0) T	-.0292 (.0001)	-.0239 (.001)	-.0272 (.0001)	-.0248 (.0001)	-.0292 (.008)	-.0305 (.0005)
(β_1) T	.0109 (.05)	.0111 (.05)	.0100 (.07)	-.0024 (.77)	-.0035 (.69)	-.0031 (.72)
(β_2) T		-.0030 (.32)	_____		-.0034 (.55)	_____
(β_3) T		-.00001 (.73)	_____		.0001 (.08)	.0001 (.09)
(β_4) T		-.0061 (.73)	_____		-.0064 (.81)	_____
(β_5) T		-.0475 (.06)	-.0462 (.06)		.0445 (.39)	_____
(β_6) T		-.0101 (.63)	_____		-.0243 (.32)	-.0248 (.29)
(β_7) T		.0386 (.36)	_____		-.1069 (.10)	-.1104 (.07)
(β_8) T		-.0098 (.45)	_____		.0364 (.03)	.0358 (.02)
Adj R ²	.025	.017	.03	-.010	.04	.06
F	4.65	1.30	3.6	.07	1.47	2.17

β_1 = ITV, ITV_{netshr}

β_2 = PIV, Prior Issue Variable

β_3 = EA, Days to Last Earn. Ann.

β_4 = RIS, Relative Issue Size

β_5 = SO, Percentage of Issue that is Secondary

β_6 = BD, Level of Bank Debt

β_7 = MRUN, Market Run-up

β_8 = FRUN, Firm Run-up

Prob > |t| in parenthesis

Group A - shares acquired through exercise of stock options is treated as a buy.

TABLE VI.B.3.d
Model Comparison, Number of Shares Traded

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + e$$

Capital Expenditure Sample

Acquisition Sample

Par.	Basic Model	Full Model	Reduced Model	Basic Model	Full Model	Reduced Model
(β_0) T	-.0313 (.0001)	-.0319 (.0007)	-.0337 (.0001)	-.0250 (.0001)	-.0016 (.90)	-.0098 (.30)
(β_1) T	.0106 (.16)	.0103 (.20)	.0104 (.19)	.0117 (.20)	.0146 (.15)	.0175 (.07)
(β_2) T		-.0023 (.54)	————		-.0063 (.28)	-.0069 (.23)
(β_3) T		.00005 (.66)	.00003 (.72)		-.0002 (.25)	————
(β_4) T		.0084 (.71)	.0113 (.60)		-.0325 (.36)	-.0398 (.26)
(β_5) T		-.0539 (.09)	-.0531 (.09)		-.0176 (.69)	————
(β_6) T		-.0128 (.59)	-.1233 (.60)		-.0698 (.33)	-.0726 (.28)
(β_7) T		.0286 (.60)	.0250 (.57)		.0890 (.19)	.0802 (.22)
(β_8) T		-.0023 (.89)	————		-.0365 (.12)	-.0307 (.17)
Adj R ²	.009	-.014	.005	.013	-.001	.01
F	1.91	.84	1.08	1.66	.99	1.09

β_1 = ITV, ITV_{netshr}

β_2 = PIV, Prior Issue Variable

β_3 = EA, Days to Last Earn. Ann.

β_4 = RIS, Relative Issue Size

β_5 = SO, Percentage of Issue that is Secondary

β_6 = BD, Level of Bank Debt

β_7 = MRUN, Market Run-up

β_8 = FRUN, Firm Run-up

Prob > |t| in parenthesis

Group A - shares acquired through exercise of stock options is treated as a buy.

regression is estimated for each sample and each construction of the insider trading variable as described in Chapter IV. Results indicate that for all size measures and both constructions of the insider trading variable, insider trading is more informative for smaller firms than larger firms. This result only shows up for the investment samples, consistent with the hypothesis that insider trades provide information about investment opportunities. Abnormal returns do not differ significantly across large and small firm groups, so this result does not stem from inherent differences in announcement reaction for large versus small firms. Results of this regression are reported in Table VI.B.3.e for the "number of shares" construction of the net trading variable when adjusted for asset size. The results of other size related regressions are reported in tables A.6-A.10 of the Appendix.

The other constructions of the insider trading variable were examined for firm size effects as well. The only other variable that exhibits increased significance is the ITV_{incbuy} abnormal trading variable. The significance level drops to $\alpha=2\%$ for this variable for small firm size, but only when measured by asset size. The effect is not found for the other two size measures. This variable is not as consistent as the net trading variables examined earlier, so it seems that the net trading measures better capture information effects provided by insider trades around equity issues.

VI.C Insider Trading, Announcement Returns, and Run-up

Although the coefficients of the insider trading variable do exhibit significance for the investment samples, the results are not strong. This section follows a

TABLE VI.B.3.e

Comprehensive Model, Number of Shares Traded, Control for Asset Size

$$AR_0 = \beta_0 + \beta_1 ITVSMALL + \beta_2 ITVLARGE + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8 MRUN + \beta_9 FRUN + e$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.0234 (.001)	-.0310 (.001)	.0026 (.84)	-.0294 (.01)
ITVS _{ASSET} (β_1) P > T	.0196 (.01)	.0184 (.08)	.0302 (.04)	-.0041 (.75)
ITVL _{ASSET} (β_2) P > T	.0048 (.53)	.0007 (.94)	.0047 (.69)	-.0030 (.78)
PRIOR (β_3) P > T	-.0022 (.47)	-.0014 (.71)	-.0046 (.43)	-.0034 (.55)
DTEA β_4 P > T	.00001 (.97)	.00001 (.49)	-.0002 (.21)	.0001 (.08)
RELSIZE (β_5) P > T	-.0095 (.60)	.0046 (.83)	-.0519 (.17)	-.0057 (.84)
SEC (β_6) P > T	-.0511 (.04)	-.0569 (.07)	-.0263 (.55)	.0452 (.40)
BD (β_7) P > T	-.0101 (.63)	-.0151 (.53)	-.0748 (.29)	-.0240 (.34)
MRUN (β_8) P > T	.0436 (.28)	.0264 (.63)	.1143 (.10)	-.1073 (.10)
FRUN (β_9) P > T	-.0146 (.27)	-.0061 (.72)	-.0449 (.06)	.0364 (.03)
R ²	.02	-.008	.02	.02
F	1.41	.92	1.14	1.29

β_1 = ITVS, ITVSMALL_{ASSET}

β_2 = ITVL, ITVLARGE_{ASSET}

β_3 = PIV, Prior Issue

β_4 = DTEA, Days to Last Earnings Announcement

β_5 = RIS, Relative Issue Size

Prob > |t| in parenthesis

β_6 = SO, Percentage Secondary

β_7 = BD, Level of Bank Debt

β_8 = MRUN, Market Run-up Runup

β_9 = FRUN, Firm Runup

different approach, separating the issues according to announcement period reaction and firm run-up to examine whether insider trading activity differs significantly across these groups. According to the hypothesis examined in this study, issues with the most positive announcement period returns should exhibit a greater instance of net buying than other issues.

For the investment sample, the half of the investment sample with the least negative returns has a greater instance of insider buying than the half with the most negative returns. For instance, the ITV_{netshr} variable indicates net buying for 43% of the firms in the highest return group, while for the lowest return group, net buying only occurred in 22% of the issues. The median two day cumulative return is -2.7%, so many of the firms in the highest return group still experienced very negative returns. Sixteen percent of the firms in this sample had positive returns. Of the firms with positive returns, only 39% experienced insider buying prior to announcement. The comprehensive regression model is estimated for highest and lowest return groups. The insider trading variables were not significant in either estimation. Thus, the link observed between insider trading and announcement period returns appears weak.

Abnormal returns are next examined with respect to the issuer's market to book ratio and insider trading activity. There is no significant difference in abnormal returns for issuers with high versus low market-to-book ratios. This is not surprising since market-to-book as a reflection of the market's perception of value, not necessarily inside information. When measuring both factors, however, the

announcement period returns are not consistent with the signaling hypothesis. Returns are not less negative for issues by high market/book firms with insider buying, as predicted by the signaling models of John and Mishra [1990] and John and Lang [1991], for example. Announcement returns are not significantly lower for low market/book firms with insider selling either. The results of this analysis do not support the signaling hypothesis tested in this paper.

Insider trading may be more directly tied to firm run-up patterns which, in turn, have an impact on announcement effects. To determine whether the observed relationship between insider trading and announcement is driven by run-up patterns, the samples are divided in half according to the run-up in firm returns during the 75 trading days prior to the announcement. The significance of the insider trading variable does not differ significantly across large and small run-up groups for either sample. There is not a significant difference in the number or percent of issues with net buying across small and large run-up groups for either sample. Therefore, the observed relationship does not appear to be driven by the run-up in firm returns.

VI.D Firm Performance Measures

If insider trading activity is a reflection investment opportunities, this information should eventually be revealed and reflected in the firm's earnings performance in the period following the announcement. Firm stock performance is measured over the 40 day period following the equity announcement for each firm to examine whether post announcement stock price movements are related to insider

activity prior to the announcement. Standard OLS regressions estimated with the 40 day abnormal return run-up as the dependent variable and insider trading as the independent variable, do not suggest that there is a correlation between the stock performance immediately following the announcement and the insider trading activity occurring before. Across all of the insider trading variable constructions, this relationship is not significant.

The same is true for post estimation period firm returns using longer price performance measures. The beta excess returns for each firm cumulated over day +1 to +250 relative to the event date measure year one price performance, and the market model abnormal returns cumulated over the 250 trading days following the estimation period measure year two price performance. For all samples, for all insider trading variables, this relationship is not significant. Insider trading is significantly related to stock price reaction at the time of the equity announcement, but is not significantly related to post-announcement price movements. This indicates that information revealed through insider trading activity is acted upon at the time of the corporate announcement, as suggested by the joint signal hypothesis.

The standardized earnings change for the year following the announcement is calculated for each firm. If insider trading reflects marginal investment opportunities, this should show up in post-announcement earnings. This does not appear to be the case. For the investment sample, 44 percent of the firms with earnings decline following announcement experienced net buying prior to announcement. Of the firms experiencing subsequent earnings increases, only 35%

exhibited net buying in the pre-announcement period. For the no-investment firms, issues followed by earnings declines experienced more insider buying prior to announcement than those followed by earnings increases. OLS regression analysis indicates no significant correlation between the insider activity prior to announcement and earnings performance after announcement. The investment sample exhibits a lower percentage of issues with subsequent earnings declines (34%) than the no-investment sample (50%). However, the difference in mean earnings change across investment and no-investment firms is not significant. The relationship between relative issues size and post-announcement earnings performance is not significant for either sample. Earnings and stock price performance measures are also examined for the firms in each small size category since insider trading seems to be more important for this group. Even small firms' managers do not seem to be able to accurately predict immediate post-announcement earnings performance. There is no significant relationship between the direction of insider trading and firm performance even for these smaller firms.

The analysis of firm earnings measures as well as the market-to-book analysis suggest that the direction and magnitude of insider trading may not accurately reflect the marginal investment profitability of the firm. Insider trading does seem to be weakly linked to the announcement period reaction of the firm, however. This means that either the market thinks it's getting accurate information from the trades, and acts on the announcement accordingly, or the observed insider trading patterns are characteristic of certain firm types, not identified in this analysis.

CHAPTER VII

Results for Debt Issues

VII.A. Abnormal Returns

Announcement period abnormal returns for firms issuing straight debt are reported in Table VII.A.1. These results are consistent with previous studies which have documented insignificant market reaction to debt issues across different uses of proceeds.³⁰ Although there appears to be a different reaction for the capital expenditure and possible acquisition samples, it is not significant. Announcement day abnormal returns were compared, as were cumulative returns for days -1 and 0, days 0 and +1, and days -1,0, and +1. There is no significant difference in any of these return measures across samples. While the average abnormal return across firms is not significantly different from zero, the lowest day (-1,0,+1) cumulative return for the entire group of issues is a negative twelve percent, and the highest fourteen percent. If insider trading acts as a signal of a firm's investment opportunities, firms in which insiders are buying prior to issue may exhibit significantly higher returns

³⁰ See Eckbo [1986], Hansen and Crutchley [1991].

TABLE VII.A.1

Announcement Period Abnormal Returns for Each Sample

SAMPLE	N	DAY	AR (Mkt.Model)	T
Full Sample	214	-1 0 +1	.0013 -.0003 -.0005	1.02 0.25 0.43
Capital Expenditures	134	-1 0 +1	.0022 -.0013 -.0012	1.39 .83 .74
Possible Acquisitions	80	-1 0 +1	-.0003 .0013 .0005	.13 .58 .22
No Investment	383	-1 0 +1	-.0006 -.0005 .0002	.67 .52 .20

Capital Expenditures Sample: Contains those issues listing investment in capital expenditures; investment in capital expenditures and working capital; capital expenditures and general corporate purposes; or capital expenditures, general corporate purposes and working capital.

Acquisition Sample: Includes the issues that mention acquisitions as one of the use of proceeds, but no debt repayment.

Full Investment Sample: Contains all of the issues in the capital expenditures and acquisitions samples.

No Investment Sample: Contains a group of issues with no mention of investment.

than those for which insiders are selling. Sample statistics for firms experiencing net buying, net selling, and no trading are reported in Table VII.A.2 for group A and B trading types. The samples are examined according to announcement day 0 return, and cumulative returns for day (-1,0), (0,+1), and (-1,0,+1) relative to the event day. Only results for the day (-1,0,+1) cumulative return are reported. Sample statistics for the net trading variable do not exhibit the clear pattern of more negative returns for net selling than net buying that existed for the investment groups in the equity section.

For each sample, mean abnormal returns do not differ significantly ($\alpha = 5\%$) across buy, sell, and no-trade groups for data A or B, or for any measure of abnormal return. The exercise of stock options does not appear to be viewed by the market as bad news. Insider trading in general does not appear to be an informative event for debt issues. Management holdings increase for passive managers and managers buying shares in their firm. However, issues where management holdings increase do not exhibit more positive announcement returns than issues where management holdings decreased, as measured by net trading. This is not consistent with Jensen and Meckling [1976] or Leland and Pyle [1977], or the hypotheses presented in this paper. Since it is unclear how the market views the no trading cases all tests subsequently presented are performed for both the case where no trading is treated as a buy and where no trading is treated like a sell.

The results for net trading measures may be obscured by compensation plans or liquidity considerations. The ITV_{buy} variable avoids some of these problems.

TABLE VII.A.2

**Cumulative Abnormal Returns, Day (-1,0,+1)
Group A - Net Trading**

Sample	Sample Statistics	Abnormal Returns- Shares			Abnormal Returns- Trades		
		BUY	SELL	NONE	BUY	SELL	NONE
Full Inv. Sample	N	80	114	20	86	99	29
	Mean	.0001	.0001	-.002	.001	-.0005	-.0018
	Median	.003	.001	.0003	.004	-.003	.002
No Inv. Sample	N	160	173	50	134	183	66
	Mean	-.002	.001	-.004	-.002	.0004	-.001
	Median	-.002	.001	-.001	-.004	.001	.002

**Cumulative Abnormal Returns, Day (-1,0,+1)
Group B - Net Trading**

Sample	Sample Statistics	Abnormal Returns- Shares			Abnormal Returns- Trades		
		BUY	SELL	NONE	BUY	SELL	NONE
Full Inv. Sample	N	40	152	22	47	138	29
	Mean	.0002	.0003	-.003	.0006	.0004	-.003
	Median	.0009	.0025	-.002	.002	.002	-.001
No Inv. Sample	N	82	251	50	71	250	62
	Mean	-.0005	-.0001	-.004	.001	-.0003	-.005
	Median	.0003	.0002	-.001	-.0002	.001	-.001

"Buy" group includes issues for which Buys exceeded Sells in the four month period prior to the announcement.

"Sell" group includes issues for which sells exceeded buys in the four month period prior to announcement.

"None" group includes issues for which no trading occurred in the four month period prior to announcement or where buys just equal sells.

Group A - shares acquired through exercise of stock options is treated as a buy.

Group B - shares acquired through exercise of stock options is treated as a sell.

Sample statistics for firms experiencing open market or private purchases prior to issue are reported in Table VII.A.3. Results for this variable are much the same as the net trading variable. For the capital expenditure issues, however, the day 0 return, and the day (-1,0) and (-1,0,+1) cumulative returns are significantly lower for firms with no insider buying activity and firms where insider buying took place. This does not hold for the acquisition sample, that exhibits a negative reaction on average to issues where firms insiders are buying. The full investment and no-investment samples do not exhibit the vast differences observed in the equity section. This is consistent with information asymmetry models suggesting that costs associated with adverse selection and misuse of free cash flow are lower for debt issues than for equity. It becomes more difficult to explain the difference in the significance of the buy variable across the two types of investment. This could be due to differences in the types of firms that grow through acquisitions as opposed to internal growth. This is examined in more detail later in the chapter. Although only the 'shares traded' construction is reported, the 'number of trades' results are virtually identical.

VII.B Cross-Sectional Regression

In this section OLS regression models are estimated for each sample for each

Table VII.A.3
Abnormal Returns
Group C - ITV_{buy}

Sample	Sample Statistics	Abnormal Returns		
		BUY	NOBUY	P-Value
Full Inv. Sample	N	98	116	.25
	Mean	.001	-.001	
	Median	.003	-.001	
Capital Exp. Sample	N	62	72	.07
	Mean	.003	-.003	
	Median	.004	-.002	
Poss. Acquis. Sample	N	36	44	.29
	Mean	-.001	-.002	
	Median	-.013	-.0001	
No Inv. Sample	N	170	214	.36
	Mean	-.001	-.0003	
	Median	-.002	.0005	

The "Buy" group includes issues where insiders were buying shares through open market transactions or private purchases during the four month period prior to announcement.

The "Nobuy" group includes issues for which there were no open market or private purchases during the four month period prior to announcement.

of the measures of announcement day return and each construction of the insider trading variable.³¹

VII.B.1 Basic and Comprehensive Models

The basic model is estimated using day 0 abnormal returns and cumulative returns over day (-1,0), (0,+1), and (-1,0,+1) as dependent variables. The various constructions of the insider trading variable are predicted to exhibit positive coefficients.

A prior issue variable, PIV, is used to identify which firms were in the market within the past 12 months with a debt issue. This alternative construction was used for the debt issues because with the advent of shelf debt and the lower flotation costs of debt, most of these issues had been preceded by another debt issue within the last five years, while a few of these firms were continually in the debt market issuing some type of debt. It is these frequent issuers for which the market should not find another debt issue surprising.

The number of days to the last earnings announcement was included to account for timing concerns with respect to information asymmetry surrounding assets in place. Koraczyk, Lucas, and McDonald [1991] find an inverse relationship between the length of time between an equity issue and the firm's last earnings

³¹ Each model is examined for evidence of violation of first and second moment specification to determine if weighted least squares analysis is necessary. None were found to have significant violations of model assumptions.

announcement and the market reaction to the issue. This, they postulate, is due to lower information asymmetry about assets in place immediately following earnings announcement. To the extent that information asymmetry about earnings is a factor in debt issue announcements, (as suggested by Miller and Rock [1986]), this variable should be important for debt issues as well.

A measure of relative issue size, RIS, is computed as the dollar volume of the issue relative to the total assets of the firm. Under conditions of information asymmetry, larger issues should be met with a more unfavorable reaction due to adverse selection or free cash flow costs, or earnings concerns.³²

Slovin, Sushka, and Hudson [1991] find that the level of bank debt, is inversely related to announcement period effects of equity issues. This they attribute to the benefits of monitoring provided by these creditors. The results for equity issues in the previous chapter suggest otherwise. A decision to issue long-term debt for a firm with high levels of short term debt may be viewed favorably by the market as simply a cost reducing refunding decision.

Results for the basic regression model and comprehensive model are presented in Table VII.B.1.a and Table VII.B.1.b for the number of shares construction of the net insider trading variable. Results of all regressions indicate

³² See Myers Majluf [1977], Jensen [1986], Miller and Rock [1986].

TABLE VII.B.1.a
Group A, Number of Shares Traded
Basic Model:

$$AR_0 = \beta_0 + \beta_1 ITV + e$$

Comprehensive Model:

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 BD + e$$

	Capital	Expenditures	Possible	Acquisitions
Variable, Parameter	Basic Model	Comp Model	Basic Model	Comp Model
INTCPT. (β_0) Pr > T	-.0014 (.69)	-.0063 (.30)	.0042 (.50)	-.0206 (.06)
ITV _{NETSHR} (β_1) Pr > T	.0011 (.83)	-.0009 (.86)	-.0022 (.79)	-.0034 (.70)
PRIOR (β_2) Pr > T	————	-.0042 (.54)	————	-.0178 (.11)
DTEA (β_3) Pr > T	————	.00009 (.20)	————	-.0001 (.47)
RELSIZE (β_4) Pr > T	————	.1273 (.66)	————	-.4409 (.22)
BD (β_5) Pr > T	————	.0429 (.07)	————	-.0071 (.47)
ADJ R ²	-.009	.01	-.01	-.01
F	.04	1.24	.07	.84

β_1 = ITV, ITV_{netshr}
 β_2 = PIV, Prior Issue Variable
 β_3 = EA, Days to Last Earn. Ann.
 β_4 = RIS, Relative Issue Size
 β_5 = BD, Level of Bank Debt

Group A - shares acquired through exercise of stock options is treated as a buy.

Prob > |t| in parenthesis

TABLE VII.B.13.b
Group A, Number of Shares Traded
Basic Model:

$$AR_0 = \beta_0 + \beta_1 ITV + e$$

Comprehensive Model:

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + e$$

	Full Investment		No Investment	
Variable, Parameter	Basic Model	Comp Model	Basic Model	Comp Model
INTCPT. (β_0) Pr > T	.0006 (.84)	.0042 (.44)	.0029 (.27)	.0009 (.80)
ITV _{NETSHR} (β_1) Pr > T	.00004 (.99)	-.0018 (.71)	-.0045 (.20)	-.0042 (.25)
PRIOR (β_2) Pr > T	—	-.0084 (.10)	—	.0057 (.15)
DTEA (β_3) Pr > T	—	.00004 (.53)	—	-.0001 (.85)
RELSIZE (β_4) Pr > T	—	-.1368 (.53)	—	.1429 (.17)
BD (β_5) Pr > T	—	-.0026 (.74)	—	-.0089 (.13)
ADJ R ²	-.005	-.01	.002	.008
F	.65	.65	1.61	1.51

β_1 = ITV, ITV_{netshr}
 β_2 = PIV, Prior Issue Variable
 β_3 = EA, Days to Last Earn. Ann.
 β_4 = RIS, Relative Issue Size
 β_5 = BD, Level of Bank Debt

Group A - shares acquired through exercise of stock options is treated as a buy.

Prob > |t| in parenthesis

that insider trading is not, for the most part, an important variable in explaining announcement period returns for debt issues. The net insider trading variables are not significant in any of the estimated models, regardless of the trading data used (A or B), the construction (shares or trades) or the event period examined. The variables do not exhibit consistent signs across even the investment samples, and the sign of the coefficients change when control variables are added to the model. Even the ITV_{buy} variable, significant at $\alpha=10\%$ for the capital expenditure sample, becomes insignificant when the additional variables are added to the model. The abnormal trading measures, likewise, are not significant in explaining announcement period returns. The four variables, measuring increases in shares bought, increases in the number of purchases, decreases in shares sold, and decreases in the number of sells, were examined for each of the announcement period return measures.

None of the other firm specific variables are consistently significant across all samples. The bank debt variable is the only variable that is significant for group A, B, and C trades, and this is only for the capital expenditure sample. The fact that it is not significant for the other samples is not consistent with the monitoring hypothesis. If monitoring is important when a firm is using the funds for capital expenditures, why is it not important when a firm might use the money for acquisitions, an area that has been linked to significant agency costs for shareholders? Were this included, the variable could be significant in all of the samples.

VII.B.3 Basic Regression Model: Continuous Net Trading Variable

The results for the continuous regression model for the net trading variables are also insignificant for all samples, across all measures of announcement period returns, for both constructions of the net trading variables. This indicates that the insignificant results obtained in section VII.B.1. are not due to the insignificance of one trading activity clouding the effects of the other. Recall for the equity sample, the buy variable was significant for the investment samples, but not the sell variable, leading to dampened results in the simple OLS model specification. That does not seem to be the case here. The insider trading does not seem to be important in explaining announcement returns for debt issues.

VII.C Firm Characteristics

The performance of independent variables was shown to differ in some cases for different firm size measures for the equity issues. To determine whether firm characteristics have an impact on the significance of the trading variables, each sample is examined according to the insider trading variables split according to asset size, the market value of firm equity, and dividend size as described in Chapter IV. Coefficients on the number of shares construction of the insider trading variable and the abnormal trading variables are not significant for any sample, any size division. The number of trades construction of the net trading variable exhibits results similar to that found for the equity issues. This variable is positive and significant for the smaller firms. This is particularly pronounced when market value of equity is the

size variable utilized, and more important for the capital expenditure sample than the acquisitions sample. For the capital expenditure sample, the ITV_{netshr} variable is negative and significant at $\alpha=.01$. This is similar to the results observed for the capital expenditure sample of equity issues when split by asset size. Inconsistent with these results, the open market buying variable is significant and positive for the large asset group of capital expenditure bond issues.

VII.D Insider Trading, Announcement Returns, and Firm Performance

The above results suggest that insider trading is not an important signal of value for most issues. For the entire investment sample, approximately 54% of the issues experienced positive returns upon announcement of a debt issue. Of these positive return issues, however, less than half experienced net insider buying prior to announcement (38%). Of the 100 investment issues associated with negative returns 35% experienced insider buying prior to announcement. This pattern is the same for the no-investment issues.

Analysis of market-to-book and insider trading do not support the signaling hypothesis for debt issues. Here, as is the case for the equity sample, firms with high market-to-book ratios and insider buying do not exhibit a significantly more positive reaction at announcement than other issuers. Similarly, there is no evidence that abnormal returns are significantly lower for low market-to-book firms in which insider are selling as opposed to other issues. This is not consistent with the predictions for the interaction of these internal and external factors.

For those groups of issues for which insider trading appears to be acting as a signal, (small firms in the capital expenditure sample for example), stock price performance and earnings changes following the announcement should reflect the information conveyed by the insiders' trading signal. Examination of performance measures for these issues does not indicate that this is the case. For the small equity group of capital expenditure issues, neither cumulative return over the 40 days immediately following the issues nor the cumulative return over the year following the event year indicate any relationship between stock price performance and insider trading patterns. Likewise, earnings changes following the announcement are not significantly correlated with insider trading patterns for any of the samples, across any of the size divisions. The only indication of a link between firm performance and trading activity exists for the open market trading variable in the large asset division of the capital expenditure sample. The relationship between trading and immediate post announcement price performance is significant at $\alpha=1\%$ for this group. Recall that there is a significant relationship ($\alpha=10\%$) between announcement returns and insider trading for this sample for this variable construction. Rozeff and Zaman [1984] show evidence that insiders of small firms tend to be buyers of their firm's shares, while insiders of larger firms tend to be sellers on average. Since debt issuers tend to be larger firms, perhaps the ITV_{Buy} construction is a better measure of insider information than the net trading variable.

There is no relationship between the longer term price performance measures or the earnings change measure and this open market trading variable. This

relationship does not appear between ITV_{Buy} and the 40 day cumulative returns for any other sample. This variable is much less significant in explaining market reaction than the ITV_{Netnum} variable which exhibits no relation to firm performance for debt issues.

Results for debt issues indicate, for the most part, that insider trading and announcement period returns are not correlated. The lack of significance for insider trading variables for the debt sample is not surprising. This result is consistent with the notion that adverse selection costs are not as severe for debt issues. These larger firms may have less information asymmetry about assets in place and investment opportunities. At least, if these larger companies are more well diversified, perhaps information asymmetry in general is less important to investors. These results are also consistent with most empirical studies to date involving debt issue announcement effects, which suggest that there are no announcement effects for debt.³³

³³ See Eckbo [1986], or Hansen and Crutchley [1991] for example.

CHAPTER VIII

Summary and Conclusions

This study has examined the effectiveness of insider trading as a signal of firm investment opportunities at the time of corporate financing announcements. To date, all studies of corporate financing announcements have assumed management is passive. However, to the extent that insiders do trade around the time of corporate announcements and this trading reduces information asymmetry, announcement price effects of debt and equity issues should be lessened. Results of this study indicate that insider trading is an important factor in explaining announcement effects for some equity issues. For most financing announcements, however, insider trading does not appear to be an effective signal of firms' investment opportunities.

This analysis initially focused on the relationship between the various measures of insider trading and announcement period abnormal return. A significant positive relationship ($\alpha = 5\%$) between announcement period returns and net trading variables was observed for equity issues in the investment sample. The marginal contribution of these insider trading variables was not diminished by the introduction of other control variables. One surprising result from the expanded regression

analysis was the relative insignificance of most of the control variables, particularly firm run-up, which has been shown in previous studies to be a strong indicator of announcement period price reaction.

The relationship between announcement returns and insider trading did not exist for the no-investment issues, which is consistent with the implications of the signaling models on which this study is based. According to these models, insider trading is predicted to reduce information asymmetry about the firm's investment opportunities. To the extent that information asymmetry with respect to investment opportunities is greater for the investment issues, one would expect to observe a stronger relationship for this group as opposed to the no-investment issues.

Upon closer examination of the continuous trading variable, net buying appeared to be driving the observed relationship between trading and returns. While net buying seemed to reflect good news, the market did not seem to view net selling as bad news. This is probably due to the many factors, not information related, that could motivate managers to sell (tax considerations, liquidity reasons, portfolio re-balancing, or braces for Jr., for example).

The acquisition of shares through the exercise of stock options was analyzed in greater detail to determine whether the market tends to view these transactions as similar to selling. The exercise of stock options was not accompanied by a more negative market reaction in any of the estimations reported in this study. Therefore, it does not appear that the exercise of stock options is viewed as bad news by the market. This is probably due to compensation considerations which may require

managers to exercise their options either to obtain more shares, or to take advantage of them before they expire.

The observed relationship between trading and announcement returns for equity issues did not appear to be the consequence of a relationship between price run-up and trading patterns prior to announcement. There was no apparent link between insider trading variables and pre-announcement price run-up.

The positive relationship for the investment group was most prominent for small firms. Regardless of the measure of size used (asset size, market value of equity, even dividend size), the net trading variables were significant only for smaller firms in the investment sample. Significance levels dropped to .01 in some cases, and the significance of the insider trading variable increased for the most part, in the two investment sub-samples. Seyhun [1986] and [1988] reports that while insiders in large firms tend to trade more according to macro-economic factors, insiders in small firms trade more on the basis of firm-related information. If this is the case, the evidence of firm size effects documented in this analysis supports theoretical arguments that the trading signal conveys firm-specific information. All of the evidence thus far supports the signaling hypothesis examined in this paper, although the strongest effect appears only for the smaller firms in the sample.

When an alternate measure of investment profitability, market-to-book ratio, was examined in conjunction with insider trading, results were not supportive of the insider trading signaling hypothesis. Market-to-book measures the market's perception of growth opportunities, while insider trading is predicted to reflect

managers' perception of growth opportunities. Firms exhibiting high market-to-book ratios and insider buying should have exhibited significantly higher announcement returns than other firms. They did not. The information conveyed by the insider trading does not appear to be based on the growth opportunities of the firm.

None of the post-announcement performance variables were significantly related to insider trading activity prior to announcement, even for the small firms. Evidence from price performance measures indicates that any information conveyed to the market through insider trading activity is reflected in the market's response to at the time of the issue announcement, consistent with the signaling hypothesis. Insider trading activity does not, however, appear to be a good indicator of post-announcement earnings changes. This is not entirely inconsistent with the signaling hypothesis, however, since investment returns from projects funded by these issues may not appear for several years beyond the issue date.

This study provides new evidence on the impact of changes in management ownership surrounding debt and equity issues. Previous empirical studies of announcement effects assume management is passive, and therefore interpret the significant negative reaction to equity issues as evidence supporting the theories of Leland and Pyle [1977] and Jensen and Meckling [1976].³⁴ Likewise, a less negative reaction for debt issues is typically interpreted as evidence that announcement effects are lessened when management ownership increases. It is evident from this study,

³⁴ See, for example, Masulis and Korwar [1986].

however, that increases in management holdings are not, for the most part, associated with more positive market response to debt issues. This is not entirely inconsistent with signaling models like Leland and Pyle [1977] and the John and Mishra [1990] and John and Lang [1991] models, since the need to signal may be lower for debt issues. This result is not supportive, however, of Jensen and Meckling's [1976] agency theory arguments.

Similarly, for larger firms issuing equity, increases in management holdings is not associated with less negative announcement returns, which is not consistent with signaling or agency theory models because there is no reason to believe that adverse selection costs or agency costs of free cash flow should be lower for these larger firms.

The failure of these insider trading signaling models to be effective at financing announcements most probably stems from inherent differences in insider trading patterns for firms that announce new financing; differences not addressed by any of the signaling models. Firms of all sizes, at all stages of development, raise capital. These cross-sectional differences do not create problems for the signaling models for some other types of announcement. The type of firm that would be announcing spin-offs are probably fairly similar cross-sectionally in terms of firm size, type of firm (conglomerate), etc. Similarly, firms announcing dividend initiations are probably similar in size, at least more so than all firms with financing announcements. This may be why insider trading results tend to be stronger in other studies where information asymmetry about investment opportunities is a factor.

This study also provides evidence on the type of trading that markets appear to use. Markets did not respond at all to the absolute level of buying by insiders or increases in buying from the previous year, or decreases in selling. The net effect of managers trades just prior to the event, both in terms of the number of shares traded and the number of transactions, appears to be more important than the investment decisions of a few insiders or the change in trading patterns over time. Finally, the market does not react to the exercise of stock options as bad news events, a concern which has been raised in previous studies of insider trading activity.

In conclusion, this study has empirically addressed a previously unexplored question in capital market theory. It has examined the contribution of insider trading to the explanation of announcement period effects of new financing. This study sheds new light on the role of insider trading and changes in ownership holdings around new issues of debt and equity, and adds to the basic understanding of how capital markets work.

APPENDIX

TABLE A.1
Comprehensive Model, Number of Shares

$$AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 RUNDIF + \epsilon$$

Sample	β_0	β_1	β_2	β_3	β_4
Full Investment	-.0234 (3.42)	.0117 (2.07)	-.0030 (0.98)	.00002 (0.22)	-.0047 (0.25)
Capital Exp.	-.0301 (3.57)	.0104 (1.30)	-.0023 (0.62)	-.0023 (0.62)	.00006 (0.48)
Possible Acquisit.	-.0017 (0.13)	.0122 (1.20)	-.0056 (0.96)	-.0002 (1.42)	-.0331 (0.91)
No Investment	-.0359 (3.88)	-.0035 (0.39)	-.0031 (0.52)	.0002 (1.84)	.0001 (0.00)
β_5	β_6	β_7	Adj. R ²	F	
-.0470 (1.88)	-.0100 (0.47)	.0063 (0.49)	.023	1.46	
-.0548 (1.73)	-.0145 (0.61)	-.0080 (0.05)	-.006	.92	
-.0190 (0.43)	-.0514 (0.74)	.0276 (1.13)	-.007	.95	
.0481 (0.92)	-.0295 (1.22)	-.0348 (2.02)	.03	1.48	

β_1 = ITV, ITV_{netahr}

β_2 = PIV, Prior Issue Variable

β_3 = EA, Days to Last Earnings Announce.

β_4 = RIS, Relative Issue Size

β_5 = SO, Percentage of Issue that is Secondary

β_6 = BD, Level of Bank Debt

β_7 = Mkt. Run-up minus Firm Run-up

T statistic reported in parenthesis.

TABLE A.2
Reduced Models, No Investment Sample, Number of Shares
 $AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + \epsilon$

Intercept	ITV	Prior	DTEA	Relsize	Sec
-.0292 (.008)	-.0034 (.64)	-.0034 (.55)	.0001 (.08)	-.0063 (.81)	.0445 (.39)
-.0260 (.01)	-.0133 (.15)	_____	.0001 (.13)	-.0076 (.77)	.0519 (.31)
-.0172 (.10)	-.0150 (.10)	-.0029 (.61)	_____	-.0119 (.66)	.0487 (.34)
-.0268 (.003)	-.0127 (.17)	-.0031 (.57)	.0001 (.12)	_____	.0477 (.34)
-.0238 (.03)	-.0119 (.19)	-.0038 (.49)	.0001 (.13)	-.0038 (.79)	_____
-.0240 (.03)	-.0141 (.13)	-.0032 (.57)	.0001 (.13)	-.0157 (.56)	.0531 (.30)
-.0337 (.001)	-.0110 (.24)	-.0034 (.55)	.0001 (.10)	.0014 (.95)	.0557 (.28)
-.0236 (.03)	-.0033 (.71)	-.0048 (.41)	.0001 (.12)	.0015 (.95)	.0522 (.32)
Bankdt	Indcum	Frmeum	Adj. R ²	F	
-.0243 (.32)	-.1069 (.10)	.0364 (.03)	.04	1.47	
-.0202 (.40)	-.1173 (.07)	.0364 (.03)	.06	1.94	
-.0206 (.40)	-.1253 (.05)	.0332 (.05)	.04	1.62	
-.0232 (.32)	-.1122 (.07)	.0343 (.03)	.07	1.92	
-.0228 (.34)	-.1216 (.06)	.0364 (.03)	.06	1.85	
_____	-.1285 (.04)	-.0355 (.03)	.06	1.84	
-.0297 (.22)	_____	.0247 (.13)	.03	1.46	
-.0259 (.30)	-.0602 (.33)	_____	.004	1.00	

$\beta_1 = ITV, ITV_{netshr}$

$\beta_2 = PIV, \text{Prior Issue Variable}$

$\beta_3 = EA, \text{Days to Last Earnings Announce.}$

$\beta_4 = RIS, \text{Relative Issue Size}$

$\beta_5 = SO, \text{Percentage of Issue that is Secondary}$

$\beta_6 = BD, \text{Level of Bank Debt}$

$\beta_7 = \text{Mkt. Run-up}$

$\beta_8 = \text{Firm Run-up}$

Prob > |T| in parenthesis.

TABLE A.3
Reduced Models, Full Investment Sample, Number of Shares
 $AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + \epsilon$

Intercept	ITV	Prior	DTEA	Relsize	SO
-.0239 (.001)	.0111 (.05)	-.0031 (.32)	-.00001 (.88)	-.0061 (.73)	-.0475 (.06)
-.0256 (.0003)	.0111 (.05)	—	-.00002 (.78)	-.0029 (.87)	-.0462 (.06)
-.0243 (.0002)	.0111 (.05)	-.0031 (.30)	—	-.0061 (.73)	-.0473 (.05)
-.0252 (.0001)	.0111 (.05)	-.0028 (.34)	-.00001 (.89)	—	-.0480 (.05)
-.0263 (.0003)	.0121 (.0362)	-.0027 (.37)	-.000003 (.96)	-.0079 (.66)	—
-.0243 (.0007)	.0112 (.04)	-.0029 (.33)	-.00001 (.85)	-.0068 (.70)	-.0471 (.06)
-.0277 (.001)	.0112 (.04)	-.0031 (.32)	-.000006 (.94)	-.0064 (.72)	-.0486 (.05)
-.0258 (.0002)	.0113 (.04)	-.0031 (.31)	-.000007 (.93)	-.0054 (.76)	-.0482 (.05)
Bankdt	Indcum	Frmcum	Adj. R ²	F	
-.0100 (.63)	.0368 (.36)	-.0093 (.45)	.02	1.3	
-.0085 (.68)	.0365 (.36)	-.0098 (.45)	.02	1.3	
-.0103 (.62)	.0364 (.36)	-.0097 (.45)	.02	1.5	
-.0101 (.61)	.0371 (.35)	-.0096 (.46)	.02	1.5	
-.0082 (.68)	.0405 (.32)	-.0108 (.41)	-.002	0.95	
—	.0376 (.35)	-.0095 (.46)	.02	1.4	
-.0109 (.60)	—	-.0037 (.74)	.02	1.4	
-.0092 (.66)	.0212 (.54)	—	.02	1.4	

β_1 = ITV, ITV_{netshr}

β_2 = PIV, Prior Issue Variable

β_3 = EA, Days to Last Earnings Announce.

β_4 = RIS, Relative Issue Size

Prob > |T| in parenthesis.

β_5 = SO, Percentage of Issue that is Secondary

β_6 = BD, Level of Bank Debt

β_7 = Mkt. Run-up

β_8 = Firm Run-up

TABLE A.4
Reduced Models, Capital Expenditure Sample, Number of Shares
 $AR_0 = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SEC + \beta_6 BD + \beta_7 BCYC + \beta_8 FRUN$

Intercept	ITV	Prior	DTEA	Relsize	Sec
-.0319 (-3.52)	.0103 (1.27)	-.0023 (-0.60)	.00005 (0.43)	.0084 (0.37)	-.0539 (-1.70)
-.0333 (-3.82)	.0104 (1.29)	_____	.00004 (0.35)	.0109 (0.48)	-.0529 (-1.67)
.0305 (-3.60)	.0109 (1.36)	-.0021 (-0.54)	_____	.0081 (0.36)	-.0545 (-1.72)
.0301 (-3.96)	.0100 (1.25)	-.0025 (-0.68)	.00005 (0.43)	_____	-.0535 (-1.69)
.0352 (-3.93)	.0119 (1.47)	-.0022 (-0.59)	.00005 (0.51)	.0070 (0.31)	_____
-.0325 (-3.61)	.0108 (1.36)	_____	.00004 (0.36)	.0068 (0.30)	-.0522 (-1.65)
-.0309 (-3.50)	.0105 (1.30)	-.0023 (-0.62)	.00005 (0.47)	.0094 (0.42)	-.0547 (-1.73)
-.0328 (-3.77)	.0104 (1.29)	-.0023 (-0.62)	.00005 (0.45)	.0085 (0.40)	-.0540 (-1.71)
Bankdt	Indcum	Frmcum	Adj. R ²	F	
-.0128 (-0.53)	.0286 (0.51)	-.0023 (-0.13)	-.014	.84	
-.0123 (-0.51)	.0295 (0.53)	-.0024 (-0.14)	-.006	.91	
-.0112 (-0.47)	.0303 (0.54)	-.0025 (-0.14)	-.004	.94	
-.0020 (-0.51)	.0335 (0.59)	-.0029 (-0.17)	-.036	.54	
-.0116 (-0.49)	.0304 (0.55)	-.0033 (-0.20)	-.003	.95	
_____	.0319 (0.58)	-.0023 (-0.14)	-.014	.82	
-.0142 (-0.59)	_____	-.002927 (0.21)	-.005	.93	
-.0128 (-0.53)	.0243 (0.54)	_____	-.002	.97	

$\beta_1 = ITV, ITV_{netshr}$

$\beta_2 = PIV, \text{Prior Issue Variable}$

$\beta_3 = EA, \text{Days to Last Earnings Announce.}$

$\beta_4 = RIS, \text{Relative Issue Size}$

$\beta_5 = SO, \text{Percentage of Issue that is Secondary}$

$\beta_6 = BD, \text{Level of Bank Debt}$

$\beta_7 = \text{Mkt. Run-up}$

$\beta_8 = \text{Firm Run-up}$

Prob > |T| in parenthesis.

TABLE A.5

Reduced Models, Acquisition Sample, Number of Shares

$$AR_t = \beta_0 + \beta_1 ITV + \beta_2 PIV + \beta_3 EA + \beta_4 RIS + \beta_5 SO + \beta_6 BD + \beta_7 MRUN + \beta_8 FRUN + \epsilon$$

Intercept	ITV	Prior	DTEA	Relsize	SO
-.0016 (.90)	.0146 (.15)	-.0063 (.28)	-.0002 (.25)	-.0325 (.36)	-.0176 (.69)
-.0057 (.67)	.0126 (.20)	_____	-.0002 (.22)	-.02355 (.50)	-.01827 (.68)
-.0100 (.37)	.0172 (.08)	-.0068 (.24)	_____	-.0384 (.28)	-.0171 (.70)
-.0062 (.61)	.0120 (.21)	-.0051 (.37)	-.0002 (.20)	_____	-.0217 (.62)
-.0015 (.91)	.0149 (.13)	-.0063 (.27)	-.0002 (.25)	-.0340 (.34)	_____
-.0065 (.59)	.0122 (.21)	-.0043 (.43)	-.0001 (.27)	-.0265 (.45)	-.0290 (.49)
-.0007 (.94)	.0137 (.18)	-.0053 (.36)	-.0001 (.34)	-.0386 (.28)	-.0248 (.57)
-.0113 (.35)	.0151 (.14)	-.0058 (.32)	-.0001 (.45)	-.0416 (.25)	-.0278 (.33)
Bankdt	Indcum	Frmcum	Adj. R ²	F	
-.0698 (.33)	.0890 (.19)	-.0365 (.12)	-.001	.99	
-.04297 (.52)	.0791 (.24)	-.0351 (.14)	-.005	.96	
-.0654 (.36)	.0769 (.25)	-.0293 (.20)	-.009	.93	
-.0589 (.40)	.0968 (.15)	-.0401 (.09)	.003	1.02	
-.0772 (.25)	.0924 (.16)	-.0379 (.10)	.02	1.13	
_____	.0725 (.27)	-.0307 (.18)	-.0003	.99	
-.0464 (.50)	_____	-.0224 (.29)	-.02	.86	
-.0424 (.54)	.0420 (.49)	_____	-.03	.76	

β_1 = ITV, ITV_{netshr}
 β_2 = PIV, Prior Issue Variable
 β_3 = EA, Days to Last Earnings Announce.
 β_4 = RIS, Relative Issue Size

β_5 = SO, Percentage of Issue that is Secondary
 β_6 = BD, Level of Bank Debt
 β_7 = Mkt. Run-up
 β_8 = Firm Run-up

Prob > |T| in parenthesis.

TABLE A.6

Comprehensive Model, Number of Trades, Control for Asset Size

$$AR_0 = \beta_0 + \beta_1 ITVSMALL + \beta_2 ITVLARGE + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8 MRUN + \beta_9 FRUN + \epsilon$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.0223 (.002)	-.0300 (.001)	.0033 (.80)	-.0241 (.04)
ITVS _{ASSET} (β_1) P > T	.0219 (.005)	.0224 (.03)	.0310 (.02)	-.0119 (.38)
ITVL _{ASSET} (β_2) P > T	-.0004 (.95)	-.0064 (.54)	.0051 (.67)	-.0139 (.24)
PRIOR (β_3) P > T	-.0015 (.62)	-.0011 (.77)	-.0039 (.50)	-.0035 (.54)
DTEA β_4 P > T	.00001 (.97)	.0001 (.36)	-.0003 (.10)	.0001 (.13)
RELSIZE (β_5) P > T	-.0137 (.46)	-.007 (.97)	-.0498 (.18)	-.0112 (.69)
SO (β_6) P > T	-.0523 (.03)	-.0591 (.06)	-.0208 (.63)	.0482 (.37)
BD (β_7) P > T	-.0082 (.69)	-.0111 (.63)	-.0769 (.27)	-.0218 (.38)
MRUN (β_8) P > T	.0565 (.16)	.0322 (.55)	.1454 (.04)	-.1178 (.07)
FRUN (β_9) P > T	-.0206 (.12)	-.0109 (.52)	-.0537 (.03)	.0352 (.04)
R ²	.04	.02	.04	.05
F	1.64	1.21	1.26	1.52

β_1 = ITVS, ITVSMALL_{ASSET}

β_2 = ITVL, ITVLARGE_{ASSET}

β_3 = PIV, Prior Issue

β_4 = DTEA, Days to Last Earnings Announcement

β_5 = RIS, Relative Issue Size

β_6 = SO, Percentage Secondary

β_7 = BD, Level of Bank Debt

β_8 = MRUN, Market Run-up Runup

β_9 = FRUN, Firm Runup

Prob > |t| in parenthesis

Table A.7

Comprehensive Model, Number of Shares Traded, Control for Equity Size

$$AR_0 = \beta_0 + \beta_1 ITVSMALL + \beta_2 ITVLARGE + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8 MRUN + \beta_9 FRUN + \epsilon$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.0240 (.001)	-.0321 (.0008)	.0008 (.95)	-.0279 (.01)
ITVS _{EQUITY} (β_1) P > T	.0145 (.06)	.0092 (.40)	.0235 (.06)	.0021 (.87)
ITVL _{EQUITY} (β_2) P > T	.0094 (.24)	.0113 (.28)	.0023 (.87)	-.0075 (.50)
PRIOR (β_3) P > T	-.0029 (.34)	-.0024 (.53)	-.0055 (.35)	-.0030 (.61)
DTEA β_4 P > T	-.00001 (.88)	.00005 (.65)	-.0002 (.19)	.0001 (.08)
RELSIZE (β_5) P > T	-.0068 (.72)	.0091 (.69)	-.0486 (.20)	-.0116 (.69)
SO (β_6) P > T	-.0486 (.05)	-.0536 (.09)	-.0252 (.57)	.0454 (.38)
BD (β_7) P > T	-.0092 (.66)	-.0127 (.59)	-.0574 (.42)	-.0279 (.27)
MRUN (β_8) P > T	.0429 (.29)	.0281 (.61)	.1084 (.12)	-.1037 (.11)
FRUN (β_9) P > T	-.0115 (.38)	-.0019 (.91)	-.0386 (.10)	.0355 (.04)
R ²	.01	-.02	.01	
F	1.21	.74	1.05	

β_1 = ITVS, ITVSMALL_{EQUITY}

β_2 = ITVL, ITVLARGE_{EQUITY}

β_3 = PIV, Prior Issue

β_4 = DTEA, Days to Last Earnings Announcement

β_5 = RIS, Relative Issue Size

β_6 = SO, Percentage Secondary

β_7 = BD, Level of Bank Debt

β_8 = MRUN, Market Run-up Runup

β_9 = FRUN, Firm Runup

Prob > |t| in parenthesis

TABLE A.8

Comprehensive Model, Number of Trades, Control for Equity Size

$$AR_0 = \beta_0 + \beta_1 ITVSMALL + \beta_2 ITVLARGE + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8 MRUN + \beta_9 FRUN + \epsilon$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.0225 (.002)	-.0304 (.001)	.0017 (.89)	-.0245 (.03)
ITVS _{EQUITY} (β_1) P > T	.0172 (.02)	.0143 (.17)	.0261 (.03)	-.0148 (.26)
ITVL _{EQUITY} (β_2) P > T	.0035 (.66)	.0033 (.74)	.0042 (.75)	-.0117 (.32)
PRIOR (β_3) P > T	-.0022 (.47)	-.0015 (.68)	-.0055 (.34)	-.0035 (.53)
DTEA β_4 P > T	-.00001 (.85)	.00006 (.59)	-.0002 (.12)	.0001 (.13)
RELSIZE (β_5) P > T	-.0113 (.55)	.0039 (.86)	-.0487 (.19)	-.0092 (.74)
SO (β_6) P > T	-.0494 (.05)	-.0554 (.08)	-.0209 (.63)	.0491 (.34)
BD (β_7) P > T	-.0093 (.66)	-.0147 (.54)	-.0661 (.35)	-.0201 (.42)
MRUN (β_8) P > T	.0523 (.20)	.0313 (.57)	.1319 (.06)	-.1188 (.04)
FRUN (β_9) P > T	-.0164 (.21)	-.0064 (.71)	-.0464 (.05)	.0351 (.04)
R ²	.02	-.02	.03	.05
F	1.3	.76	1.18	1.53

β_1 = ITVS, ITVSMALL_{EQUITY}

β_2 = ITVL, ITVLARGE_{EQUITY}

β_3 = PIV, Prior Issue

β_4 = DTEA, Days to Last Earnings Announcement

β_5 = RIS, Relative Issue Size

β_6 = SO, Percentage Secondary

β_7 = BD, Level of Bank Debt

β_8 = MRUN, Market Run-up Runup

β_9 = FRUN, Firm Runup

Prob > |t| in parenthesis

TABLE A.9

Comprehensive Model, Number of Shares Traded, Control for Dividend Size

$$AR_0 = \beta_0 + \beta_1 ITVSMALL + \beta_2 ITVLARGE + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.028 (.0008)	-.0324 (.0006)	-.0005 (.96)	-.0243 (.03)
ITVS _{DIV} (β_1) P > T	.0150 (.05)	.0173 (.08)	.0076 (.62)	.0114 (.39)
ITVL _{DIV} (β_2) P > T	.0091 (.24)	.0013 (.90)	.0182 (.12)	-.0128 (.23)
PRIOR (β_3) P > T	-.0033 (.29)	-.0030 (.43)	-.0065 (.27)	-.0064 (.29)
DTEA β_4 P > T	-.00001 (.96)	.00006 (.56)	.0002 (.21)	.0001 (.08)
RELSIZE (β_5) P > T	-.0054 (.76)	.0061 (.78)	-.0247 (.52)	-.0163 (.56)
SO (β_6) P > T	-.0492 (.05)	-.0560 (.08)	-.0134 (.76)	.0269 (.61)
BD (β_7) P > T	-.0098 (.64)	-.0130 (.58)	-.0623 (.39)	-.0328 (.19)
MRUN (β_8) P > T	.0430 (.29)	.0379 (.50)	.0810 (.24)	-.1136 (.07)
FRUN (β_9) P > T	-.0099 (.44)	-.0021 (.90)	-.0401 (.11)	.0342 (.04)
R ²	.01	-.01	-.01	.06
F	1.22	.90	.90	1.59

β_1 = ITVS, ITVSMALL_{DIV}

β_2 = ITVL, ITVLARGE_{DIV}

β_3 = PIV, Prior Issue

β_4 = DTEA, Days to Last Earnings Announcement

β_5 = RIS, Relative Issue Size

β_6 = SO, Percentage Secondary

β_7 = BD, Level of Bank Debt

β_8 = MRUN, Market Run-up Runup

β_9 = FRUN, Firm Runup

Prob > |t| in parenthesis

TABLE A.10

Comprehensive Model, Number of Trades, Control for Dividend Size

$$AR_{it} = \beta_0 + \beta_1 ITVSMALL + \beta_2 ITVLARGE + \beta_3 PIV + \beta_4 EA + \beta_5 RIS + \beta_6 SO + \beta_7 BD + \beta_8 MRUN + \beta_9 FRUN + \epsilon$$

Variable, Parameter	Full Investment	Capital Expenditure	Possible Acquisitions	No Investment
INTCPT. (β_0) P > T	-.0241 (.001)	-.0313 (.0009)	-.0013 (.92)	-.0234 (.04)
ITVS _{DIV} (β_1) P > T	.0118 (.13)	.0105 (.30)	.0167 (.31)	-.0091 (.50)
ITVL _{DIV} (β_2) P > T	.0100 (.20)	.0649 (.56)	.0167 (.15)	-.0156 (.19)
PRIOR (β_3) P > T	-.0027 (.37)	-.0021 (.58)	-.0064 (.28)	-.0038 (.51)
DTEA β_4 P > T	-.00001 (.93)	.00007 (.55)	-.0008 (.17)	.0001 (.13)
RELSIZE (β_5) P > T	-.0045 (.80)	.0064 (.76)	-.0298 (.46)	-.0116 (.67)
SEC (β_6) P > T	-.0431 (.06)	-.0554 (.08)	-.0143 (.75)	.0466 (.37)
BD (β_7) P > T	-.0139 (.52)	-.0169 (.49)	-.0761 (.29)	-.0234 (.35)
MRUN (β_8) P > T	.0501 (.22)	.0352 (.53)	.1199 (.10)	-.1195 (.06)
FRUN (β_9) P > T	-.0145 (.27)	-.0059 (.73)	-.0435 (.09)	.0382 (.04)
R ²	.005	-.03	-.01	.05
F	1.09	.69	.95	1.54

β_1 = ITVS, ITVSMALL_{DIV}

β_2 = ITVL, ITVLARGE_{DIV}

β_3 = PIV, Prior Issue

β_4 = DTEA, Days to Last Earnings Announcement

β_5 = RIS, Relative Issue Size

β_6 = SO, Percentage Secondary

β_7 = BD, Level of Bank Debt

β_8 = MRUN, Market Run-up Runup

β_9 = FRUN, Firm Runup

Prob > |t| in parenthesis

REFERENCES

- Akerlof, G., "The Market for 'Lemons': Qualitative Uncertainty and the Market Mechanism," Quarterly Journal of Economics, August 1970, pp. 488-500.
- Allen, D., and G. R. Thompson, "Preannouncement of Changes in the S&P 500 Index Test for Price and Volume Pressure" Financial Management, Winter 1991, pp. 7-8.
- Ambarish, R., K. John, and J. Williams, "Efficient Signalling with Dividends and Investments," Journal of Finance 42, 1987, pp. 321-344.
- Asquith, P. and D. Mullins, "Equity Issues and Stock Price Dilution," Journal of Financial Economics 15, 1986, pp. 61-90.
- Barclay, M., and R. Litzenberger, "Announcement Effects of New Equity Issues and the Use of Intraday Price Data," Journal of Financial Economics 21, 1988, pp. 71-100.
- Bonomo, V., D. Johnson, and G. R. Thompson, "An Initial Investigation of the Impact of the Source and Sequence of Information in Primary Equity Offerings," Working Paper, Virginia Polytechnic Institute and State University, 1991.
- Bradley, M., G. Jarrell, and E. H. Kim, "On the Existence of and Optimal Capital Structure," Journal of Business 63, no. 3, 1990, 347-371.
- Choe, H., R. Masulis, and V. Nanda, "On the Timing of Seasoned Common Stock Issues: Theory and Evidence," Working Paper, Vanderbilt University, 1991.
- Dierkens, N., "Information Asymmetry and Equity Issues," Journal of Financial and Quantitative Analysis 26, 1991, pp. 181-198.

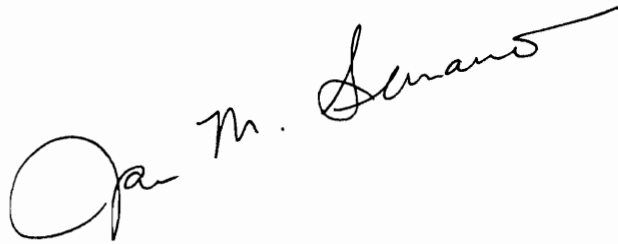
- Denis, D., "Investment Opportunities and the Market Reaction to Equity Issues," Working Paper, Virginia Polytechnic Institute and State University, 1991.
- Easterbrook, F., "Two Agency Cost Explanations of Dividends," The American Economic Review 74, No. 4, September 1984, pp. 650-659.
- Eckbo, E., "Valuation Effects of Corporate Debt Offerings," Journal of Financial and Quantitative Analysis 26, 1991, pp. 181-198.
- Givoly, D., and D. Palmon, "Insider Trading and the Exploitation of Inside Information: Some Empirical Evidence," Journal of Business 58, 1985, pp. 69-87.
- Gombola, M., F. Shin, and G. Tsetsekos, "A Test of the Insider Trading Signaling Hypothesis: The case of Plant Closings," Working Paper, Drexel University, 1992.
- Hansen, R., and C. Crutchley, "Corporate Earnings and Financing: An Empirical Analysis," Journal of Business 58, 1990, pp. 69-887.
- Jensen, M., "Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers," American Economic Review, 1986, pp. 323-329.
- Jensen, M., and W. Meckling, "Theory of the Firm; Managerial Behavior, Agency Costs, and Ownership Structure," Journal of Financial Economics, Vol. 3, 1976, pp. 305-360.
- Jennings, R., and H. Marsh Jr., *Securities Regulation Cases and Materials*, 6th ED., The Foundation Press, Inc. Mineola, New York, 1987.
- John, K., and L. Lang, "Insider Trading Around Dividend Announcements: Theory and Evidence," Journal of Finance 42, 1991, pp. 1361-1389.
- John, K., and B. Mishra, "Information Content of Insider Trading Around Corporate Announcements: The Case of Capital Expenditures," Journal of Finance 45, 1990, pp. 835-855.
- Karpoff, J., and D. Lee, "Insider Trading Around Announcements of Capital Structure Changes: Evidence on Information Signalling," Financial Management, Spring 1991, pp. 18-25.

- Korajczyk, R., D. Lucas, and R. McDonald, "The Effect of Information Releases on the Pricing and Timing of Equity Issues: Theory and Evidence," Working Paper no. 2727, NBER.
- Leland, H., and D. Pyle, "Informational Asymmetries, Financial Structure, and Financial Intermediation," Journal of Finance 32, May 1977, pp. 371-387.
- Lorie, J., and V. Niederhoffer, "Predictive and Statistical Properties of Insider Trading," Journal of Law and Economics 11, 1968, pp. 35-51.
- Lucas, D., and R. McDonald, "Equity Issues and Stock Price Dynamics," Journal of Finance 45, 1990, pp. 1019-1043.
- Masulis, R., "The Impact of Capital Structure Change on Firm Value: Some Estimates," Journal of Finance 38, 1983, pp. 107-126.
- Masulis, R., and A. Korwar, "Seasoned Equity Offerings: An Empirical Investigation," Journal of Financial Economics 15, 1986, pp. 91-118.
- McConnell, J., and C. Muscarella, "Corporate Capital Expenditure Decisions and the Market Value of the Firm," Journal of Financial Economics, 1985, pp. 399-422.
- Mikkelson, W., and M. Partch, "Stock Price Effects and Costs of Secondary Distributions," Journal of Financial Economics 14, pp. 165-194.
- Mikkelson, W. and M. Partch, "Valuation Effects of Security Offerings," Journal of Financial Economics 15, 1986, pp. 31-60.
- Miller, M., and D. Rock, "Dividend Policy Under Asymmetric information," Journal of Finance 40, 1985, pp. 1031-1052.
- Mitchell, M., and K. Lehn, "Do Bad Bidders Become Good Targets?," Journal of Political Economy 98, 1990, pp. 372-398.
- Morck, R., A. Shleifer, and R. Vishny, "Do Managerial Objectives Drive Bad Acquisitions?," Journal of Finance, March 1990, pp. 31-48.
- Myers, S., and N. Majluf, "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have," Journal of Finance 13, 1984, pp. 187-221.

- Pilotte, E., "Production Technology and the Stock Price Response to New Financing," Working Paper, University of Wyoming, 1990.
- Riley, J., "Informational Equilibrium," Econometrica 47, 1979, pp. 331-359.
- Rozeff, M. and M. Zaman, "Market Efficiency and Insider Trading: New Evidence," Journal of Financial Economics 16, 189-212.
- Scott, J., "A Theory of Optimal Capital Structure," Bell Journal of Economics, Spring 1976, pp. 33-54.
- Seyhun, N., "Insiders' Profits, Costs of Trading and Market Efficiency," Journal of Financial Economics 16, 189-212.
- Seyhun, N., "Do Bidder Managers Knowingly Pay Too Much for Target Firms?" Journal of Business 63, 1990, pp. 439-464.
- Seyhun, N., "The Information Content of Aggregate Insider Trading," Journal of Business 61, 1988, pp. 1-24.
- Slovin, M., M. Sushka, and C. Hudson, "External Monitoring and Its Effect on Seasoned Common Stock Issues," Journal of Accounting and Economics 12, 1990, pp. 397-417.
- Smith, C. and R. Watts, "Financing, Dividend, and Compensation Policies," Journal of Financial Economics 32, 1992, pp. 263-292.
- Smith, C., "Investment Banking and the Capital Acquisition Process," Journal of Financial Economics 15, 1986, pp. 3-29.
- Spence, A., "Job Market Signalling," Quarterly Journal of Economics, August 1973, pp. 355-379.
- Trueman, B., "The Relationship Between the Level of Capital Expenditures and Firm Value," Journal of Financial and Quantitative Analysis, 1985.
- Weisbach, M., "Outside Directors and CEO Turnover," Journal of Financial Economics 20, 1988, pp. 431-460.

VITA

Jan Maroney was born on February 24, 1963 in Nacogdoches, Texas to Nancy and Tom Maroney. She graduated from Nacogdoches High School in 1981, and married Benny Serrano in September of that same year. Her son, Matt, was born on November 13, 1983. She graduated from Stephen F. Austin State University in 1986 with a BBA in Finance, and went on to complete her MBA at Stephen F. Austin in 1986. Her daughter, Jenna, was born in August of 1987. After teaching finance and economics for two years at Stephen F. Austin, she returned to graduate school at Virginia Tech. She received a Ph.D. in Finance at Virginia Tech, and will be joining the faculty of Stephen F. Austin State University in the fall of 1993.

A handwritten signature in black ink, reading "Jan M. Serrano". The signature is written in a cursive style, with the first name "Jan" being the most prominent and the last name "Serrano" following in a similar script. The initials "M." are written between the first and last names.