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VALUATION EFFECTS OF SECURITY OFFERINGS AND THE ISSUANCE PROCESS

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This study examines the stock price effects of security offerings and investigates the nature of information inferred by investors from offering announcements. Changes in share price are unrelated to characteristics of offerings such as the net amount of new financing, relative offering size, and the quality rating of debt issues. The type of security is the only significant determinant of the price response. The opposite patterns of abnormal stock returns following the announcement of completed versus cancelled offerings suggest that managers issue common stock or convertible debt when in managers' view shares are overpriced.

1. Introduction

Recent studies document significant average stock price reactions to the announcement of changes in capital structure.[1] However, despite the extensive evidence, our understanding of the determinants of these price effects is quite limited. Most authors conclude that the stock price reaction reflects more than the direct effects of the capital structure change on the firm's cash flows.

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[1]Masulis (1980a) finds an increase in share price at the announcement of intrafirm exchange offers when shares are retired and a decrease in share price when shares are issued. Dann (1981), Masulis (1980b) and Vermaelen (1981) report a positive price effect at the announcement of intrafirm tender offers to repurchase shares. Masulis and Korwar (1986) and Asquith and Mullins (1986) document a decline in share price at the announcement of common stock offerings, and Dann and Mikkelson (1984) find a negative price effect for convertible debt offerings. Mikkelson (1981) reports a negative share price response to calls of convertible debt that force conversion to common stock.

Changes in the amount of straight debt outstanding are met with less pronounced effects on share price. Dann and Mikkelson (1984) report a small and statistically insignificant stock price decline in response to the announcement of public offerings of straight debt. Vu (1986) finds a small, statistically insignificant average stock price reaction to the announcement of calls of straight debt.

However, the nature of the information about the firm that market participants infer from a capital structure change, and use in revising their assessment of share value, has not been determined.

In this paper we attempt to explain the nature of the information that security offerings convey to market participants. A general explanation we investigate is that investors infer that the market price exceeds managers' assessment of share price when *any* offering of common stock or securities convertible into common stock is announced, regardless of the characteristics of the offering. That is, market participants respond to insiders' incentive to issue shares that are priced too high and to retire shares that are priced too low. Security offerings are viewed as examples of the lemons problem presented by Akerlof (1970).

A more specific explanation is based on Miller and Rock (1985) and Myers and Majluf (1984). The basic premise of these models is that information about the firm's earnings prospects, investment opportunities or assets in place is unevenly distributed between the firm's managers and investors. The announcement of a security offering that represents new financing (i.e., an increase in the firm's assets) conveys unfavorable information to the market. As Myers and Majluf (1984) note, their model can be viewed as an application of the lemons problem with a particular structure on the information asymmetry.

Our primary evidence is common stock prediction errors around the announcements of financing decisions. We investigate various types of security offerings and financing arrangements. The sample includes all security offerings for cash and private borrowings reported in *The Wall Street Journal* or in the *Investment Dealer's Digest* in the period 1972 through 1982 for a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange. Thus, we compare the price effects of offerings of different types of securities while holding constant the sample of firms. Like earlier studies, we find a negative and statistically significant valuation effect at the announcement of common stock and convertible debt offerings. The price effect of straight debt offerings is less pronounced. For our total sample of offerings of straight debt, the average stock price effect at the announcement is insignificant at the 0.10 level. But for the subset of completed offerings of straight debt, the price effect at the announcement is negative and significant at the 0.05 level. Announcements of private placements of debt and term loans have no significant effect on stock price, but announcements of credit agreements are associated with a small, positive valuation effect.

We explore the nature of the information asymmetry between managers and market participants by studying share price behavior after the announcement of common stock and convertible debt offerings that subsequently are com-

pleted as well as offerings that subsequently are cancelled. A striking finding of our study is that completed offerings are associated with a positive return between the announcement and issuance and a negative return at the issuance. Conversely, cancelled offerings are followed by a negative return between the announcement and the cancellation and a positive return at the cancellation.

The patterns of returns from the offering announcement through the issuance or cancellation are consistent with the argument that managers try to issue securities that are overpriced, and that market participants understand managers' incentive. It appears that the market's response to the announcement does not eliminate the difference between the market's and managers' assessments of share value. Rather, the negative price reaction at the issuance and the positive price reaction at the cancellation suggest that a divergence of opinion about share price exists at the outcome of the offering as well.

We also conduct a cross-sectional analysis of the relation between the stock price effects at the announcement of security offerings and determinants of the price response suggested by Miller and Rock (1985) and Myers and Majluf (1984). We investigate whether the stock price effects at the announcement are related to (1) the net amount of new financing provided by the offering, (2) the size of the offering, (3) the quality rating of straight debt and convertible debt offerings, and (4) the stated reason for the offering. In general, we do not find that the stock price effects are related to our measures of the amount of net new financing or to the dollar amount of the offering. Nor is there a statistically significant difference between the price effects of debt offerings grouped by quality rating. We find a greater decrease in share price in response to common stock offerings that refinance debt than those that finance capital expenditures. None of these results supports the notion that negative stock price effects represent a reassessment of the firm's earnings prospects, assets in place or investment opportunities.

Cross-sectional regressions on the stock price reactions to the offering announcements indicate that the type of security is the most important determinant. Offerings of common stock and convertible debt are met with a less favorable price response when controlling for other characteristics of offerings. This finding is consistent with Myers and Majluf (1984) and the argument that announcements of common stock and convertible security offerings convey that share price is too high.

The paper is organized as follows: Section 2 describes our sample firms and the financing events undertaken by these firms. In section 3 we discuss our methods of measuring and testing valuation effects. Section 4 presents the average common stock prediction errors associated with announcements of various types of financing events. Section 5 compares the stock price effects of completed and cancelled offerings of common stock and convertible debt. In

Table 1

Pattern of survivorship in the randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange, 1972–1982.[a]

Calendar year (1)	Firms in sample at year end (2)	Proportion of initial sample (3)
1972	360	1.00
1973	346	0.96
1974	328	0.91
1975	316	0.88
1976	308	0.86
1977	298	0.83
1978	281	0.78
1979	269	0.75
1980	251	0.70
1981	235	0.65
1982	221	0.61

[a] The sample is selected at random from firms that (1) are included in the CRSP Daily Returns File for the entire year 1972 and (2) are included in *Moody's Industrial Manual*.

section 6 we present results of cross-sectional analyses of the price responses. Section 7 summarizes our findings and presents our conclusions.

2. Description of the sample

2.1. Random sample of firms

The sample consists of 360 firms selected at random from a population defined as follows:

1. Firms are represented in the Center for Research in Security Prices (CRSP) Daily Returns File throughout 1972. The CRSP database includes companies listed on the New York or American Stock Exchange. There are 2556 firms in the database that were listed throughout 1972.
2. Firms are included in *Moody's Industrial Manual*. This excludes banking, insurance and other financial companies as well as utilities and transportation companies.

The time period of our analysis is from 1972 to 1982. A firm is removed from the sample at the time its return series ends on the CRSP Daily Returns File. Table 1 presents the pattern of survivorship in the sample. The number of firms leaving the sample is quite evenly distributed over the years 1973 through 1982. The largest number of firms (17) left the sample in 1978 and the smallest number (8) left in 1976. At the end of 1982, the sample contains 221 firms, or

61% of the initial sample. According to the stop code contained in the CRSP Daily Returns File, 80 firms left the sample due to a merger or exchange of securities and 47 firms were delisted. Five firms were liquidated and seven had trading halted or suspended.

2.2. Sample of capital structure events

We assembled the sample of capital structure events by searching *The Wall Street Journal Index* and the issues of the *Investment Dealer's Digest* containing the Corporate Financing Directory for each firm for each year in the sample period. The sample consists of every registered security offering for cash, private placement of debt and borrowing agreement reported in either of these two sources. Thus, it contains offerings announced and completed, as well as offerings announced but subsequently cancelled. Table 2 presents the distribution of announcements of capital structure events by type of financing and by calendar year, as well as the number of completed public offerings.

The total sample consists of announcements of 595 financing events. There are 299 announcements of public security offerings for cash. Of these, 80 are common stock offerings, 172 are straight debt offerings, 33 are convertible debt offerings and 14 are preferred stock offerings.[2]

The number of announcements of public security offerings varies widely across time. More than half of the common stock and convertible debt offerings took place in 1972, 1980 and 1981. Most offerings of straight debt were made in 1975, 1980 and 1982. Approximately 30% of the security offerings for cash occurred in 1980 or 1982, even though the number of firms in the sample during this period is less than 71% of the original sample.

We were able to verify that 246 of the 299 public offerings announced actually took place, either by identifying the date of issuance in the *Investment Dealer's Digest* or by finding evidence of the offering in *Moody's Industrial Manual.* Of the remaining 53 public offerings, 25 are rights offerings or shelf distributions which by definition have no issuance date. The other 28 offerings are classified as cancelled offerings. We were able to find reports of the cancellation in *The Wall Street Journal* for 19 offerings. Of these, ten are common stock offerings, four are convertible debt offerings, four are offerings of straight debt, and one is an offering of preferred stock. The remaining nine offerings were announced, but we could not find evidence that they occurred.

The sample also includes 296 publicly reported private borrowing arrangements. There are 155 credit line or revolving credit agreements, 61 term loans, and 80 private placements of debt. Since these events generally are not

[2] Of the 80 common stock offerings, 51 are primary offerings, 23 are made in combination with a secondary distribution, and six are rights offerings. Nine of the 14 preferred stock offerings involve convertible preferred stock.

Table 2

Distribution of announcements of capital structure events by type of financing and by calendar year for a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange.

Type of event	Year											Total number of events	Number of firms represented	Number of completed offerings[a]
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982			
(1) Common stock	25	3	1	8	6	3	2	4	11	10	7	80	65	62
(2) Straight debt	6	7	13	26	20	16	7	9	24	8	36	172	78	147
(3) Convertible debt	5	1	1	2	2	0	2	1	7	7	5	33	26	25
(4) Preferred stock	0	2	1	1	1	3	2	2	1	0	1	14	9	12
(5) All registered security offerings for cash	36	13	16	37	29	22	13	16	43	25	49	299	124	246
(6) Credit agreements	14	18	23	22	14	13	8	13	14	9	7	155	88	—
(7) Term loans	11	8	4	8	6	9	4	4	5	1	1	61	45	—
(8) Private placements of debt	7	12	8	10	9	16	9	5	1	3	0	80	63	—
(9) All private borrowing arrangements	32	38	35	40	29	38	21	22	20	13	8	296	150	—
Number of firms in sample	360	346	328	316	308	298	281	269	251	235	221			

[a]An offering is defined as completed if (i) the issuance date was identified in the *Investment Dealer's Digest* or (ii) a report of the offering appeared in *Moody's Industrial Manual*. Since the *Investment Dealer's Digest* generally does not contain information on private borrowing arrangements, it is not possible to classify these events as completed.

reported in the *Investment Dealer's Digest*, we could not classify private borrowing arrangements as completed or cancelled.

The distributions in table 2 are noteworthy because they suggest that external financing is not a frequent event for many firms. Announcements of public security offerings for cash were made by 124 firms, or only 34% of the 360 firms sampled. In addition, 150 firms, or 41% of the sample, entered into a publicly reported private borrowing arrangement. These two groups overlap; 203 firms either offered securities publicly for cash or entered into a publicly reported private borrowing arrangement in the sample period. In other words, 44% of the original sample did not engage in *any* publicly reported external financing, and almost two-thirds of the sample firms did not offer securities publicly for cash during the sample period. This evidence lends some support for the argument that firms resort to external financing only if internally generated funds are unavailable, a phenomenon Myers (1984) describes as a pecking order.

2.3. *Summary statistics of the financing events*

Summary statistics for completed security offerings are presented in table 3. Summary measures of the total and relative dollar size of the offerings are presented in rows 1 and 2. The median dollar amount ranges from $24.0 million for common stock offerings to $112.5 million for straight debt offerings. The median market value of common stock of the issuing firm is more than four times greater for straight debt offerings than for common stock offerings. Consequently, the four types of security offerings represent comparable dollar amounts measured relative to the market value of the issuing firm's common stock. The median amount issued relative to the market value of equity is 0.111 for common stock offerings, similar in magnitude to the 0.136 for straight debt offerings.

The change in capitalization associated with a public security offering is calculated using information in the offering prospectus. We were able to obtain a copy of the offering prospectus for approximately 80% of the completed offerings. The prospectus reports the composition of the firm's capital structure prior to the offering (usually within two months of the offering) and after the offering. The post-offering capitalization reflects the planned use of the proceeds as well as the effects of any other nearby capital structure change. We compute the differences between the post-offering and pre-offering values of short-term debt, long-term debt, common stock, preferred stock and leases.[3] The sum of these differences represents our measure of the change in capitalization.

[3]All values are book values except for common stock. The market value of common stock is measured by multiplying the number of shares outstanding given in the prospectus by the closing price at the end of the month prior to the month of announcement. The closing prices were collected from the *Security Owner's Stock Guide*.

Table 3

Summary statistics for completed public security offerings made by a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange, 1972–1982.[a]

Descriptive measure[b]	Type of security offering: Common stock ($n = 62$) (1)	Straight debt ($n = 147$) (2)	Convertible debt ($n = 25$) (3)	Preferred stock ($n = 12$) (4)
(1) Amount offered (millions)	\$38.9, \$24.0 (\$48.5)	\$152.8, \$112.5 (\$134.9)	\$75.2, \$50.0 (\$72.4)	\$106.9, \$87.5 (\$71.8)
(2) Amount offered/market value of common stock[c]	0.151, 0.111 (0.139)	0.300, 0.136 (0.780)	0.224, 0.132 (0.283)	0.256, 0.135 (0.341)
(3) Change in capitalization[d]/ amount offered	0.712, 0.594 (1.362)	0.395, 0.110 (0.533)	0.304, 0.104 (0.860)	0.169, 0.026 (0.353)
(4) Change in capitalization[d]/ market value of common stock[c]	0.056, 0.048 (0.135)	0.213, 0.016 (0.959)	0.059, 0.022 (0.161)	−0.025, 0.005 (0.101)
(5) Total offering costs[e]/ amount offered	0.060, 0.055 (0.017)	0.013, 0.010 (0.009)	0.038, 0.016 (0.040)	0.038, 0.041 (0.018)
(6) Total offering costs[e]/ market value of common stock[c]	0.007, 0.006 (0.006)	0.004, 0.001 (0.009)	0.019, 0.002 (0.040)	0.006, 0.004 (0.005)
(7) Trading days between initial announcement and issuance	27, 18 (25)	24, 13 (46)	18, 13 (16)	29, 18 (40)

[a] Statistics given are the mean followed by the median; the standard deviation is in parentheses.

[b] Descriptive measures presented in rows 3 through 6 are calculated primarily from data in offering prospectuses. Prospectuses were obtained for 46 common stock offerings, 125 straight debt offerings, 20 convertible debt offerings, and six preferred stock offerings.

[c] The market value of common stock is the product of the number of shares outstanding and the closing price at the end of the month prior to the offering announcement. The closing price and number of shares outstanding were collected from the *Security Owner's Stock Guide*.

[d] The change in capitalization is calculated as the sum of the differences between the post-offering and pre-offering values of short-term debt, long-term debt, common stock, preferred stock and leases. All values are book values except for common stock. The market value of common stock is measured by multiplying the number of shares outstanding given in the prospectus by the closing price at the end of the month prior to the month of announcement. The closing prices were collected from the *Security Owner's Stock Guide*.

[e] Total offering costs include the underwriting spread as well as other expenses incurred by the firm.

Rows 3 and 4 of table 3 present summary statistics for the change in capitalization relative to the dollar amount of the offering and relative to the market value of common stock, respectively. The median change in capitalization relative to the amount of the offering is 0.594 for common stock offerings, which is substantially higher than for other types of security offerings. On average, a greater proportion of the proceeds of common stock financing represents an addition to the firm's total assets. As a fraction of the market value of common stock, the median change in capitalization ranges from 0.048 for common stock offerings to 0.005 for preferred stock offerings.

Summary measures of the relative offering costs of the different types of completed security offerings are presented in rows 5 and 6 of table 3. Total offering costs include the underwriting spread as well as other expenses incurred by the firm. These costs are reported in the offering prospectus. The median total costs, as a proportion of the dollar amount of the issue, range from 0.055 for common stock to 0.010 for straight debt. The hypothesis that the mean total costs relative to issue size are equal for the common stock and straight debt samples is rejected at the 0.01 level. The median offering costs measured relative to the market value of common stock range from 0.006 for common stock to 0.001 for straight debt. Offering costs, therefore, can explain only a small negative stock price reaction to announcements of security offerings.

The last row of table 3 reports the length of the interval between the announcement of the offering and the issuance. The median length of this interval is 18 trading days for common stock and preferred stock offerings and is 13 trading days for straight debt and convertible debt offerings. This period is of interest in our analysis of the stock price effects of completed security offerings, since in this interval much of the underwriters' selling effort takes place and uncertainty about the offering is resolved.

Information on private borrowing arrangements was collected from reports in *The Wall Street Journal*. The median size of private placements is $25.0 million, much smaller than the comparable figure for public offerings of debt. However, the median size of private placements relative to the market value of common stock is 0.266, similar to public offerings. Thus, firms that privately place debt tend to be smaller than issuers of public debt. The median dollar amount of term loans is $15.0 million. The median amount of the revolving credit and line of credit agreements is $42.5 million.

Private borrowing arrangements also can be compared to public debt offerings on the basis of the maturity of the debt, or the duration of the loan or credit agreement. Public debt offerings tend to have longer maturities than private borrowing arrangements. For example, 54% of public debt offerings have maturities greater than or equal to 20 years. In comparison, 38.5% of private placements, 12% of term loans and 5% of credit agreements last longer than twenty years. Only 17% of public debt offerings have maturities less than or equal to ten years. This can be compared to 8% of private placements, 44% of term loans and 92% of credit agreements that are less than ten years in maturity or length.

3. Measurement of prediction errors

Average daily prediction errors, or excess returns, are measured around the announcement of all financing events and around the issuance or cancellation of security offerings. The announcement is defined as the earlier of the date of

the first report of the offering in *The Wall Street Journal* and the trading day following the date the offering was registered with the Securities and Exchange Commission. The issuance is the date of the offering as reported in the *Investment Dealer's Digest*. The cancellation is the date a report of the cancellation appeared in *The Wall Street Journal*. The prediction error for the common stock of firm j on day t is defined as

$$PE_{jt} = R_{jt} - (\alpha_j + \beta_j R_{mt}), \tag{1}$$

where R_{jt} is the continuously compounded rate of return for the common stock of firm j on day t, and R_{mt} is the continuously compounded rate of return for the CRSP equally weighted index on day t. The coefficients α_j and β_j are ordinary least squares estimates of firm j's market model parameters. The estimation period is 140 trading days, beginning 21 trading days after the issuance or cancellation.

The estimation period follows the issuance or cancellation because many types of security offerings follow a period of statistically significant abnormal returns. Market efficiency implies that abnormal returns following the issuance should not differ systematically from zero. We avoid a bias in estimation of market model parameters due to stock returns that are systematically non-zero in the estimation period. However, parameter estimates derived from a period that follows the offering reflect any shift in the parameters due to a change in the firm's financial leverage. Thus, our estimation period may induce a bias in the measurement of prediction errors prior to the issuance.

Prediction errors are calculated for each day in the event period that begins 60 trading days before the announcement and ends 20 trading days after the issuance or cancellation. The length of the event period differs among the security offerings due to the varying number of days between the announcement and the issuance or cancellation.

The average prediction error on event day t for a sample of size N is

$$APE_t = \frac{1}{N} \sum_{j=1}^{N} PE_{jt}. \tag{2}$$

Tests of statistical significance are based on standardized prediction errors. Each standardized prediction error (SPE_{jt}) is defined as

$$SPE_{jt} = PE_{jt}/S_{jt}, \tag{3}$$

where

$$S_{jt} = \left\{ V_j^2 \left[1 + \frac{1}{ED} + \frac{(R_{mt} - \bar{R}_m)^2}{\sum_{i=1}^{ED} (R_{mi} - \bar{R}_m)^2} \right] \right\}^{1/2}. \tag{4}$$

In (4), V_j^2 is the residual variance of firm j's market model regression, ED is the number of days in the period used to estimate the market model, R_{mt} is the market return on day t, and $\bar{R}_m$ is the mean market return in the estimation period.[4] The average standardized prediction error is

$$ASPE_t = \frac{1}{N} \sum_{j=1}^{N} SPE_{jt}. \tag{5}$$

The individual daily prediction errors are assumed to be normally distributed, so each SPE_{jt} is distributed Student t with variance equal to $ED/(ED - 2)$. Under the Central Limit Theorem, $ASPE_t$ is asymptotically normally distributed with a variance equal to $ED/((ED - 2)N)$, assuming that the individual prediction errors are cross-sectionally independent. Since ED is large, $ED/(ED - 2)$ is very close to one and the variance of $ASPE_t$ approximately equals $1/N$. For each day, the following Z-statistic is computed:

$$Z = \sqrt{N}\,(ASPE_t). \tag{6}$$

The limiting distribution of Z is the unit normal, under the hypothesis that the mean standardized prediction error equals zero.

Over an interval of trading days that may differ among firms and begins with day T_1 and ends with T_2, where T_{1j} and T_{2j} are specific to event j, the average interval prediction error is

$$AIPE_{T_1, T_2} = \frac{1}{N} \sum_{j=1}^{N} \sum_{t=T_{1j}}^{T_{2j}} PE_{jt}. \tag{7}$$

We test the hypothesis that the average interval standardized prediction error

[4] We make no adjustment for a possible increase in variance in stock returns following the offering announcement.

equals zero, where

$$AISPE_{T_1,T_2} = \frac{1}{N}\sum_{j=1}^{N}\sum_{t=T_{1j}}^{T_{2j}} SPE_{jt} \Big/ \sqrt{T_{2j} - T_{1j} + 1}\,. \tag{8}$$

We assume that the average interval standardized prediction error, given by (8), has a variance equal to $1/N$ and is asymptotically normally distributed. Thus, the Z-statistic,

$$Z = \sqrt{N}\left(AISPE_{T_1,T_2}\right), \tag{9}$$

has a unit normal limiting distribution under the hypothesis that the average interval standardized prediction error equals zero.

4. Average prediction errors

4.1. Total sample of security offerings and private financing

The average stock price responses to the announcements of various types of security offerings are reported in table 4. Each average prediction error corresponds to a two-day period that ends with the day defined as the announcement. Column 1 contains the average prediction errors for the full sample of events. The average prediction errors are statistically significant and negative at the announcement of common stock and convertible debt offerings. In both samples, three-fourths or more of the two-day prediction errors are negative. The average prediction errors for straight debt, preferred stock, private debt and term loans are all negative, but none is significant at the 0.10 level. The average prediction error at the announcement of credit agreements equals 0.89%, significant at the 0.01 level, although only 53% of the prediction errors are positive.

Several announcements are complicated in one or two ways. First, for some observations the two-day announcement period is contemporaneous with a report in *The Wall Street Journal* of other news about the firm. Second, some offerings involve more than one type of security. Events that have neither a contemporaneous announcement nor another type of security in the offering comprise the samples in columns 4–6.[5] For the subsamples of clean events, the two-day average prediction errors are negative and significant only for common stock and convertible debt offerings (column 4). This pattern is the same as in the full sample (column 1). Given the minor variation in results, the analysis in the remainder of the paper uses the entire sample of security offerings.

[5]Joint primary and secondary, or combination, offerings of common stock are included in both subsamples of events.

Table 4

Average two-day common stock prediction errors (APE) at the announcement of financing events undertaken by firms in the randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange, 1972–1982.

	Sample of events					
	All events			Events with no contemporaneous announcement or other financing		
Type of event	APE (1)	Z-value[a] (2)	Proportion negative[b] (sample size) (3)	APE (4)	Z-value[a] (5)	Proportion negative[b] (sample size) (6)
Public offerings for cash						
(1) Common stock	−3.56%	−9.81	0.75[e] (80)	−4.46%	−9.43	0.81[e] (47)
(2) Straight debt	−0.23	−1.40	0.56 (171)	0.06	0.57	0.52 (111)
(3) Convertible debt	−1.97	−4.94	0.78[e] (33)	−1.39	−3.19	0.74[e] (23)
(4) Preferred stock	−0.26	−0.55	0.71 (14)	1.53	0.83	0.50 (6)
Private borrowing arrangements						
(5) Private placements of debt	−0.57	−1.44	0.63[d] (80)	−0.36	−0.57	0.61 (57)
(6) Term loans	−0.15	−1.41	0.49 (61)	0.38[c]	−0.29	0.45 (40)
(7) Credit agreements	0.89	2.58	0.47 (155)	0.86	2.09	0.46 (124)

[a] The null hypothesis is that the average standardized prediction error equals zero.
[b] The null hypothesis is that the proportion of negative prediction errors equals 0.50. We use the Wilcoxon signed-ranks test statistic described by Daniel (1978).
[c] The average prediction error and Z-value can differ in sign because the former assigns uniform weights to each observation and the latter assigns non-uniform weights.
[d] Signed-ranks test statistic is significant at the 0.05 level.
[e] Signed-ranks test statistic is significant at the 0.01 level.

4.2. *Interpretation of the average stock price effects*

Under the assumption that a firm's investment requirements are known, Miller and Rock (1985) present a model in which unanticipated announcements of net new financing lead market participants to lower their assessment of a firm's earnings prospects. An implication of their model is that the stock price reaction to a financing announcement is related to the amount of unexpected net new financing. The model does not distinguish among different types of securities.

In Myers and Majluf's (1984) model, the issuance of securities conveys information about the firm's investment opportunities and assets in place. The

model implies that issuances of equity securities convey less favorable information about the firm's investment opportunities and assets in place than do issuances of debt securities. Unlike Miller and Rock (1985), their model implies that the price effects depend on the type of security offered, and in particular on the sensitivity of security value to changes in firm value. Like Miller and Rock (1985), the Myers and Majluf (1984) model pertains only to new financing of investment.

The average announcement period prediction errors for the total sample of security offerings (table 4) are consistent with both models. Announcements of offerings of common stock and convertible debt are met by a statistically significant price decline, but the price response to straight debt offerings is insignificant. The small and statistically insignificant price response to straight debt offerings is consistent with Myers and Majluf (1984). In addition, this result is not necessarily inconsistent with Miller and Rock (1985), since the average ratio of change in capitalization to the market value of common stock, or the relative amount of new financing, is smallest for the sample of straight debt offerings.

The average price responses to the announcements of private placements of debt or term loans are similar to the price changes observed for public offerings of straight debt. This finding is consistent with Miller and Rock (1985), if these announcements do not change sufficiently the market's expectation of new financing by the firm. The insignificant average price effects are consistent with Myers and Majluf (1984), if the default risk of these borrowings is sufficiently low. The positive average prediction errors at the announcement of credit agreements are not predicted by either model.

The results in table 4 also suggest that the magnitude of the price response is inversely related to the risk of the security being offered. The average stock price response to the announcement of offerings of straight debt is significantly greater, at the 0.01 level, than the announcement period average prediction error for convertible debt offerings. This is consistent with predictions of Myers and Majluf (1984). The announcement period average prediction error for convertible debt offerings is greater than the announcement period average prediction error for common stock offerings, but the difference is not statistically significant at the 0.10 level.

The evidence in table 4 of negative stock price reactions to the announcement of common stock and convertible debt offerings is also consistent with the view that market participants perceive an incentive of managers to issue these securities when managers think shares are overpriced. In addition, this argument is consistent with insignificant average stock price response to offerings of straight debt or private borrowing.

5. Completed and cancelled security offerings

In this section we broaden our investigation of price effects of security offerings. Managers' decisions to propose a security offering may be related to

the security's performance in an earlier period. In addition, managers' decisions to complete or to cancel an offering may be related to share price performance after the announcement. Furthermore, uncertainty about the outcome of the offering is resolved following the announcement. Therefore, we examine share price behavior before and after the announcement of completed and cancelled offerings.

5.1. *Completed underwritten security offerings for cash*

Average common stock daily prediction errors around the announcement and issuance of the completed public security offerings are presented in table 5. The average prediction errors in the interval beginning 60 days before and ending two days before the announcement are positive and statistically significant at least at the 0.05 level for common stock, convertible debt and preferred stock offerings. The average prediction error in this interval for straight debt offerings is negative and statistically significant at the 0.01 level.

News of security offerings is met with a negative stock price reaction. The average prediction errors are negative and significant at the 0.01 level for the samples of common stock and convertible debt offerings, and at least 73% of the prediction errors are negative. For the sample of straight debt offerings, the average two-day prediction error is also negative and significant at the 0.05 level. These results are similar to those reported by Asquith and Mullins (1986) and Masulis and Korwar (1986) for common stock offerings and by Dann and Mikkelson (1984) and Eckbo (1986) for straight debt and convertible debt offerings.

In intervals that follow the announcement, there are significant average prediction errors for common stock and convertible debt offerings, but not for straight debt and preferred stock offerings. At the issuance, the average prediction errors are negative and significant at the 0.01 level for both common stock and convertible debt offerings. Two-thirds or more of these prediction errors are negative in the two samples of offerings. Average returns at the issuance are insignificant at the 0.10 level for straight debt and preferred stock offerings. Between the announcement and issuance, the average prediction error is significant only for common stock offerings.[6,7] Over the twenty trading

[6] We examined more closely the offerings with a cumulative prediction error of more than 10% in the period beginning one day after the announcement and ending one day before the issuance by looking at citations in *The Wall Street Journal Index*. We found no dramatic announcements, such as a takeover attempt or a major stock repurchase. The most common subject of articles was a report of net income or dividend payouts.

[7] There is a relation between the length of the period from one day after the announcement to one day before the issuance and the common stock prediction error measured over this interval. For both the common stock and convertible debt samples, the average prediction error in this period is positive when the interval is longer than the sample median number of days and is negative when the interval length is shorter than the sample median number of days.

Table 5

Average common stock prediction errors around the announcement and issuance of completed, underwritten security offerings undertaken by a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange, 1972–1982[a] (Z-value and proportion of negative prediction errors are in parentheses[b]).

	Type of security offered			
Interval of trading days[c]	Common stock ($N = 56$) (1)	Straight debt ($N = 135$) (2)	Convertible debt ($N = 24$) (3)	Preferred stock ($N = 12$) (4)
AD − 60 through AD − 2	6.20%	−4.11%	10.94%	15.35%
	(2.19)	(−2.85)	(3.42)	(2.23)
	(0.36)[e]	(0.52)	(0.17)[f]	(0.33)
AD − 1 through AD	−3.44	−0.39	−1.57	0.10
	(−8.31)	(−2.21)	(−4.23)	(0.23)
	(0.73)[f]	(0.56)	(0.79)[e]	(0.67)
AD + 1 through ID − 1[d]	5.51	−0.37	1.29	2.52
	(3.11)	(−1.04)	(0.20)	0.58
	(0.34)[f]	(0.56)	(0.33)	(0.42)
ID	−0.70	0.19	−1.71	−0.74
	(−2.33)	(1.13)	(−3.27)	(0.86)
	(0.70)[f]	(0.56)	(0.67)[e]	(0.58)
ID + 1 through ID + 20	0.84	0.38	−1.87	−0.80
	(0.58)	(0.95)	(−0.51)	(0.11)
	(0.45)	(0.44)	(0.67)	(0.50)

[a] Offerings are excluded if (i) the announcement (AD) or issuance (ID) could not be identified; (ii) the event was a rights offering or a shelf distribution; or (iii) the offering was cancelled.

[b] The null hypotheses are (1) the average standardized prediction error equals zero and (2) the proportion of negative prediction errors equals 0.50. We test the second hypothesis using the Wilcoxon signed-ranks test statistic described by Daniel (1978).

[c] AD is the announcement and ID is the issuance.

[d] The median length of this interval is 18 trading days for common stock offerings, 12 days for straight debt, 12 days for convertible debt and 17 days for preferred stock.

[e] Signed-ranks test statistic is significant at the 0.05 level.

[f] Signed-ranks test statistic is significant at the 0.01 level.

days that follow the issuance, the average prediction errors are insignificant at the 0.10 level for all categories of security offerings.[8]

The statistically significant average returns following the announcement of common stock and convertible debt offerings, documented in table 5, suggest that there is a difference between managers' and the market's assessment of share price, and that the difference is not eliminated entirely by the price

[8] We also measure the average prediction errors for the sample of offerings by firms that issued straight debt and either common stock or convertible debt. This subsample includes 26 common stock offerings, 59 straight debt offerings and 16 convertible debt offerings. The average returns for this subsample are very similar to the results presented in table 5.

response to the announcement. To investigate this further, we examine the average prediction errors of common stock and convertible debt offerings that are cancelled.

5.2. Comparison of prediction errors of cancelled and completed offerings

The sample of announced security offerings includes 14 offerings of common stock and convertible debt for which the date of cancellation was identified in *The Wall Street Journal*. Of these, ten are common stock and four are convertible debt offerings. Column 1 of table 6 presents average prediction

Table 6

Average common stock prediction errors around the announcement and issuance or cancellation of offerings of common stock and convertible debt undertaken by a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange, 1972–1982[a] (Z-value and proportion of negative prediction errors are in parentheses[b]).

Interval of trading days[c]	Cancelled offerings ($N = 14$) (1)	Completed offerings ($N = 80$) (2)	Cancelled and completed offerings ($N = 94$) (3)
AD − 60 to AD − 2	11.73%	7.62%	8.20%
	(2.43)	(3.71)	(4.34)
	(0.36)[e]	(0.30)[f]	(0.31)[f]
AD − 1 to AD	−5.72	−2.88	−3.30
	(−6.44)	(−9.27)	(−11.04)
	(0.93)[f]	(0.75)[f]	(0.78)[f]
AD + 1 to CD − 2 or	−8.59	4.24	2.33
AD + 1 to ID − 1[d]	(−1.52)	(2.74)	(1.93)
	(0.79)	(0.34)[f]	(0.40)[e]
CD − 1 to CD or ID	4.13	−1.01	−0.24
	(3.71)	(−3.74)	(−2.03)
	(0.07)[f]	(0.69)[f]	(0.60)
CD + 1 to CD + 20 or	0.51	0.03	0.10
ID + 1 to ID + 20	(0.80)	(0.20)	(0.49)
	(0.50)	(0.51)	(0.51)

[a] Offerings are excluded from this table if (i) the announcement (AD), or either the cancellation (CD) or issuance (ID) could not be identified; or (ii) the event was a rights offering or a shelf distribution.

[b] The null hypotheses are (1) the average standardized prediction error equals zero, and (2) the proportion of negative prediction errors equals 0.50. We test the second hypothesis using the Wilcoxon signed-ranks test statistic described by Daniel (1978).

[c] AD is the announcement, CD is the cancellation, and ID is the issuance.

[d] The median length of this interval is 32 trading days for the cancelled offerings, 16 days for the completed offerings and 18 days for the combined sample.

[e] Signed-rank test statistic is significant at the 0.05 level.

[f] Signed-rank test statistic is significant at the 0.01 level.

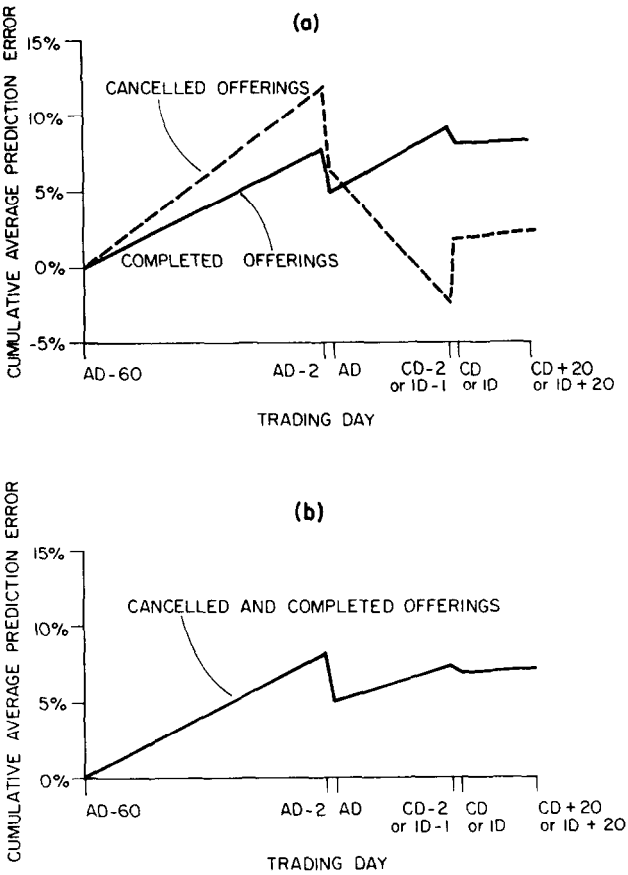

Fig. 1. Plots of the cumulative average common stock prediction errors around the announcement (AD) and issuance (ID) or cancellation (CD) for 80 completed and 14 cancelled offerings of common stock and convertible debt by a randomly selected sample of 360 firms, 1972–1982.

errors for the sample of 14 cancelled offerings. Column 2 presents average prediction errors for the sample of 80 completed offerings of common stock and convertible debt. Average prediction errors for the combined sample of completed and cancelled offerings are presented in column 3. Fig. 1a plots the cumulative average prediction errors for the sample of completed offerings and the sample of cancelled offerings. The cumulative average prediction errors for the combined sample are presented in fig. 1b.

Like the completed offerings, the average prediction errors of offerings eventually cancelled are positive before the announcement and negative at the announcement. Following the announcement, the pattern of average prediction errors for cancelled offerings is opposite that of completed offerings. Between

the announcement and the day before the cancellation, a period that has a median length of 32 trading days, the average prediction error is large and negative, but not significant at the 0.10 level. In contrast, between the announcement and the issuance, an interval that has a median length of 16 trading days, the average return is positive and significant at the 0.01 level. The average return at the cancellation is positive and significant at the 0.01 level; the average return at the issuance is negative and significant at the 0.01 level.

The average prediction errors after the announcement for the combined sample of cancelled and completed offerings imply that the stock price response to the announcement is an unbiased estimate of the valuation effect. The average prediction error from one day after the announcement through the issuance or cancellation, a return not reported in table 6, is insignificantly different from zero at the 0.05 level. Therefore, the large post-announcement average returns for the samples of cancelled and completed offerings appear to reflect a selection bias that corresponds to the offering outcome rather than systematic mispricing and a profitable trading rule.

5.3. Interpretation of stock returns during the issuance process

The pattern of average prediction errors from before the announcement through the issuance or cancellation is new evidence on the issuance process for securities. This evidence is of particular interest because it is not implied explicitly by models that predict price effects at announcements of security offerings. In this section we discuss a possible interpretation of our results that is consistent with the stock returns we observe throughout the issuance process.

Our interpretation presumes that managers attempt to issue common stock or convertible debt when shares are overpriced, and tend to cancel proposed offerings if in their view shares are underpriced. This suggests a relation between abnormal stock returns and decisions to announce, to complete, or to cancel security offerings.

The decision to announce offerings of common stock or convertible debt is made after a period of positive and significant average returns. The sign and significance of the pre-announcement average returns are consistent with the notion that managers attempt to sell securities when they are overpriced, if positive abnormal returns tend to reflect a period in which the market price exceeds managers' assessment of share price.

On average, share prices fall in response to news of an equity or convertible debt offering. Our interpretation is that the announcement of the offering conveys to market participants that in managers' view the shares are overpriced. In response, the market lowers its valuation of the shares.

In the period between the announcement and the outcome of the proposed offering, average returns are positive for offerings subsequently completed and are negative for offerings subsequently cancelled. In our view, these results

reflect the interaction between stock returns and managers' decisions. If post-announcement returns are positive, managers are likely to complete the proposed offering. Conversely, if post-announcements returns are negative, managers are likely to cancel the proposed offering.

Finally, the average prediction errors observed at the issuance and cancellation are also consistent with our argument based on managers' incentives. At the issuance, news that the proposed offering is actually being completed leads the market to infer that managers still think the shares are overpriced. As a result, stock prices fall. On the other hand, news of a cancellation indicates that managers now view the market price as too low. Consequently, share price increases in response to news of a cancellation.[9]

Our interpretation presumes that managers act in the interests of current stockholders and attempt to transfer wealth from purchasers of new common stock or convertible debt. But rational market participants will adjust share price in response to news of an offering or a decision to proceed with an offering. Consequently, it is unclear whether managers on average can succeed in effecting such wealth transfers through offerings of common stock or convertible securities.

Other interpretations of the stock returns throughout the issuance process are possible. However, none that we have considered satisfactorily explain the complete pattern of returns. For example, one view is that a by-product of offering announcements is unfavorable information about the firm's earnings prospects. But it is unclear how the positive average returns between the announcement and the issuance are related to unfavorable information conveyed by the announcement of the offering.

In this view, the negative average returns at the issuance of common stock or convertible debt reflect the resolution of uncertainty about the outcome of the proposed offering. However, the average return at the issuance does not support an explanation based on the resolution of uncertainty. For example, the average stock return of -1.71% at the issuance of convertible debt is too large (in absolute value) to represent only the resolution of uncertainty, given the low frequency of cancellations and an average stock return of -1.57% at the announcement.[10]

6. Cross-sectional analysis of the stock price response to the announcement of completed offerings

In this section we analyze the stock price effects of completed underwritten security offerings in light of models of security issuance presented by Miller

[9]Officer and Smith (1985) present a similar interpretation of their finding of a significant, positive average stock price reaction to the announcement of withdrawals of common stock offerings.

[10]This evidence and line of argument are similar to that presented in Dann and Mikkelson

and Rock (1985) and Myers and Majluf (1984). These models are similar in that both generally imply a negative stock price reaction to news of a security offering that provides new financing. However, the models identify different determinants of the stock price effects. We examine the relation between the common stock prediction errors at the announcement of completed security offerings and (1) the quality rating of debt offerings, (2) the stated reason for the offering, (3) the net amount of new financing provided by the offering, (4) the size of the offering, and (5) the type of security offered.

6.1. *Quality rating of debt issues*

Myers and Majluf (1984) predict that the price response to security offerings depends on the sensitivity of the value of the new securities to changes in firm value. We infer from this that a larger decrease in stock price may be associated with debt offerings of lower quality rating. No price response is predicted for issuances of securities associated with no default risk.

Average two-day common stock prediction errors at the announcement of straight and convertible debt offerings classified by Standard and Poor's ratings are presented in table 7. Consistent with the implication of Myers and

Table 7

Average two-day announcement period common stock prediction errors for straight debt offerings and convertible debt offerings classified by Standard and Poor's quality ratings.[a]

Security type	Rating	Amount of offering/ market value of common stock (mean value)	Average two-day prediction error	Z-value[b]	Proportion negative[c] (sample size)
Straight debt	AAA or AA	0.082	0.00%	−0.80	0.50 (50)
Straight debt	A	0.168	−0.26	−1.06	0.58 (55)
Straight debt	BBB or below	0.359	−0.51	−1.46	0.54 (24)
Convertible debt	AA or A	0.075	−3.72%	−3.84	1.00 (5)
Convertible debt	BBB or BB	0.111	−1.86	−3.10	0.82 (11)
Convertible debt	B or below	0.627	−0.14	−0.91	0.71 (7)

[a] The offerings were undertaken by a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange in 1972–1982.

[b] The null hypothesis is that the average standardized prediction error equals zero.

[c] The null hypothesis is that the proportion of negative prediction errors equals 0.50. We use the Wilcoxon signed-ranks test statistic described by Daniel (1978). None of the test statistics is significant at the 0.05 level.

Majluf (1984), the average two-day stock return is −0.51% for the 24 issues of straight debt rated BBB or lower and is 0.00% for the issues rated AAA. However, at best these results provide only weak support for the predicted relation, because none of the average two-day prediction errors or proportions of negative returns for straight debt offerings are significant at the 0.10 level.

The average two-day common stock prediction errors for convertible debt offerings classified by quality ratings is opposite to that predicted. The five convertible bonds in our sample rated AA or A have an average two-day prediction error of −3.72%, and the seven bonds rated B or lower have an average two-day prediction error of only −0.14%. The ordering of average prediction errors is not due to relative offering size, since the offerings of lowest quality tend to be the largest relative to the market value of common stock. The average prediction errors for convertible debt offerings do not support Myers and Majluf (1984).

6.2. *Stated reason for the offering*

The theories presented by Miller and Rock (1985) and Myers and Majluf (1984) pertain to security offerings that provide new financing. Neither theory predicts a stock price response to offerings that refinance debt. Therefore, we compare the stock price responses to offerings that are reported to finance new investment to those that are reported to refinance debt.

We read all reports of offerings in *The Wall Street Journal*. We classified reasons given in these reports into five categories: (1) refinance debt, (2) finance capital expenditures, (3) finance corporate growth, (4) use for general corporate purposes, and (5) use for miscellaneous other reasons. One or more reasons is given in reports of 254 offerings of common stock, convertible debt or straight debt. Based on our interpretations of the published reports, a single reason is given for 122 offerings.

Panel A of table 8 presents two measures of relative offering size for offerings having a single reason of (1) refinancing debt, (2) financing capital expenditures or (3) financing corporate growth, general corporate purposes or miscellaneous (labeled 'other'). The first measure of relative offering size is the net change in capitalization, as reported in the offering prospectus, divided by the total dollar value of the offering. On average, refinancings of debt represent a small change in total assets as a fraction of offering amount and financings of capital expenditures represent a large relative change in total assets. Thus, our classification by stated reason corresponds to the actual change in total assets reported in the offering prospectus. The second measure of relative offering size is the total dollar amount of the offering divided by the market value of common stock. There do not appear to be any systematic patterns in this measure of relative offering size, either by type of security or stated reason.

Table 8

Offering characteristics and average two-day announcement period prediction errors (*APE*) of completed underwritten security offerings classified by stated purpose of the offering and by type of security offered.[a]

Panel A: Mean values of the change in capitalization relative to the dollar amount of the offering and offering size relative to the market value of common stock[b]

	Type of security					
	Common stock		Convertible debt		Straight debt	
Stated reason	Change in capitalization/ amount of offering	Amount of offering/ market value of common stock	Change in capitalization/ amount of offering	Amount of offering/ market value of common stock	Change in capitalization/ amount of offering	Amount of offering/ market value of common stock
Refinance debt	0.073	0.157	0.070	0.289	0.088	0.215
Capital expenditures	0.958	0.187	1.027	0.079	0.975	0.117
Other	0.610	0.136	0.550	0.221	0.517	0.389

Panel B: Average two-day announcement period common stock prediction error[c]

	Type of security					
	Common stock		Convertible debt		Straight debt	
Stated reason	*APE* (*Z*-value)	Sample size	*APE* (*Z*-value)	Sample size	*APE* (*Z*-value)	Sample size
Refinance debt	−4.19% (−5.41)	12	−3.60% (−3.30)	9	−0.53% (−1.38)	48
Capital expenditures	−1.32[d] (−1.23)	11	−2.33 (−2.24)	4	−0.67 (−1.90)	15
Other	−5.21 (−3.06)	3	−3.94 (−2.91)	5	1.11 (2.73)	15

[a] The sample consists of 360 randomly selected industrial firms listed on the New York or American Stock Exchange in 1972–1982.

[b] The change in capitalization is the sum of the differences between the post-offering and pre-offering values of short-term debt, long-term debt, common stock, preferred stock and leases, as reported in the offering prospectus. The market value of common stock is measured by multiplying the number of shares outstanding by the closing price at the end of the month prior to the month of announcement. The closing prices and the number of shares outstanding were collected from the *Security Owner's Stock Guide*.

[c] The null hypothesis is that the average standardized prediction error equals zero.

[d] This return is significantly different, at the 0.05 significance level, from the average prediction error for the sample of common stock offerings for which the stated reason is to refinance debt.

Panel B reports average announcement period prediction errors for offerings classified by a single stated reason. For common stock offerings, the average decrease in share price is smaller when the reported purpose is to finance capital expenditures. The difference between the average returns for offerings to refinance debt and to finance capital expenditures is significant at the 0.05 level. No difference between the prediction errors in these categories is found for convertible debt or straight debt offerings. Straight debt offerings in the other category on average have a favorable stock price reaction.

Two findings are of particular interest. First, common stock and convertible debt offerings that refinance debt have substantial negative effects on share price.[11] There are significant valuation effects of offerings that do not change appreciably the firm's total assets, but reduce the firm's financial leverage. This result alone suggests that the theories of Miller and Rock (1985) and Myers and Majluf (1984) do not explain fully the price effects. Second, the smaller decrease in share price for common stock offerings to finance capital expenditures suggests that investment has a favorable effect on share price. This is consistent with positive price responses to capital expenditure announcements reported by McConnell and Muscarella (1984).

The second row of panel B most directly pertains to Miller and Rock (1985) and Myers and Majluf (1984). The statistically significant average prediction errors for convertible debt and straight debt offerings support these theories, while the insignificant average return for common stock offerings does not.

6.3. *Proportion of new financing*

We also group the offerings by the proportion of the offering that represents an addition to the firm's assets, according to information in the offering prospectus. The first row of table 9 represents offerings where the change in capitalization is between 80% and 120% of the amount of the offering. Consistent with Myers and Majluf (1984) and Miller and Rock (1985), the average stock price reaction is negative for all three types of securities. For common stock offerings, the price response is significant at the 0.01 level, and for convertible debt offerings the price response is significant at the 0.05 level. For straight debt offerings, the price response is significant only at approximately the 0.10 level. The third row represents offerings where the change in assets is between -20% and 20% of the amount of the offering. The average prediction errors for common stock and convertible debt are similar to the returns for offerings that are stated to be mostly for refinancing. For these

[11] The negative and significant average prediction errors of common stock and convertible debt offerings that refinance debt are also consistent with the argument that a decrease in financial leverage conveys unfavorable information about the firm's earnings prospects. Dann and Mikkelson (1984) discuss this hypothesis, but do not find much empirical support for it. We do not attempt to test this hypothesis directly.

Table 9

Average two-day announcement period prediction errors (APE) of completed underwritten offerings classified by type of security and by the change in capitalization relative to the dollar amount of the offering.[a,b]

Change in capitalization/ dollar amount of offering ($\Delta A/AMT$)[c,d]	Mean value of $\Delta A/AMT$	Type of security: Common stock APE	Common stock Z-value[e] (sample size)	Convertible debt APE	Convertible debt Z-value[e] (sample size)	Straight debt APE	Straight debt Z-value[e] (sample size)
$0.8 \leq \frac{\Delta A}{AMT} \leq 1.2$	0.99	−5.47%	−4.57 (11)	−1.87%	−2.30 (5)	−1.20%	−1.65 (26)
$0.2 < \frac{\Delta A}{AMT} < 0.8$	0.49	−4.09	−4.05 (10)	5.28	0.63 (3)	−0.82	−0.84 (18)
$-0.2 \leq \frac{\Delta A}{AMT} \leq 0.2$	0.03	−4.17	−6.44 (15)	−2.38	−3.05 (10)	−0.134	−0.01 (60)

[a] The sample consists of 360 randomly selected industrial firms listed on the New York or American Stock Exchange in 1972–1982.

[b] The change in capitalization is the sum of the differences between the post-offering and pre-offering values of short-term debt, long-term debt, common stock, preferred stock and leases, as reported in the offering prospectus.

[c] We exclude observations if a prospectus was not available, or if the value of $\Delta A/AMT$ was less than −0.2 (six observations) or greater than 1.2 (fourteen observations).

[d] Groups defined by values of $\Delta A/AMT$ do not correspond exactly to groups defined by a single stated reason for the financing. For example, of the eleven common stock offering in the first row, five have a single stated reason to finance capital expenditures, four have no stated reason, and two have multiple reasons (finance capital expenditures and use for general corporate purposes).

[e] The null hypothesis is that the average standardized two-day prediction error equals zero.

offerings, the significant decrease in share price appears to be related to a decrease in financial leverage or explained by the argument that in general the market infers that share price is too high when common stock or convertible debt is issued. The straight debt offerings represented in row 3 are refinancings of debt and are not associated with a significant price effect on average.[12]

6.4. *Cross-sectional regressions*

Table 10 presents weighted least squares regressions of the two-day announcement period prediction errors on variables that represent potential determinants of the price response for completed common stock, convertible

[12] The results in table 9 are consistent with those reported by Dann and Mikkelson (1984) for their samples of straight debt and convertible debt offerings. They find no significant difference between the average prediction errors for offerings that represent 90% or more new financing versus those that represent less than 10% new financing.

Table 10

Estimates of weighted least squares regressions of two-day announcement period prediction errors on measures of change in capitalization or size for completed underwritten offerings of common stock, convertible debt and straight debt undertaken by a randomly selected sample of 360 industrial firms listed on the New York or American Stock Exchange, 1972–1982 (t-statistics in parentheses).

Panel A: Combined sample of offerings

	Independent variables[a]							
	Constant (1)	$AMT/MVCS$ (2)	$\Delta A/MVCS$ (3)	$\Delta A/AMT$ (4)	I_{CS} (5)	I_{CD} (6)	Sample size	F-statistic
(1)	−0.004	0.005		−0.001	−0.034	−0.023	175	9.70
	(−1.05)	(0.58)		(−0.45)	(−4.78)	(−2.67)		
(2)	−0.003		−0.001	−0.001	−0.035	−0.023	175	9.62
	(−0.86)		(−0.16)	(−0.43)	(−4.81)	(−2.71)		

Panel B: Samples classified by type of security:[b] (3),(4) = common stock; (5),(6) = convertible debt; (7),(8) = straight debt

	Independent variables[a]						
	Constant (1)	$AMT/MVCS$ (2)	$\Delta A/AMT$ (3)	$R1$ (4)	$R2$ (5)	Sample size	F-statistic
(3)	−0.031	−0.082	0.003			45	12.67
	(−2.79)	(−1.17)	(0.72)				
(4)	−0.036	−0.069		0.035	0.013	24	6.25
	(−2.91)	(−1.05)		(2.19)	(0.39)		
(5)	−0.035	0.060	0.002			20	6.21
	(−3.38)	(1.18)	(0.19)				
(6)	−0.015	−0.088		−0.007	−0.009	17	11.56
	(−1.40)	(−2.10)		(−0.60)	(−0.72)		
(7)	−0.000	0.005	−0.009			114	1.90
	(−0.12)	(0.58)	(−1.83)				
(8)	−0.003	−0.005		−0.007	0.028	76	4.04
	(−0.76)	(−0.44)		(−1.06)	(3.40)		

[a]Independent variables are defined as follows:
$MVCS$ = market value of common stock prior to the offering,
ΔA = net change in capitalization resulting from the offering, as reported in the offering prospectus,
AMT = dollar amount of the offering,
I_{CS} = index variable for common stock,
I_{CD} = index variable for convertible debt,
$R1$ = index variable if stated reason for offering is to finance capital expenditures,
$R2$ = index variable if stated reason for offering is growth, general corporate purposes or other.

[b]The sample sizes differ between the two regressions reported for each security type because observations are excluded from the second regression if no reason was stated, or if more than one reason was stated.

debt and straight debt offerings.[13] The potential determinants are suggested by Miller and Rock (1985) and Myers and Majluf (1984). The first row reports no significant relation between the prediction errors and the size of the offering relative to the market value of common stock ($AMT/MVCS$) nor the net change in the firm's assets as a proportion of the dollar amount of the offering ($\Delta A/AMT$). The coefficients on index variables for common stock (I_{CS}) and convertible debt (I_{CD}) are negative and statistically significant. The second regression replaces $AMT/MVCS$ with a measure of the net change in total assets relative to the market value of common stock ($\Delta A/MVCS$). Again, only the coefficients on the index variables representing type of security are significantly different from zero.[14,15]

Regressions for offerings classified by the type of security are presented in panel B of table 10. Overall, no variable has a significant relation with the common stock prediction error for all three types of security offerings. Consistent with results reported in table 8, there is a significant, positive coefficient on the index variable ($R1$) for common stock offerings that are stated to be for financing of capital expenditures. In the second regression for the convertible debt sample, there is a significant, negative relation between stock return and the relative dollar amount of the offering ($AMT/MVCS$). For straight debt, the F-statistic of the first regression is insignificant, and in the second regression only the positive coefficient on the second index variable ($R2$) for stated reason is significant.

The estimates presented in table 10 imply that type of security is the most reliable determinant of the stock price response. The index variables for security type in panel A as well as the constant terms in panel B imply that the market responds negatively to news of a common stock or convertible debt offering, controlling for the effects of the offering's stated reason, relative size and net change in the firm's total assets. We are unable to detect a consistent

[13] The dependent and independent variables are divided by the standard error of the two-day announcement period prediction error. This adjusts for heteroscedasticity of the residuals due to different variances of stock returns across firms.

[14] We also have estimated the regressions in rows 1 and 2 of table 10 using different measures of the stock price effect as the dependent variable. The first alternative measure is the sum of the two-day announcement period prediction error and the prediction error at issuance. The statistical inferences are unchanged. The second alternative measure is the cumulative prediction error from one day before the announcement through the issuance. For these regressions the explained variation is much lower and the coefficient on the index variable for common stock is insignificant at the 0.10 level. However, the coefficient on change in net assets divided by market value of common stock ($\Delta A/MVCS$) is negative and significant at the 0.05 level.

A potentially important problem with using returns that follow the announcement is that they may reflect a positive bias if managers elect to complete offerings with positive post-announcement returns and cancel those with negative post-announcement returns. Our evidence for completed and cancelled offerings is consistent with such a bias in the post-announcement returns. Therefore, we emphasize the analysis of the prediction errors at the announcement.

[15] We also estimated the regressions in rows 1 and 2 including the reason index variables $R1$ and $R2$. Neither variable is related significantly to the two-day prediction error.

relation between the common stock prediction errors and potential determinants other than type of security.[16]

6.5. *Summary of the cross-sectional analysis*

The evidence presented in tables 7 through 10 does not reveal a consistent relation between the price effects of security offering announcements and measures of quality, relative offering size or net change in assets. There are at least two possible reasons for our failure to find an effect related to our measures of offering size or net change in assets. First, the market may form accurate forecasts of firms' financing requirements such that the type of financing rather than the amount of financing is the most pertinent information conveyed at the announcement. Second, our measure of the amount of net new financing may be imprecise. We implicitly assume that the expected relative amount of new financing is constant across financing events and that the measures of net new financing reported by different firms are comparable. These two possible problems are important qualifications of our results.

We find that the stock price response to security offerings depends on the type of security. Common stock and convertible debt offerings are met with a larger decrease in share price at the announcement, even after adjusting for the effects of relative offering size and net change in assets. This is consistent with Myers and Majluf (1984), and the notion of a pecking order discussed by Myers (1984), as well as with the notion that in general the market infers a difference between the managers' and the market's assessment of share price when an offering of common stock or convertible debt is announced.

7. Summary and conclusions

In this paper we analyze the stock price effects of various types of financing events undertaken by a constant set of firms in the period 1972 through 1982. On average we find a negative, statistically significant stock price response to the announcement of common stock and convertible debt offerings. The average price reaction to the announcement of preferred stock, straight debt, private placements of debt and term loans is small and not significant at the 0.10 level. The average price response to the announcement of credit agreements is positive.

[16] We also estimated all of the regressions reported in table 10 on the subsample of offerings that involve only one type of security and do not have a contemporaneous announcement of other news about the firm during the two-day announcement period. The inferences of statistical significance are the same as those based on table 10, with two exceptions. First, in the regression for common stock offerings corresponding to row 3, the t-statistic for the coefficient on $\Delta A/AMT$ is 2.03. Second, the t-statistic for the coefficient on $\Delta A/AMT$ is 0.70 in the regression for straight debt offerings corresponding to row 7.

There are two important contributions of our study. First, we document significant stock price effects following the announcement of convertible debt and common stock offerings. Completed offerings are associated with a positive average excess return between the announcement and issuance and a negative average return at the issuance. Conversely, the average return for cancelled offerings is negative between the announcement and the cancellation and is positive at the cancellation. This result indicates that the outcome of the issuance process, i.e., completion or cancellation, is correlated with stock price behavior after the announcement.

The second contribution of our study is a cross-sectional analysis of announcement period stock price effects for completed, underwritten security offerings. The results in general do not reveal a relation between the stock price effects and either (1) the quality rating of debt, (2) the relative net amount of new financing provided by the offering, or (3) the relative size of the offering. The strongest relation uncovered by the regression analysis is between the price effects and type of security offered. Adjusting for the potential effect of amount of financing or offering size, common stock and convertible debt offerings are associated in general with an incremental negative valuation effect.

Our evidence is consistent with the prediction by Myers and Majluf (1984) that offerings of common stock and convertible debt are met with a less favorable price response than are offerings of straight debt. In this model, the type of security conveys information about the values of the firm's investment opportunities and assets in place. Our results are also consistent with the more general argument that market participants tend to infer that the market price is too high whenever an offering of common stock or convertible debt is announced.

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