Partial Anticipation, the Flow of Information and the Economic Impact of Corporate Debt Sales

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Corporate debt sales have been regarded as "no news" events because them is no significant price reaction on average to their announcement. We explore the hypothesis that this lack of average price reaction to debt sale announcements is explained by the partial anticipation of debt offers. Theory suggests that the demand for debt capital is fundamentally related to changes in the sources and uses of funds, and we find evidence that earnings are significantly lower, investment growth is significantly higher, and, for some issuers, debt refunding requirements are significantly greater in the period immediately prior to issue than in periods well before and after the issue. We find that this preissue information conditions investors' expectations of issue, thereby affecting the cross-sectional announcement date price reaction to debt sales in two ways. First, announcement

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date price reactions are negative, on average, for unanticipated offers or for those offers where prior information suggests that an issue is unlikely. Second holding the probability of issue constant, announcement date price reactions are significantly more negative for offers that raise more capital than investors expected. These results are consistent with cash flow signaling and asymmetric information models of corporate financings.

Under the classical model where perfect information prevails [Fama and Miller (1972)], corporate debt financing decisions do not impact stock prices because they are not informative. Miller and Rock (1985) and John and Williams (1985) relax the perfect information assumption and show that if investment and dividends are known, unanticipated financing announcements reveal that earnings have fallen and stock prices should decline accordingly. Myers and Majluf (1984) argue that risky debt offers are afflicted with Akerlof s (1970) "lemons" problem, so that prices should decline on average at their announcement. Their model also predicts that the price decline should be larger for riskier offers and larger offers [Krasker (1986)]. Nonetheless, existing empirical studies generally show that the price reactions to debt sale announcements are not significantly different from zero on average and do not differ cross-sectionally with respect to earnings, offer size, or risk.' In short, the extant evidence is consistent with the classical model in which debt offers are "no news" events.

The central hypothesis explored in this article is whether partial anticipation of debt issuance obscures the economic impact of corporate debt sales and provides an explanation for the insignificant average price reaction to debt sale announcements.[2] Theory suggests that the demand for debt capital is fundamentally related to changes in the sources and uses of funds, so that information revealed to the market about changes in earnings, investment, and other public disclosures relating to the sources and uses of funds is likely to affect investors' expectations of a future debt issue. We examine a sample

[1]For straight debt sale announcements, Dann and Mikkelson (1984) and Mikkelson and Partch (1986) find a small negative cumulative announcement prediction error (CAPE), while Eckbo (1986), James (1987). Hansen and Crutchley (1990). and Bayless and Chaplinsky (1991) find the CAPE is *not* significantly different from zero. Prior studies do not find evidence that the CAPE is related to earnings [Eckbo (1986), Hansen and Crutchley (1990)). to offer size [Mikkelson and Panch (1986), Eckbo (1986), Hansen and Crutchley (1990)], or to the rating of the offer [Eckbo (1986), James (1987)]. For a recent review of the information-based debt financing models and others, see Harris and Raviv (1990) and Masulis (1988).

[2]Dann and Mikkelson (1984). Mikkelson and Panch (1986). and Hansen and Crutchley (1990) all report negative abnormal returns before the announcement, with estimates ranging from -1.3 to -4.1 percent. This evidence suggests that important new information is revealed to the market prior to the issue. However, these studies do not link the insignificant announcement price reactions to the preannouncement information flow.

of debt offers from 1974 to 1984 and find, using a logit analysis, that earnings are significantly lower, investment growth is significantly higher and, for some issuers, debt refunding requirements are significantly greater in the period immediately prior to issue than in periods well before and after the issue. This evidence suggests that debt issuers have relatively higher demands for capital in the preannouncement period and that investors know this.

We examine the effect of several proxies for partial anticipation on the cross-sectional behavior of the announcement date price reactions to debt sales. We find that announcement date price reactions are negative, on average, for unanticipated offers or for those offers where previous information suggests that an issue is unlikely. Further, when the probability of issue is held constant, announcement data price reactions are significantly more negative for offers that raise more capital than investors expected. The average valuation effect for unanticipated debt offers is -0.6 percent, which, owing to the greater size of debt issuers in relation to equity issuers, suggests that unanticipated debt sales result in substantial losses to shareholders. This evidence supports the view of cash flow signaling models [e.g., Miller and Rock (1985), John and Williams (1985)] that less anticipated and larger than expected offers reveal unexpected shortfalls in cash flow; it is also consistent with unanticipated debt offers having potentially large costs of adverse selection. Additional analysis shows that the proxies for partial anticipation have no impact on the abnormal returns on any day except the announcement date. Because significant revisions of expectations take place uniquely on the announcement date, this indicates that debt sales are indeed informative events. Thus, in contrast to the conventional view (and existing empirical evidence) that debt sales are "no news" events, our evidence indicates that, controlling for partial anticipation, debt sale announcements are highly informative events that are accompanied by significant resolution of uncertainty.

If debt sales are partially anticipated, then any relation between announcement date price reactions and issuer characteristics (i.e., size, risk, and earnings) is likely to be obscured. This is one potential reason why previous cross-sectional analyses have been unable to document significant relations between announcement date price reactions and selected attributes of the issuer. However, the information content of offers may emerge in circumstances where investors are less likely to have fully updated expectations of capital needs. Consequently, we examine the announcement price reactions for issuers experiencing extreme postissue earnings and investment performance that represent circumstances where full updating is less likely. Other things being equal, we find that the announcement date

predictions errors are significantly lower for those issuers having the largest postissue decline in earnings. This evidence suggests that the information content of debt sale announcements is linked to expectations of future earnings.

We proceed as follows. Section 1 examines how investors may come to anticipate debt sales. Section 2 reports sample characteristics of the debt offers, demonstrating that significant performance differences arise prior to their announcement, and discusses the variables used to proxy for anticipation. Section 3 examines the announcement date price reactions to anticipated and unanticipated debt offers. Conclusions are offered in Section 4.

1. Partial Anticipation of Debt Offers

The economic impact of a debt offer is the difference between firm value with a debt issue and the prior firm value given that a debt issue was not anticipated. The economic effect and the valuation effect at the debt issue announcement are equal only if the issue is completely unanticipated by investors. Otherwise, the issue is partially anticipated and the announcement effect is smaller than the economic effect, ceteris paribus [see Malatesta and Thompson (1985)]. Because a given debt issue is likely to be part of an overall program of debt financing, we assume that investors expect that firms will issue debt when they need capital. This assumption is consistent with financing preferences under the "pecking order" [Myers (1984)], the finite maturity of debt, the tendency of firms to maintain target debt ratios, as well as the observation that many firms repeatedly issue debt. Since investors expect firms to issue debt at some point in the future, the valuation effect at announcement measures the change in firm value due to the resolution of uncertainty about the timing and magnitude of the offer. Here, we suggest ways in which information disclosed prior to an issue may increase investors' expectations that a debt issue is more likely.

1.1 Changes in investment and earnings

Under the assumption of known investment, Miller and Rock (1985) and John and Williams (1985) predict that unanticipated security offers should have negative price reactions because they signal unanticipated reductions in internal funds. More generally, investors can anticipate forthcoming capital needs from preannouncement information concerning fundamental changes in the sources and uses of funds, such as might be reflected in the financial statements and other public disclosures of the firm. Therefore, a primary focus of our analysis is on the increased expectations of issue that stem from previous

knowledge of decreases in corporate earnings or from relatively heavy demands for investment capital, ceteris paribus.

1.2 Maturity structure

An additional means of anticipation that is not directly related to earnings or investment performance is Smith's (1986) suggestion that debt maturity provides investors with information concerning forthcoming debt offerings. The demand for debt to repay principal on the firm's outstanding maturing bonds should therefore be anticipated. Because the demand for funds used to retire long-term bonds is known well in advance, there should be no significant price reaction before or at the debt sale announcement date. In addition, as Smith (1986) and Marsh (1982) suggest, some debt offers may be anticipated from the firm's short-term debt structure. Since several small public debt offerings would be relatively costly, efficient borrowers initially use up their short-term debt capacity, which is subsequently restored with the issuance of *a* large offer of long-term debt.

1.3 Search for new capital

Investors can also come to anticipate debt offerings from information circulating in the financial markets about the firm's search for new funds. For example, the day before the formal announcement of IBM's first-ever public debt offering, the *Wall Street Journal (WSJ)* (Heard on the Street, September 25, 1979) reported that IBM's shares fell $2.13 on rumors that the firm held talks with several investment banks about a possible offering. However, because it is rare that more than the debt offer announcement appears in the *WSJ,* information circulating in the investment community prior to the announcement is likely to go unreported.

2. Data and Sample Characteristics

2.1 Data

A sample of 245 debt offers by industrial firms is obtained from Security Data Corporation (SDC) for the period 1974-1984. All offers are publicly issued straight bonds, and thus the sample does not include convertible debt or privately placed debt offers. The SDC data provide information on, among other items, the date and size of the issue, the maturity, security, and rating of the debt. Each offer selected also meets the following criteria:

1. Daily stock prices are available from the University of Chicago's NYSE/ASE Center for Research in Security Prices (CRSP) tapes.
2. Annual financial statement data are available on Compustat's

Table 1
Selected sample characteristics of 245 debt offers; year of offer announcement, firm size, gross proceeds, leverage, preannouncement common stock beta, security, and Standard and Poors rating of debt offered

Year	*N*	Year	*N*	Year	*N*
1974	18	1978	19	1982	29
1975	36	1979	15	1983	19
1976	18	1980	40	1984	10
1977	18	1981	23		

	Mean	Median
Total assets ($ million)[1]	$6,205.5	$2,807.5
Gross proceeds ($ million)[1]	$182.4	$129.1
Long-term debt ÷ total assets	25.9%	23.2%
Common stock beta[2]	1.1	1.0

Security of Debt Offered	Pct	Bond Rating	*N*
Senior, senior subordinated, subordinated, and straight debentures	97.1	AAA	16
		AA	60
		A	97
		BBB	13
Collateralized	2.9	BB and below & not rated	58

Straight debt offers greater than $10 million by NYSE/ASE listed firms.
[1]Restated using the consumer price index in January 1985 dollars.
[2]Common stock beta is estimated using the marker model from day -480 to day -240 relative to the *WSJ* announcement date.

Primary, Supplementary, Tertiary, and Research files in the year of issue.

3. Quarterly earnings per share data are available through Compustat's Custom Business Unit for a 13-quarter sequence around the debt offer.

4. The offer exceeds $10 million, and its maturity is at least five years.

5. An announcement date could be identified for the offer in the *Wall Street Journal Index (WSJI),* which contained no other significant financial disclosures.[3]

Sample characteristics are reported in Table 1. The announcements are relatively evenly dispersed over the sample period with the largest concentration in 1980-1982. Since most of the sample period precedes the introduction of Rule 415 in 1982, only 26 offers are shelf registered. However, all 26 announcements involve an initial sale of debt and the placement of additional debt "on the shelf." The typical debtor is a large firm (mean = $6.2 billion in assets, median = $2.8 billion) of average risk (common stock beta = 1.1) that raises $182 million (median = $129 million) in debt capital through the offer.

[3]The primary reason offers are excluded is that in 18 cases debt offers were announced simultaneously with the sale of warrants (i.e., unit offers).

Table 2
Cumulative average prediction errors for common stock, CAPE *(b, e)* from day *b* to day *e*, where day 0 is the debt announcement date, percent negative and fractiles of distribution for 245 debt offers from 1974 to 1984

	CAPE(−140, −61)	CAPE(−60, −2)	CAPE(−1, 0)
Mean	−2.90%*	−3.22%*	0.05%
	(−2.65)	(−3.18)	(0.22)
% negative	57.55%	58.37%	59.30%
Fractiles			
90%	16.28%	14.60%	3.68%
75%	6.92	5.59	1.52
Median	−2.89	−3.21	−0.12
25%	−13.68	−13.35	−1.71
10%	−21.66	−21.49	−3.68

t- statistics are in parentheses.
* = *p* value < .01.

Although not reported in Table 1, 31 percent of the issuers make more than one offer during the sample period. With the exception of seven collateralized bonds, 97 percent of the offers are debentures of some kind. Seventy-six percent of the offers are rated BBB or above by Standard and Poors. Consistent with McDaniel's (1986) finding that public debt instruments have relatively few covenant provisions, these offers are likely to be among the least encumbered of borrowing arrangements.

2.2 Average prediction errors for debt sales

Table 2 reports the cumulative average prediction errors, CAPE(*b, e),* from day *b* to day *e* for selected intervals surrounding the debt sale announcement. We use Scholes-Williams excess returns obtained from CRSP as our measure of prediction errors, although market-adjusted returns (i.e., the return on the stock minus the return on the market) computed using equal- and value-weighted market indices produce equivalent results. Prior to 140 days before issue (not reported in Table 2), the CAPE is insignificantly different from zero. Thereafter, it falls 2.90 percent on average from day -140 to day -61 and 3.22 percent from day -60 to day -2 for a total decline of 6.12 percent over the 140 days prior to issue. At announcement, CAPE is insignificantly different from zero. These results, which are consistent with earlier studies, show that debt issuers as a group experience poor stock performance on average in the months leading up to the sale. The preannouncement decline in stock prices for debt issuers, which is in sharp contrast to the stock-price run-up observed prior to equity issues [Smith (1986)], may also explain why some firms do not issue equity.

Table 3
Earnings and investment performance surrounding debt sale announcements, quarterly and annual earnings, and annual asset growth

Quarter	EPS	Year	ROA	ASSET GROWTH
−4	12.84%	−4	17.08%	16.66%
−3	12.26	−3	16.13	16.45
−2	12.01	−2	14.48	19.68
−1	13.10	−1	12.52	11.09
0	11.92	0	11.80	8.53
1	11.94	1	11.40	6.58
2	11.46	2	10.79	5.23

EPS(t) - [EPS(q) · 4] ÷ *P(–2)* is the average annualized earnings per share divided by the stock price two quarters before the issue; ROA is the ratio of net operating income in *t* ÷ total assets in *t;* ASSET GROWTH is the natural log of the ratio of total assets in *t* ÷ total assets in *t* - 1. Announcement quarter or year is 0. *N* = 245 in the quarter or year of announcement.

2.3 Variables affecting the demand for capital

Tables 3 and 4 report descriptive statistics for variables likely to affect the demand for capital.

Earnings and investment performance. Table 3 shows the behavior of quarterly earnings per share, the annual return on assets, and the growth rate in total assets around the debt sale announcement. The earnings-per-share measure used is annualized quarter-q earnings per share deflated by the firm's stock price two quarters prior to the issue, $P(-2)$: $\mathrm{EPS}(t) = (\mathrm{EPS}(q)\cdot 4) \div P(-2)$. EPS are 0.92 percent lower in the announcement quarter on average than at –4 quarters, or approximately one year, before the issue (12.84% – 11.92%). The largest percentage drop in EPS occurs in the announcement quarter. Thereafter, there is little evidence that earnings rebound significantly. The results for the annual return on assets (ROA) are similar and show a steady decrease in cash flows beginning four years prior to the issue and continuing, albeit more slowly, thereafter.[4] Thus, the evidence indicates that debt issuers experience large reductions in cash inflows in the periods surrounding the debt sale announcement.

Investment activity is proxied by the annual growth rate in total assets (ASSET GROWTH), defined as ln[TA(t) ÷ TA(t - 1)]. The growth rate in assets is positive on average in all years.[5] Average asset growth increases from year -4 through year -2, reaches its peak two

[4]We also examined the price reaction to earnings announcements in the quarters leading up to the debt sale announcement, but, in contrast to the findings of Korajczyk et al. (1991) for equity offerings, announcement date price reactions to quarterly earnings reports prior to debt sales are insignificantly different from zero.

[5]The positive growth rate in assets is not due to a survivorship bias in Compustat data. The 245 offers analyzed in Table 3 are constrained to have Compustat data available only in the year of issue. For example, the number of observations used in the postissue period is less than 245 because a small number of firms are removed from Compustat subsequent to the issue year.

Table 4
Cumulative average prediction errors for common stock for two-day announcement period, CAPE(-1,0). for debt offers by preannouncement disclosures reported in the *Wall Street Journal* in the three months prior to issue and by financing purpose

		N	CAPE(−1, 0)
Preannouncement *WSJ* disclosures			
Uses	Capital expenditures	22	−0.54%
	Asset purchases	47	−0.31
	Dividend increases	31	0.12
	Bond sale	15	−0.10
Sources	Raise bank debt	9	−0.12
	Stock sale	10	2.16
	No preannouncement *WSJ* disclosures	115	−0.09
Financing purpose			
Purpose specified	Retire long-term debt	20	0.16
	Retire short-term debt	104	0.82
	Investment	53	0.41
No purpose specified		68	−0.63**

** = p value < .05.

years before the financing year, and then increases less rapidly thereafter. Despite decreases in average ROA, debt issuers continue to increase investment expenditures on average in the year of and the year prior to the financing. Thus, the evidence in Table **3** suggests that the demand for capital derives on average from a combination of poor earnings and ongoing investment demands.

***Wall Street Journal Index* disclosures.** In addition to changes in earnings and assets, investors potentially can anticipate demands for capital from published disclosures related to other changes in the sources and uses of funds. For example, all else being equal, disclosures that reveal an expanded program of investment, specific asset purchases, or increased dividends can signal increased uses of funds. While these disclosures are likely to be correlated with changes in earnings or assets, we test to see if they provide any incremental information that aids investors in revising their expectations of issue. The *WSJI* is searched for announcements of changes in the sources and uses of funds during the three months before the announcement date. Initially we collect disclosures of repurchases, dividends, new issues, credit and lease agreements, divestitures, and acquisitions, but we report only those disclosures that occur for more than 3 percent of the offers because finer partitions of the data are not informative.

As shown in Table 4, reports of increased uses of funds (100) exceed reports of sources of funds (34) by nearly a 3:1 margin. In 115 cases, no disclosures related to changes in sources and uses are reported

within the three months prior to issue.[6] However, the CAPE(-1, 0) is insignificantly different from zero for all the disclosure categories. These results suggest that investors are not more "surprised" by debt offers announced by firms with no prior public disclosures in the *WSJI*, and thus these disclosures do not exert a strong influence on investors' anticipations of an issue.'

Financing purpose. The stated use of the proceeds reported in the *WSJ* announcement is considered as a proxy for preannouncement search for new capital that may be correlated with advance knowledge of the offer. We assume that firms refunding or rolling over debt are less likely to be concerned with disclosure of preannouncement activities than firms using the proceeds for more discretionary and, perhaps, proprietary purposes. Table 4 reports the CAPE(-1, 0) by the categories of financing purpose reported in the *WSJ*. Specified purposes are retirement of long-term debt, retirement of short-term debt, and investment. For more than a quarter of the offerings (68), the purpose is not specified. These offers, hereafter designated as NOPURPOSE offers, have a CAPE(-1, 0) of -0.63 percent, which is significant at the 5 percent level. Ceteris paribus, the greater surprise at announcement of NOPURPOSE offers is consistent with investors having reduced anticipations of the debt issue.[8]

2.4 Logit analysis of debt issuers' preannouncement performance

If investors are to learn in advance of issuers' demands for debt capital, then we should observe greater information flow in the preannouncement period relative to other periods. This suggests, all else remain ing the same, that prior to the announcement debt issuers have

H1: higher rates of investment
H2: poorer earnings
H3: larger amounts of scheduled debt refunding
H4: higher stock price volatility

relative to other points in time. To the extent that hypotheses 1-4 are supported, investors have increased knowledge and anticipations

[6]We use the *WSJI* as our proxy for the information flow to the market, but this raises the issue of how comprehensive this source is. As a check, we examined *Moody's Dividend Record* for the dividends paid in the two quarters prior to the debt sale announcement date. This analysis showed approximately the same number of dividend increases (34) as that reported (31) in the *WSJI*, suggesting that the *WSJI* is a relatively comprehensive source of information in this context.

[7]The same search is conducted for the 100-trading-day period immediately prior to the announcement period. The results obtained are qualitatively the same and are not reported.

[8]NOPURPOSE offers were extensively examined, without success, to identify other meaningful characteristics. For example, NOPURPOSE is not related to firm size or to the amount of proceeds.

of the firm's demand for capital by the time the announcement is made.

To test these hypotheses, we use a logit analysis that compares issuers' investment performances, earnings performances, and debt-refunding activities prior to the announcement date to two benchmark periods of nonissuance. By design, the logit analysis attempts to discern how factors that affect the demand for debt capital change in proximity to the announcement date. The benchmark periods are constructed by moving the debt sale announcement date two years forward or backward in time to points where no issue occurred. For example, if the *WSJI* announcement date for an offer is 01/01/80, then the preissue period examines issuers relative to 01/01/78, and the postissue period examines issuers relative to 01/01/82. The variables used in the analysis (defined below) are computed to correspond to these three comparison dates. For convenience, we refer to the time prior to the announcement as the announcement period and to the preissue and postissue periods generally as "comparison periods."

We estimate the following logit specification in Table 5: $P(\text{Issue} = 1) = e^{\beta X} \div (1 + e^{\beta X})$, where the dependent variable is the probability that the firm will issue debt (conditional on debt issuance); that is, P(Issue) = 1 for the announcement period and is zero for the comparison periods. The variable X is the column vector of independent variables, and β is the row vector of parameter estimates. Our specification for βX is

$$\begin{aligned}\beta X = {} & \beta_0 + \beta_1\,\Delta\text{TA}(-1,-3)_i + \beta_2\,\Delta\text{NOI}(-1,-3)_i \\ & + \beta_3 \cdot \text{ROLLOVER}_i + \beta_4 \cdot \text{STDXR60}_i \\ & + \beta_5 \cdot \text{DEBT\_FORECAST}_i + e_i, \end{aligned} \tag{1}$$

where

$\Delta\text{TA}(-1,-3)$ = change in total assets over two years prior to a comparison date divided by total assets in t - 3

$\Delta\text{NOI}(-1,-3)$ = change in net operating income over two years prior to a comparison date divided by total assets in t - 3

ROLLOVER = dollar amount of debt maturing during a comparison period, as reported on the previous year's balance sheet, divided by total assets in year t - 1[9]

[9]We examined a number of alternative specifications for the rollover variable (e.g., examining changes in current liabilities for various windows around the issue, using a dummy variable to flag firms with large reductions in current liabilities, etc.), but these measures produced similar results.

Table 5
Logit analysis of the demand for debt capital. $P(\text{Issue} = 1) = e^{bX} \div (1 + e^{bX})$, where the dependent varible is one in the announcement period and is zero in a comparison period. Comparison periods are defined as two y- before (preissue comparison) and two years after issue (postissue comparison). X is the column vector of independent variables, and b is the row vector of parameter estimates, respectively[1]

	Preissue comparison	Postissue comparison
INTERCEPT	−1.10	−7.19*
	(1.42)	(19.96)
STDXR60	0.29**	0.33**
	(5.03)	(5.78)
ΔTA(−1, −3)	0.02*	0.02*
	(17.91)	(14.25)
ΔNOI(−1, −3)	−0.03**	−0.04*
	(5.40)	(6.18)
ROLLOVER × 10 ⁻	0.07	0.06*
	(0.00)	(18.16)
DEBT_FORECAST × 10⁻¹⁰	−3.61	−3.03
	(0.03)	(0.02)
N	479	459
Pseudo-R^2	.06	.07

Chi-square statistic (in parentheses) tests if coefficient is statistically different from zero. Pseudo-R^2 = [chi-square for model - no. independent variables]/-2 log likelihood, when -2 log likelihood is evaluated at the intercept.

* = p value < .01.

** = p value < .05.

*** = p value < .10.

Independent variables are STDXR60, the standard deviation of abnormal returns in the 60 trading days prior to a comparison date; ΔTA(−1, −3), the change in total assets for two years prior to a comparison date divided by total assets in t − 3; ΔNOI(−1, −3) is the change in net operating income divided by total assets for the two years prior to a comparison date divided by total assets in year t - 3; ROLLOVER is the dollar amount of debt maturing during a comparison period, as reported on the prior year's balance sheet, divided by *total* assets in year t - 1; and DEBT-FORECAST is the quarterly forecast of aggregate debt issue volume for a comparison period.

STDXR60 = standard deviation of prediction errors in the 60 trading days prior to a comparison date

DEBT_FORECAST = forecast of the aggregate real dollar volume of new debt issues in quarter q for a comparison period; DEBT-FORECAST is estimated following Marsh (1982) from a regression of new debt issue volume for 15 previous quarters and lagged values of interest rates for medium-term corporate debt for the previous two quarters; debt volume data are taken from the Board of Governors, Federal Reserve System, *Annual Statistical Digest*

The independent variables are constructed from information known to investors prior to the respective comparison dates.

If investment demands increase during the announcement period relative to the pre- and postissue periods, the coefficient of $\Delta TA(-1, -3)$ is expected to be positive. If earnings decline more during the announcement period relative to the comparison periods, the coefficient of $\Delta NOI(-1, -3)$ is expected to be negative. Smith (1986) and Marsh (1982) suggest that some debt offers replace existing debt securities; thus, the pending retirement of debt may convey information to investors about an upcoming issue. Hence, the coefficient on ROLLOVER should be positive to the extent that issuers' commitments to retire debt are higher in the debt announcement period relative to the pre and postissue periods. STDXR60 is included because stock price volatility has been shown under certain conditions to be associated with periods of more intense information disclosure [e.g., see Ross (1989)]. In addition, the logit includes DEBT-FORECAST to reflect possible information from macroeconomic activity, because the demand for capital could also be correlated with economy-wide factors. To the extent that a higher level of aggregate debt issuance is associated with a greater likelihood of any individual firm's debt issuance, we expect a positive coefficient for DEBT-FORECAST.

The logit results indicate that debt issuers have higher demand for capital in the announcement period relative to the pre and postissue periods. The coefficient of $\Delta TA(-1, -3)$ is significantly positive, indicating that on average, issuers have larger increases in assets prior to the debt sale than in either comparison period. The coefficient of $\Delta NOI(-1, -3)$ is significantly negative, indicating that, on average, earnings are lower prior to the debt sale announcement relative to the comparison periods. The coefficient of STDXR60 is significantly positive, and this is consistent with the conclusion that greater valuation-relevant information is revealed prior to the debt sale announcement. The logit results also provide some support for the maturity structure hypothesis. Relative to the postissue comparison period, the coefficient of ROLLOVER is significantly positive, showing that debt retirement requirements are higher in the announcement period. However, ROLLOVER is not significant for the preissue period. Additionally, DEBT-FORECAST is not significant in either specification, indicating that macroeconomic conditions do not differ between the announcement and comparison periods.[10] Overall, the

[10] We examined several other macrolevel variables, the corporate default premium (BBB-AAA spread), NBER designated peak-to-trough periods. and forecasts of aggregate monthly debt volume and total issue volume (debt + equity), but none is significant. One explanation for the insignificant results for the macrovariables is that our analysis is conditioned on a debt offer, whereas previous studies that find effects for these variables are studies of debt versus equity issue [Marsh (1982)].

logit results show that issuers experience significant changes in earnings and investment performance in the announcement period, which suggests that they are in a period of heightened demand for capital. Because these changes are evident to investors, the results support the hypothesis that debt sales are partially anticipated events.

3. Partial Anticipation and Announcement Date Price Reactions

In this section we examine how partial anticipation affects the cross-sectional variation in announcement date price reactions to debt sales. The valuation effects at announcement reflect a mixture of investors' anticipations and the extent to which the economic impact of the offer is good or bad news. We also discuss the hypotheses tested and the proxy variables used for investors' anticipations of debt issues.

3.1 The probability of issue

One explanation for the lack of price reactions to debt sale announcements is that information disclosed in the preannouncement period leads investors to increase their estimates of the probability of issue. Therefore, the first hypothesis we examine is whether, ceteris paribus, more anticipated offers are associated with smaller announcement date price reactions. We use the predicted value generated from the logit models in Table 5 to measure investors' assessment of the likelihood of debt issue. Because the logit analysis is conditioned on a debt offer, the predicted value is not an estimate of investors' ex ante probability of issue (i.e., the probability whether to issue). Formally modeling the ex ante probability of issue would require analyzing debt issuers in relation to all nondebt firms, a task beyond the scope of this article. In our view, because a given debt issue is likely to be part of an overall program of debt financing, we assume that investors expect that firms issue debt when they need capital, but the timing and amount of future debt issues are uncertain. Our assumption implies that investors' ex ante probability of issue is greater than zero, so an issue is never completely unanticipated. Therefore, the independent variables in the logit are instrumental variables that are correlated with the probability of debt issue, conditional on investors' beliefs that these firms raise debt when they require external capital.[11]

We compute the logit prediction, denoted as PHAT, using both the preissue and postissue logit models in Table 5. Given the similarity

[11] Comparing debt issuers to a random sample of all non-debt-issuing firms would involve examining the debt/equity decision as well. Several observations suggest that our sample firms are not likely to be equity issuers. For example, Marsh (1982) and Bayless and Chaplinsky (1991) report that large firm size and poor preannouncement stock performance significantly increase the probability that a firm will choose debt over equity.

of coefficients across models, however, the results are insensitive to which comparison period is used. Therefore, in subsequent analysis we report the results for the preissue predictions only.

3.2 Unexpected gross proceeds

Deviations from the forecasted amount of capital raised can also affect announcement date price reactions by signaling whether the offer conveys good or bad news about the firm. Miller and Rock (1985) suggest that, other things being equal, larger unanticipated capital needs signal larger earnings shortfalls. This is the reason that, even if an issue is certain to occur, the amount of funding, if uncertain, conveys information about the firm's operating performance. Announcement date price reactions for debt issued to offset earnings declines should therefore be more negative when the amount of capital raised is larger than expected. Alternatively, unexpected proceeds could signal favorable investment opportunities. In this case, a positive relation would be predicted between unexpected proceeds and announcement date price reactions, ceteris paribus. Since these effects are offsetting, a negative coefficient for unexpected proceeds suggests that the earnings decline rationale dominates, whereas a positive coefficient suggests that the investment rationale dominates.

Investors' expectations of the magnitude of capital raised through the debt offer are derived from a forecast model of gross proceeds. Hansen and Crutchley (1990) report that the amount of capital raised by debt financing firms is directly related to the long-term annual earnings decline after the issue, which is consistent with managers raising capital to offset earnings declines. We measure unexpected gross proceeds (UNXPROCEEDS) as the difference between the actual dollar value of gross proceeds and E[PROCEEDS], an estimate of "expected" gross proceeds, where both are measured as a percent of total assets. Specifically,

$$\text{UNXPROCEEDS}_i = \left[\frac{\text{PROCEEDS}_i}{\text{TA}(-1)_i}\right] - E\left[\frac{\text{PROCEEDS}_i}{\text{TA}(-1)_i}\right].$$

The fitted regression specification for expected gross proceeds is (*t*-statistics in parentheses)

$$\underset{(15.78)}{0.48} - \underset{(-2.91)}{17.37}\,\Delta\text{NOI}(-1,-3) \times 10^{-4}$$

$$+ \underset{(8.92)}{11.30}\,\Delta\text{TA}(-1,-3) \times 10^{-4} - \underset{(-14.50)}{0.05}\,\ln \text{TA}(-1)$$

F-value = 133.8; Adjusted R^2 = .62%; N = 245

In addition to the variables proxying for changes in sources and uses,

the regression includes the natural log of total assets to control for the fixed costs of issuance. As noted, Smith (1986) points out that transactions costs are likely to affect issue size and cause firms to make one large offer rather than several small offers. As a result, gross proceeds as a percentage of assets are likely to be higher for small issuers. The negative coefficient for ln TA(-1) is consistent with transaction costs arguments. The regression results also indicate that actual gross proceeds are larger for larger drops in operating income, $\Delta NOI(-1, -3)$ and larger increases in total assets, $\Delta TA(-1, -3)$. Therefore, the predicted value of gross proceeds captures the impact of these changes in sources and uses on the anticipated demand for capital. Further, 62 percent of the cross-sectional variation in gross proceeds is explained by the regression. Evidently investors can reasonably estimate the amount of capital raised in the event the firm actually issues.

3.3 Information disclosures around debt sales

The variables NOPURPOSE and NOEVENTS provide measures of anticipation that attempt to capture other possible sources of information disclosed before debt sale announcements that may alert investors to a pending issue. NOPURPOSE = 1 if no specified purpose is disclosed in the *WSJ* for gross proceeds and is zero otherwise, and NOEVENTS = 1 if no preannouncement disclosures of sources and uses are reported in the *WSJ* in the three months prior to the announcement and is zero otherwise.

3.4 Regression analysis of two-day announcement prediction errors

To test the anticipation hypothesis, the following regression is used:

$$\text{CAPE}(-1, 0)_i = \beta_0 + \beta_1 \cdot \text{PHAT}_i + \beta_2 \cdot \text{UNXPROCEEDS}_i + \beta_3 \cdot \text{NOPURPOSE}_i + \beta_4 \cdot \text{NOEVENTS}_i + e_i. \quad (2)$$

The regression is estimated weighted least squares, where the weight is the standard deviation of the prediction errors prior to the event period.

Table 6 presents the results. Consider first the estimated probability of issue, PHAT. If debt offerings are primarily motivated by shortages of cash flow, we expect that $\beta_0 < 0$ and $\beta_1 > 1$. As shown in column (1) of Table 6, both coefficients are significant and have the expected signs. Prediction errors are negative on average for the least anticipated offers but increase with the likelihood of issue. Consequently, the initial results suggest that unanticipated debt sale announcements signal "bad news" on average, which is consistent with the earnings decline rationale for debt issue. The results are also consistent with

Table 6
weighted-least-squares regressions of measures of partial anticipation on two-day cumulative average prediction error for common stock at debt sale amounts, CAPE(-1.0)[1]

	(1)	(2)	(3)	(4)
INTERCEPT	−3.03*	−3.18*	−2.78*	−3.25*
	(−3.10)	(−3.26)	(−2.82)	(−3.27)
PHAT	5.78*	6.06*	5.95*	6.01*
	(3.59)	(3.77)	(3.73)	(3.72)
UNXPROCEEDS		−0.52**	−0.47***	−0.53**
		(−2.01)	(−1.82)	(−2.03)
NOPURPOSE			−1.21**	
			(−2.19)	
NOEVENTS				0.20
				(0.39)
F-value	12.88*	9.13*	7.38*	5.72*
Adjusted R^2	.05	.06	.07	.06

Regressions are estimated using weighted least squares where the weight is the standard deviation of the prediction errors prior to the event period. N = 245; t- statistics are in parentheses.

* = p value < .01.

** = p value < .05.

*** = p value < .10.

[1]Independent variables: PHAT is the logit prediction generated from the preissue comparison period model in Table 5; UNXPROCEEDS is gross proceeds divided by total assets minus expected gross proceeds estimated from a forecast model of gross proceeds; NOPURPOSE = 1 if no purpose is reported for the offer in the *WSJ*, and is zero otherwise; and NOEVENTS = 1 if no public disclosures are reported for the offer in the *WSJ* in the three months prior to issue, and is zero otherwise.

less anticipated offers being subject to significant costs of adverse selection.

In column (21, UNXPROCEEDS is introduced into the regression. The results for UNXPROCEEDS indicate that issuers raising larger than expected amounts of capital experience significantly lower announcement date prediction errors on average. With the probability of issue held constant, the more favorable price reaction for smaller than expected offers is consistent with these offers signaling unexpectedly larger cash flows.

The use of PHAT and UNXPROCEEDS as independent variables potentially involves a generated regressors problem. Although it is difficult to determine the impact of this problem in all cases, Pagan (1984) suggests that the most likely effect is to overstate the f-statistics of the parameter estimates. Various methods proposed to correct for this problem are complicated by the nonlinear nature of PHAT. Thus, we simply note that the significance levels for PHAT and UNXPROCEEDS may be overstated.

In model (3), NOPURPOSE enters the regression and has a significantly negative impact on CAPE(–1, 0). Even though the regression controls for partial anticipation, the results indicate that these announcements also reveal new information. This result is consistent

with our earlier conjecture that firms with specified purposes for the new capital experience more leakage of preannouncement information. In model (4), NOEVENTS does not have a significant impact on CAPE(-1, 0).

The results also indicate that debt sale announcements have an economically meaningful impact on shareholder value. The estimated coefficients from model (3) indicate that if investors accurately forecast proceeds (i.e., UNXPROCEEDS = 0) and NOPURPOSE takes on its average value, then CAPE(-1, 0) is -0.6 percent for offers in the lowest decile of PHAT or those offers that are "least anticipated" from preannouncement disclosures. Alternatively, if investors do not accurately forecast proceeds, CAPE(-1, 0) ranges from -0.3 percent for offers in the lowest decile of UNXPROCEEDS (i.e., smaller than expected offer size) to -0.9 percent for offers in the highest decile of UNXPROCEEDS (i.e., larger than expected offer size).[12] Given that the average debt issuer is two or more times larger than the average equity issuer, substantial wealth losses arise at unanticipated debt offers.

3.5 Stacked OLS regressions of two-day prediction errors

To further investigate the impact of partial anticipation on debt sale announcement prediction errors, we extend the regression analysis to include the four contiguous two-day intervals [i.e., days (-5, -4), (-3, -2), (+1, +2), and (+3, +4)] around the two-day debt sale announcement period, days (-1, 0). This analysis allows us to address the question, is the information content of debt sale announcements confined uniquely to the two-day announcement period? We estimate the following weighted-least-squares regression, where the weight is the standard deviation of the prediction errors prior to the event period:

$$\text{CAPE}(\tau, \tau + 1)_{i\tau} = b_0 + \beta_0 K_{i\tau} + \sum_i [b_j + \beta_j K_{i\tau}]\Phi_{ij} + e_{i\tau}, \quad (3)$$

and

i = 1 to N for each τ
τ = $-5, -3, -1, +1$, and $+3$
$K_{i\tau}$ = 1 at announcement (i.e., when $\tau = -1$) and 0 for the surrounding days

[12] The mean (median) value of PHAT for the preissue comparison period is 0.56 (0.52) and averages 0.43 in the lowest decile and 0.99 in the highest decile. The mean (median) value of UNXPROCEEDS is 0.0 (-0.01) and avenges -0.67 in the lowest decile and 0.61 in the highest decile. NOPURPOSE averages 0.28.

Table 7
"Stacked" ordinarily least-squares regressions of measures of partial anticipation on cumulative average prediction error for two-day intervals at and around the debt sale announcement date [i.e., days (-5, -4), (-3, -2), (-1, 0), (+1, +2) and (+3, +4)][1]

	Model (1)		Model (2)	
	b_j	β_j	b_j	β_j
INTERCEPT	0.00	−2.78*	0.00	−3.16*
	(0.02)	(−5.56)	(0.01)	(−6.22)
PHAT	−0.01	5.96*	−0.01	6.92*
	(−0.03)	(7.35)	(−0.02)	(8.11)
UNXPROCEEDS	0.00	−0.47*	0.00	−0.46*
	(0.03)	(−3.16)	(0.03)	(−3.53)
NOPURPOSE	−0.00	−1.21*	0.00	−1.20*
	(−0.00)	(−4.33)	(0.01)	(−4.12)
ERANK			0.00	−1.49*
			(0.01)	(−3.73)
GRANK			−0.01	−0.16
			(−0.04)	(−0.39)
F-value		16.93*		12.54*
Adjusted R^2		.09		.10

N = 1204; *t*- statistics are in parentheses.

* = *p* value < .01.

** = *p value* < .05.

*** = p value < .10.

[1]The form of the regression is

$$\text{CAPE}(\tau, \tau + 1)_{i\tau} = b_0 + \beta_0 K_{i\tau} + \Sigma_j [b_j + \beta_j K_{i\tau}] \Phi_{ij} + e_{i\tau},$$

where i= 1 to N for each τ; $\tau = -5, -3, -1, +1$, and $+3$; $K_{i\tau}$ = 1at announcement (i.e., when τ = - 1) and 0 otherwise; Φ_{ij} = PHAT, UNXPROCEEDS, NOPURPOSE, ERANK. and GRANK. ERANK = 1 if abnormal earnings changes subsequent to the issue are in the lowest decile of issuers, and is zero otherwise: and CRANK = 1 for issuers in the highest decile of postissue growth in assets and is zero otherwise.

Φ_{ij} = variables j measuring partial anticipation or other firm characteristics

$e_{i\tau}$ = error term

Table 7 shows the "stacked" OLS regression results. Model (1) reports the regression results using the third specification in Table 6. The columns separately report the β_j coefficients for the two-day announcement date interval from the b_j coefficients for the comparison two-day intervals. As would be expected from earlier results, CAPE(- 1, 0) is positively related to PHAT and negatively related to UNXPROCEEDS and NOPURPOSE. However, the anticipation variables are cross-sectionally unrelated to $\text{CAPE}(\tau, \tau + 1)$ on the surrounding days. The β_0 coefficient for the intercept, which measures the relative informativeness of days (-1, 0), is -2.8 percent with a *t*- statistic of -5.6. While we report evidence that investors partially anticipate debt offers, these results show that further revisions of expectations take place uniquely on the announcement date. Even

though announcement prediction errors are zero on average, this analysis indicates that debt offers signal new information to the market. More importantly, the large negative reaction at announcement is also consistent with debt offers having significant costs of adverse selection.

Previous studies of debt issuance have been unable to determine the source of information signaled by debt offers. For example, previous studies do not find that the CAPE(- 1, 0) is significantly related to abnormal earnings changes, offer size or risk of the offer. However, our results suggest that due to partial anticipation, it is likely that any potential relation between CAPE(- 1, 0) and future characteristics, such as unanticipated earnings, will be obscured. Thus, the impact of firm characteristics on CAPE(- 1, 0) could only occur systematically for characteristics that are more difficult to anticipate. We consider this hypothesis by examining whether the CAPE(- 1, 0) is related to extreme values of postissue earnings and investment performance, which we assume represent conditions that investors have more difficulty anticipating.

In model (2) of Table 7, two measures of extreme postissue performance, ERANK and GRANK, are added to the regression. ERANK = 1 for firms in the lowest decile of postissue abnormal earnings and is zero otherwise. Postissue abnormal earnings are the average net operating income for the three years following the issue minus the average net operating income for the three years prior to issue, normalized by year-end total assets three years prior to the announcement. GRANK = 1 for issuers in the highest decile of asset growth and is zero otherwise. Asset growth is the percentage change in total assets for two years after the announcement in relation to the year prior to the announcement. The estimated β_j for ERANK is significantly negative, suggesting that the average CAPE(- 1, 0) is significantly more negative for firms having the poorest postissue earnings. Consequently, on the announcement date investors revise downward their valuations due to bad earnings. The estimated β_j for GRANK is not significantly different from zero. Thus, at least for this extreme measure of postissue investment growth, we cannot conclude that debt issues reveal news about investment." However, part of the insignificance for GRANK could be due to the fact that changes in total assets are not a particularly revealing proxy for unanticipated changes in investment.[14] Note also that neither of the performance

[13] Consistent with earlier studies, we do not find evidence that the CAPE(-1, 0) are significantly related to continuous measures of earnings and investment performance.

[14] Using an alternative measure of investment, Muscarella and McConnell (1985) find significantly positive price reactions to announcements of changes in capital expenditures.

measures has any impact on the days surrounding the issue. Thus, the evidence suggests that in circumstances where incomplete anticipation is more likely, debt offer announcements signal new information concerning fundamental changes in earnings.

3.6 Information flow in the preannouncement period

Our results depend heavily on the assumption that the information flow in the preannouncement period differs economically from that in periods of nonissuance. Since the basic argument is that investors infer capital demands from publicly disclosed information, this raises the question of how changes in sources and uses affect investors' expectations in other periods. The efficient market hypothesis suggests that prices and investors' expectations should always reflect publicly disclosed information. Thus, we provide further evidence to determine how the valuation effects observed in the preannouncement period compare to those at other points in time.

To compare the relative valuation effects of the preannouncement period performance with those of the comparison periods, we use the stacked OLS regression method; and the dependent variable is the prediction error for nine selected 60-day intervals. In addition to the 60-day period before the announcement, the two comparison intervals used are the 60-day periods beginning with day -121 and day + 1 around the debt sale announcement. Six additional 60-day comparison periods consist of three corresponding intervals two years before the issue ($y = -2$) and three corresponding intervals two years after the issue ($y = +2$). The estimated regression is

$$\mathrm{CAPE}(\tau, \tau + 59)_{i\tau y} = b_0 + \beta_0 K_{i\tau y} + \sum_j [b_j + \beta_j K_{i\tau y}]\Phi_{ijy} + e_{i\tau y}, \quad (4)$$

where

i = 1 to N for each τ and each y
τ = -121, -61, + 1
y = -2, 0, +2
$K_{i\tau y}$ = 1 during the preannouncement period (i.e., τ = -61 and y = 0) and 0 otherwise
Φ_{ijy} = variables j measuring partial anticipation or other firm characteristics: $\Delta\mathrm{EPS2Q}(0, -2)$ is the semiannual change in earnings per share, $[\mathrm{EPS}(-1)/P(-2) + \mathrm{EPS}(0)/P(-2)]/2 - [\mathrm{EPS}(-4)/P(-2) + \mathrm{EPS}(-3)/P(-2)]/2$, where $\mathrm{EPS}(q)$ are quarterly earnings per share for a comparison period and $P(-2)$ is the stock price two quarters before a comparison period; and $\Delta\mathrm{TAQ}(0, -6)$ is the percentage increase in total

assets from the six quarters before through a comparison period[15]

The estimated parameters are (*t*- statistics in parentheses)

$$b_j: \underset{(-2.35)}{-0.97} - \underset{(-3.55)}{11.16}\ \Delta EPS2Q(0, 2) + \underset{(4.80)}{0.01}\ \Delta TAQ(0, -6)$$

$$\beta_j: \underset{(-5.47)}{-7.90} - \underset{(-1.98)}{23.76}\ \Delta EPS2Q(0, 2) + \underset{(4.46)}{0.03}\ \Delta TAQ(0, -6) + \underset{(3.42)}{7.54}\ NOPURPOSE$$

F- value = 17.68; Adjusted R^2 = .05%; *N* = 2067

The results indicate that the 60-day cumulative prediction errors are significantly negatively related to $\Delta EPS2Q(0, -2)$ and significantly positively related to $\Delta TAQ(0, -6)$ in both the announcement period and comparison periods. Consistent with efficient markets, stock prices respond as investors learn of fundamental changes in the sources and uses of funds in all periods. However, holding changes in earnings and assets constant, the β_j coefficients for $\Delta EPS2Q(0, -2)$ and $\Delta TAQ(0, -6)$ suggest that a given percentage change in earnings or asset growth has a significantly greater impact on value in the preannouncement period than in the comparison periods. This evidence further supports our contention that the information flow in the preannouncement period has greater economic impact than that which occurs in nonissue periods, thereby contributing to more substantial revisions of expectations in the announcement period.

4. Conclusions

The evidence in this article suggests that investors partially anticipate the demand for corporate debt capital from public information related to earnings and ongoing investment needs. We find that this preissue information conditions investors' expectations of issue, thereby affecting the cross-sectional announcement date price reaction to debt sales in two ways. First, announcement date price reactions are negative, on average, for unanticipated offers or those offers where prior information suggests that an issue is unlikely. Second, holding the probability of issue constant, announcement date price reactions are significantly more negative for offers that raise more capital than investors expected. These results are consistent with cash flow signaling and asymmetric information models of corporate financings.

[15] Semiannual changes in earnings per share are used to eliminate some of the "noise" of quarterly earnings changes, but similar results are obtained with quarterly earnings. For total assets, the results are not sensitive to whether the change is examined over the previous four or six quarters.

Since the market reaction to new debt issues is affected by prior disclosures of the firm, we suggest that this raises the question of whether managers control the flow of information around debt sales to reduce issue costs. The asymmetric nature of the bond contract (i.e., bondholders stand to gain little from positive news and to lose potentially large amounts from negative news) suggests that creditors are not likely to view "surprises" as favorable, on average. Debt issuers could act to protect creditors' interests by disclosing critical information prior to issue. By consistently providing such disclosures, firms may build reputation capital in the debt market, which Diamond (1989) has argued reduces issue costs. Paralleling arguments made by Korajczyk et al. (1991) for equity issuance, managers could delay debt issue until after earnings or other information is disclosed to reduce managers' information advantage over investors. Such scenarios would not appear to be of great importance if debt contracts have, as previous studies conclude, little or no costs of adverse selection. However, the large valuation effects we find for unanticipated debt issues makes plausible managers' attempts to time issue in relation to the flow of information.

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