THE QUARTERLY REVIEW
Of ECONOMICS
And FINANCE

The Quarterly Review of Economics and Finance 39 (1999) 419–438

The information contents of senior offerings that reduce junior securities

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Abstract

This study examines 196 pure leverage increases consisting of senior offerings that reduce junior securities. We offer the following contributions not previously discovered by the senior-for-junior research. First, we show that firms for which less information exists have positive announcement period stock returns that are significantly greater than firms for which more information exists. Second, we find that the signaling effects associated with the announcement of a premium and with adverse selection exercise a significant impact on stock returns. Last, we show that the decrease in systematic risk, which accompanies senior-for-junior transactions, occurs almost solely for firms for which less information exists.

Keywords: Financing Policy; Capital and ownership structure; Asymmetric and private information; Information and market efficiency; Event Studies

Senior-for-junior transactions are "pure" leverage increases. These transactions are pure in that they do not directly alter the productive assets. As first noted by Masulis (1980), such transactions provide an excellent sample for studying the wealth effects that result strictly from a change in a firm's capital structure. This is because any market response can be foremostly attributed to the change in the firm's choice of security types.

Researchers find significant positive announcement period stock returns for firms announcing senior-for-junior transactions. They generally attribute these returns to positive asymmetric information effects that

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1062-9769/99/$– see front matter
PII: S1062-9769(99)00009-5

result from insiders successfully signaling positive news to less informed market participants. Shah (1994) discovers that this news is not related to expectations about improved production possibilities. He suggests that the nature of the information conveyed by pure leverage changes is still largely a puzzle.

The questions raised by Shah's study motivate our research that investigates the nature of the positive information conveyed by senior-for-junior transactions. We examine all those information-based theories capable of unraveling the enigmatic nature of the information. In particular, we test the predictions of differential information theory. A differential information effect (unlike an asymmetric information effect) is not dependent on insider behavior but relies on categories such as firm size, number of announcements in the financial press, and listing. These categories can be used in empirical tests to detect whether the intensity of the market response is related to the amount of information available about the announcing firm.

In our investigation, we use a sample of 196 senior-for-junior announcements (spanning two decades). We have three major objectives. First, we test for a differential information effect with each test relying on the fact that senior-for-junior announcements are generally positive events. Given this fact, the magnitude of the expected positive change in stock price is hypothesized to be greater for firms with less available information (such as small firms). Second, within a regression methodology, we simultaneously examine a variety of information-based models to determine which models best account for stock returns. Besides testing for a differential information effect, we examine asymmetric information effects including those associated with the announcement of a premium and with adverse selection. These latter two effects have not been previously studied by the senior-for-junior research. Third, we investigate if either differential information or asymmetric information (or both) can account for the decrease in stock betas that have been found to accompany senior-for-junior transactions.

We now summarize our three major contributions to the senior-for-junior research. First, consistent with differential information theory, we discover that the magnitude of the positive market response is to a large extent determined by the size of the announcing firm. Second, we find statistically significant support for asymmetric information effects associated with the announcement of a premium and with adverse selection. Lastly, we show that the significant shift in systematic risk (that accompanies senior-for-junior transactions) occurs almost exclusively for firms for which less available information exists.

We structure the remainder of our paper as follows. In Section I, we discuss information-based theories and review the evidence to support these theories. In Section II, we present the data, descriptive statistics, methodology, and tests. Section III contains the announcement period stock return results when we compare groups formed according to firm size. We present our regression findings in Section IV and our change in stock beta results in Section V. The last section offers a summary.

2. Two general theories and empirical support

In this section we discuss two general classes of information-based theories that can account for the direction and magnitude of the positive market response to senior-for-junior transactions.[1]

2.1. Differential Information Theory and Evidence

Differential information proponents (Verrechia, 1980; Atiase, 1980; Bhushan, 1989) suggest that the magnitude of the market response to unexpected news announcements is negatively related to the amount of available information about the announcing firm. In particular, these theoreticians link greater dissemination with small firms because less public and private information exists for small firms. The lack of public information is an observable phenomenon as small firms have fewer published items (such as SEC and FASB disclosure requirements from which they are often exempted). The sparseness of private information for small firms occurs because there is uncertainty about whether the gain (from gathering private information) will be greater than the cost.

Previous firm size findings suggest that a differential information effect should be examined if we are to understand the nature of the information conveyed by senior-for-junior transactions. For example, Atiase, Bamber, and Freeman (1988) summarize the earnings announcement research that shows the magnitude of the market reaction depends on firm size. Other studies (Banz, 1981; Eddy and Seifert, 1988; Chandy, Peavy, and Reichenstein, 1993) have also found firm size to determine returns for situations other than earnings announcements. However, studies examining security offering announcements are typically silent on the subject. An exception is Hull and Pinches (1994/1995) who discover that the negative returns accompanying OTC stock-for-debt announcements are significantly more negative for small firms.[2] Their findings reveal that there is value in studying senior-for-junior transactions. This is because they are unable to distinguish between a firm size effect and an issue costs effect. They state that future research needs to analyze senior security offerings (such as debt offerings) where issuance expenses are not typically large. If a firm size effect is found for this sample, then additional (and stronger) support for a differential information effect can be established.[3]

2.2. Asymmetric Information Theory and Evidence

Asymmetric information theory predicts that insider actions convey new information about security value. For senior-for-junior transactions, insiders signal undervaluation by retiring junior securities at a premium (for example, at a price above the current market value of the junior security being retired). Notwithstanding the positive overt signaling via a premium, mainstream asymmetric information thought contains a variety of signaling theories that predict a pure leverage increase announcement will convey positive information. We will now comment on three widely cited signaling theories that are germane to understanding the market response to senior-for-junior announcements.

First, adverse selection signaling theory based in Myers and Majluf (1984) predicts that managers will favor debt over equity if they want to avoid negative signaling. If so, the market response to a senior-for-junior transaction will depend on the degree of seniority and juniority involved in the transaction. Adverse selection advocates, including Lucas and McDonald (1990) and Choe, Masulis, and Nanda (1994), also posit that managers avoid equity issues when the stock is undervalued. As with differential information theory, the senior-for-junior research offers no empirical support for adverse selection theory. Disregard for this theory is understandable since it generally deals with the interaction of investment and financing decisions. However, one should not overlook the findings of Masulis and Korwar (1986) and Choe, Masulis, and Nanda (1994) who discover that the market response to a firm's equity announcement is significantly negatively related to the direction of its recent change in equity value. Hull and Moellenberndt (1994) also find this to be true for their analysis of stock offerings when cash proceeds are used to reduce bank debt. Thus, an empirical question worth exploring is whether prior stock price behavior explains stock returns when equity (or equity-like) securities are reduced.

Second, the Leland and Pyle (1977) signaling theory predicts that senior-for-junior transactions convey favorable information if the market believes insiders are increasing their residual ownership proportions. For junior security reductions that involve residual stock holdings, insiders increase their relative stock holdings by not participating in the stock reductions. The assumption, that insiders increase their ownership proportions for leverage increases, is consistent with prior research (Copeland and Lee, 1991; Karpoff and Lee, 1991). This research finds a positive relationship between insider ownership changes and the direction of the leverage change. Third, the Ross (1977) signaling model suggests that

Table 1. Descriptive Statistics for 196 Senior Offerings that Reduce Junior Forms of Borrowing, 1970–1989.

Descriptive Statistics	Total Sample(n=196)	Small Firm Size Half [a] (n=98)	Large Firm Size Half [a] (n=98)
Panel A: Senior-for-Junior Classes			
Nonconvertible Debt-for-Common Stock	122 (62%)[b]	66 (67%)[b]	56 (57%)[b]
Nonconvertible Debt Plus Warrants-for-Common Stock	5 (3%)	1 (1%)	4 (4%)
Nonconvertible Debt-for-Convertible Preferred	7 (4%)	1 (1%)	6 (6%)
Nonconvertible Debt-for-Nonconvertible Preferred Stock	3 (2%)	0 (0%)	3 (3%)
Nonconvertible Debt-for-Convertible Debt	28 (14%)	12 (12%)	16 (16%)
Convertible Debt-for-Common Stock	7 (4%)	4 (4%)	3 (3%)
Convertible Debt-for-Convertible Preferred Stock	3 (2%)	1 (1%)	2 (2%)
Nonconvertible Preferred-for-Common Stock	12 (6%)	8 (8%)	4 (4%)
Nonconvertible Preferred Plus Warrant- for-Common Stock	2 (1%)	1 (1%)	1 (1%)
Nonconvertible Preferred-for-Convertible Preferred Stock	2 (1%)	1 (1%)	1 (1%)
Convertible Preferred-for-Common Stock	5 (3%)	3 (3%)	2 (2%)
Panel B: Time Profile			
Observations for 1970–1973	21 (11%)	7 (7%)	14 (13%)
Observations for 1974–1977	87 (44%)	61 (62%)	26 (27%)
Observations for 1978–1981	50 (26%)	27 (28%)	23 (24%)
Observations for 1982–1985	27 (14%)	2 (2%)	25 (26%)
Observations for 1986–1989	11 (6%)	1 (1%)	10 (10%)
Panel C: Selected Characteristics			
Noncash Offerings	156 (80%)	87 (89%)	69 (70%)
Cash Offerings	40 (20%)	11 (11%)	29 (30%)
NYSE Listed Observations	68 (35%)	11 (11%)	57 (58%)
AMEX Listed Observations	94 (48%)	62 (63%)	32 (33%)
OTC Listed Observations	34 (17%)	25 (26%)	9 (9%)
Offerings with No Mention of Premium	122 (62%)	51 (52%)	71 (72%)
Offerings with Mention of Premium	74 (38%)	47 (48%)	27 (28%)
Transactions Increasing Debt	147 (75%)	74 (76%)	73 (74%)
Transactions Not Increasing Debt	49 (25%)	24 (24%)	25 (26%)
Transactions Decreasing Common Stock	153 (78%)	84 (86%)	69 (70%)
Transactions Not Decreasing Common Stock	43 (22%)	14 (14%)	29 (30%)
Panel D: Key Variables			
Common Stock Value [c]	$325M[d] $46M)	$14M[d] ($11M)	$636M [d] ($223M)
Firm Value [e]	$714M ($139M)	$69M ($29M)	$1,359M ($258M)
Planned Senior Offering Value	$63M ($16M)	$8M ($4M)	$119M ($50M)
Planned Reduction in Common Stock as a percentage of Common Stock Value [f]	−19.5% (−16.7%)	−26.5% (−24.4%)	−12.5% (−9.4%)
Planned Increase in Debt as a Percentage of Firm Value[g]	13.9% (7.4%)	18.4% (11.4%)	9.3% (5.2%)
Planned Senior Offering as a Percentage of Firm Value	18.0% (12.7%)	23.8% (18.4%)	12.1% (9.0%)

[a] The 196 observations are ranked according to firm size. The "small firm size half" contains the 98 observations with the smallest firm sizes, while the "large firm size half" includes the remaining 98 observations with the largest firm sizes. Firm size is represented by the pre-announcement market value of common stock. [b] The percent of the column's total for each row is given in the parenthesis (and is rounded off to the nearest whole number). [c] Stock price the day prior to the announcement times the number of shares outstanding at that time. [d] Means (medians) are reported. M stands for millions. [e] Includes equity value and debt value. Equity value consists of "Common Stock Value" and the liquidation value of preferred stock (if applicable). Debt value is the book value of long-term debt obligations and current liabilities. Values are taken from sources nearest (yet prior) to the announcement date. [f] The value is zero if the junior security is not common stock. [g] The value is zero if there is no net increase in debt.

senior offerings that increase debt levels convey positive news. Market participants will perceive that higher debt levels show insider confidence that future cash flows will increase (to service the higher debt levels).

While not mentioning signaling via either a premium or adverse selection, the senior-for-junior research consistently cites empirical support for Leland and Pyle (1977) and Ross (1977). For example, Cornett and Travlos (1989) offer evidence consistent with Leland and Pyle (1977), while Masulis (1983) mentions support for Ross (1977). Hull (1994) finds support for both Leland and Pyle (1977) and Ross (1977). Copeland and Lee (1991) and Pinegar and Lease (1986) note general support for asymmetric information theory.

3. Sample, descriptive statistics, methodology, and tests

In this section, we present our sample, descriptive statistics, methodology, and tests. We use the *Investment Dealers' Digest* and *The Wall Street Journal* (*WSJ*) as our primary sources for identifying senior offering announcements. Along with these sources, we obtain data for descriptive statistics and empirical tests from *Compustat Annual Files*, *Moody's Industrial Manuals*, proxy statements, and *CRSP Price and Return Files*. These sources cover 1970–1989.

3.1. Sample

We gather a sample of 196 senior offerings that survive the following five screens. First, the senior offering must reduce a junior security. Second, the offering firm must not be identified as a utility since the announcement by a utility is likely known in advance. Third, the firm's common stock must be listed on the *CRSP Return Files* and be traded between days –220 and +240. Fourth, the value of the planned senior offering, as a percentage of firm value, must lie between 1% and 100% ("firm value" is defined in Panel D in Table 1). Lastly, if cash from current assets is also being used to retire the junior security, it must be less than 30% of the senior offering's value. This screen is used by prior research, such as Shah (1994), and allows us to keep 11 observations that involve cash from current assets.

The 196 observations that survive our screens include 19 observations having other noteworthy news announcements in *WSJ* between event days –2 and +2. We retain these observations for our tests since their inclusion does not change our findings.

3.2. Descriptive Statistics

In Table 1, we report descriptive statistics. So that we can understand differences between our sample's small and large firms, the table includes data on a "small firm size half" and a "large firm size half." The small half contains the 98 observations with the smallest firm sizes, while the large half includes the remaining 98 observations with the largest firm sizes. Firm size is represented by the pre-announcement market value of common stock.[4] Common stock value for the small half range from about $0.5 million to $49 million, and for the large half from about $50 million to $9.5 billion.

Panel A in Table 1 gives descriptive statistics for our sample's 11 senior-for-junior transaction classes. The nonconvertible debt-for-common stock class (n=122) contains the largest number of observations.[5] In Panel B, we give a time profile that reveals clustering in time (especially for the small half) during the mid-1970s. Other senior-for-junior studies (Masulis, 1980; Shah, 1994) also report clustering. Shah (1994) says that the clustering occurs during troubled times suggesting that stock prices may be at bothersome levels.

Panel C reports descriptive statistics for selected characteristics. Compared to the large half, the small half consists of more noncash offerings (which are offerings where junior security holders relinquish their ownings for more senior ownings), AMEX/OTC listed observations, offerings that mention a premium, and transactions that decrease residual ownership. As seen in the panel, we find 74 observations where our sources mention a premium. The dollar amount of the premium per junior security being reduced by the firm, as a percentage of its pre-announcement market price, has a mean (median) of 43.1% (35.9%). For firms in the small half (n=46) and the large half (n=27), the respective values are 51.2% (48.1%) and 29.4% (22.2%). Below we give pertinent details for a sample firm that involves a reported premium

> On 5/14/79, Gateway Industries, Inc. announced plans to issue subordinate debentures to retire up to 500,000 common shares. The firm planned to pay $10 face of new debt per share. The closing stock price on the trading day before 5/14/79 was $7.50. Thus, there was a plan to pay a premium of $2.50 over the pre-announcement market price (as proxied by the closing price on the trading day before 5/14/79). The amount of the premium per share, as a percentage of its pre-announcement market price, was 33.33% ($2.50/$7.50 = 0.3333).

In Panel D, we report mean and median statistics for six key variables. Statistics for the first three variables in this panel reveal that small firms have much smaller means and medians for "Common Stock Value," "Firm Value," and "Planned Senior Offering Value." Statistics for the last three variables in Panel D show that firms in the small half undergo relative changes in security mixes that are generally about twice that found for firms in the large half.

For the six variables in Panel D, we find statistically significant differences (at or near the 1% level for both the one-tailed parametric and nonparametric tests) when we compare the small firm size half to the large firm size half. The parametric *t*-statistics range in magnitude from 2.27 for "planned senior offering value" to 6.34 "for planned reduction in common stock as a percentage change of common stock value." The Wilcoxon *z*-statistics are higher ranging from 2.56 to 12.09. Although we omit (for brevity's sake) the tests and statistical details, the statistically significant differences between the relative change variables (for example, the last three variables in Panel D) do not explain our support for a differential information effect.[6]

3.3. Methodology and Primary Tests

We use the ordinary least squares (*OLS*) market model procedure described by Brown and Warner (1985) to test the hypothesis that our sample's announcement period abnormal stock return is equal to zero. The *OLS alphas* and *betas* are calculated using the equal-weighted CRSP NASDAQ index for OTC firms and CRSP NYSE/AMEX index for NYSE/AMEX firms. In our calculation, we use a 200-day post-estimation period consisting of days +41 to +240 after the initial announcement date (for example, after day 0). Our findings are robust for other methodological variations including the use of *OLS alpha*s and *beta*s given by Scholes and Williams (1977), a 200-day pre-estimation period, and value-weighted indices.

Differential information theory argues that the announcement of a positive event (such as a pure leverage increase) will be even more positive when announced by small firms. Thus, to offer support for this theory, we must disprove the null hypothesis that the mean announcement period stock return for a small firm sample is less positive or equal to the mean return for a large firm sample. To test this null hypothesis, we calculate a standard parametric one-tailed *t*-statistic for testing the equality of the means of two nonpaired samples. A positive *t*-statistic, significant at the 5% level, rejects the null hypothesis and offers support for the research or alternate hypothesis that the small firm sample will have a greater positive

Table 2. Daily Abnormal Stock Return Results

Event Day(s)	Total Sample (n=196)	Small Firm Size Half [a] (n=98)	Large Firm Size Half [a] (n=98)	Small Versus Large Half (n=196)
–3	0.39%; 1.67 [b] 48%; –0.57	1.01%; 2.57** [b] 55%; 1.01	–0.22%; –0.88 [b] 41%; –1.82	2.64**;165 [c] 2.50**
–2	0.03%; 0.14 50%; 0.00	0.21%; 0.58 51%; 0.20	–0.15%; –0.63 49%; –0.20	0.84; 167 1.04
–1	1.01%; 2.51** 46%; –1.00	1.77%; 2.40* 48%; –0.40	0.25%; 0.81 45%; –1.01	1.92*; 124 0.97
0 [d]	3.90%; 6.54** 63%; 3.57**	5.77%; 5.43** 65%; 3.03**	2.03%; 4.22** 60%; 2.02*	3.16**; 131 2.18*
+1	1.98%; 3.99** 53%; 0.71	2.99%; 3.43** 54%; 0.81	0.97%; 2.13* 51%; 0.20	2.05*; 147 1.31
+2	0.03%; 0.13 49%; –0.28	0.00%; 0.56 47%; –0.61	0.06%; 0.33 51%; 0.20	–0.12; 128 –1.33
+3	–0.29%; –0.94 43%; –1.86	–0.65%; –1.18 42%; –1.62	0.06%; 0.33 45%; –1.01	–1.15; 144 –1.74*

[a] The 196 observations are ranked according to firm size. Those with the smallest (largest) firm sizes are placed in the small (large) firm size half.

[b] The first row reports the mean daily abnormal return (AR) followed by the t-statistic when testing if the mean daily AR equals zero. The second row gives the percent of the sample with a positive daily AR followed by the binomial z-statistic when testing if the percent is equal to 50%. Although it is arguably more proper to report one-tailed significant levels (since we expect positive ARs), we report traditional two-tailed significant levels.

[c] The first row reports the parametric t-statistic when testing the null hypothesis that the mean daily AR for the small group is less positive or equal to the mean daily AR for the large group. The final number reported in the first row is the degrees of freedom. The second row reports the z-statistic for the non- parametric Wilcoxon rank-sum test. The t-test and z-test are one-tailed tests.

[d] Day 0 is the initial announcement date. Assuming no leakage or late reporting, the announcement is expected to impact the market on day 0 or, if the announcement occurs after the market is closed, on day +1.

** Significant at the 1% level.

* Significant at the 5% level.

return.[7] To detect if parametric statistics are influenced by outliers, we also compute nonparametric Wilcoxon rank-sum *z*-statistics.

To examine the importance of wealth effects predicted by testable hypotheses, we perform *OLS* regression tests and report coefficients, *t*-statistics, *F* values, and adjusted R^2 values. We calculate one-tailed *t*-statistics for explanatory variables since each is associated with an information-based theory that has a definite prediction concerning the sign of its coefficient. Our regression results are robust to other alternate functional forms including the White (1980) correction for heteroskedasticity.

4. Announcement period results

In this section, we largely focus upon the role of differential information (as represented by firm size) in accounting for returns for senior-for-junior transactions. The detailed findings, reported in Tables 2 and 3, reveal the sensitivity of announcement period returns to firm size.

4.1. Daily Abnormal Return Results

In Table 2, we report mean daily abnormal stock return (AR) results for an event period of seven days that includes event days –3 through +3. The "total sample column" reveals significant positive stock price activity for days –1, 0, and +1. The significant AR statistics for these three days suggest that these days collectively capture the announcement period wealth impact for our sample of senior-for-junior transactions. Therefore, for subsequent tests, we focus on three-day cumulative abnormal returns (CARs) consisting of days −1, 0, and +1.

When looking at the "small firm size half" and "large firm size half" columns, we find that the positive market response is especially evident for small firms. These two columns also reveal that the percentages with a positive daily abnormal return are generally similar for small and large firms. However, this is not inconsistent with differential information theory that focuses on the magnitude of the CARs (as opposed to the percentage that is positive). A comparison of the two columns shows that the difference in ARs between the small and large halves is over 1.2% for event days –3, –1, 0, and +1. For each of these four event days, the last column reports that the difference in ARs between the small and large halves produces a positive parametric *t*-statistic that is significant at the 5% level or better. These statistics support the research hypothesis that small firms have greater positive ARs for senior-for-junior transaction announcements.[8]

4.2. Cumulative Abnormal Return Results

If a differential information wealth effect is present, then differences in three-day CAR magnitudes should increase as we compare groups with greater differences in firm size. Table 3 reports three-day CAR results when we compare pairs of small and large firm size groups with increasing differences in firm size. The pairs of groups reported are: halves, thirds, fourths, eighths, and tenths. The two groups for the halves are the previously described small firm size half (n=98) and the large firm size half (n=98). We form the two groups for the thirds by partitioning the sample into three groups based on firm size, and then keeping the group with the smallest firm sizes (n=65) and the group with the largest firm sizes (n=65). The pairs of groups for the fourths, the eighths, and the tenths are each formed in the same manner.

The "total sample" column in Table 3 gives three-day CAR results for each of the combined small and large firm size groups. The increasing CARs (as we move down this column) reflect the fact that CARs for firms in the small half increase rapidly as firm sizes decrease. This more rapid increase in CARs (as firms become smaller) can be seen by comparing CARs in "small firm size group" and "large firm size group" columns. For example, the CAR of 10.53% for the small group for the halves (n=98) increases to 27.44% for the small group for the tenths (n=19). The CAR of 3.25% for the large group for the halves (n=98) only decreases to 2.67% for the large group for the tenths (n=19). Apparently, CARs are sensitive to the range of firm sizes in the small half (about $0.5 million to $49 million). On the other hand, CARs are not very responsive to firm sizes covered by the large half (about $50 million to $9.5 billion). Finally, in the last column, we report that CAR differences between groups are significant at the 1% level for all parametric and nonparametric tests.

Although this section has thus far only focused on results stemming from groups formed by firm size, we also conducted tests for groups constructed according to categories designed to test asymmetric information theories (these categories are discussed in more detail in the next section). For example, we looked at groups formed according to whether or not a premium is announced. Firms that announce a premium (n=74) have a CAR of 11.70% while those that do not announce a premium (n=122) have a CAR of 3.97%. For firms with a lesser stock price run-up prior to the senior offering announcement (n=98), the

Table 3. Cumulative Abnormal Return Results

Groups [a] Tested	Total Sample (n=196)	Small Firm Size Group (n=98)	Large Firm Size Group (n=98)	Small Versus Large Group (n=196)
Halves	6.89%;8.17**[b]	10.53%;7.13** [b]	3.25%;4.86** [b]	4.30**;140 [c]
	69%;5.43**	76%;5.05**	63%;2.63**	3.61**
Thirds	(n=130)	(n=65)	(n=65)	(n=130)
	7.55%;6.68**	12.47%;6.35**	2.63%;3.59**	4.70**;82
	73%;5.26**	83%;5.33**	63%;2.11*	4.40**
Fourths	(n=98)	(n=49)	(n=49)	(n=98)
	9.86%;7.15**	16.49%;7.37**	3.22%;3.54**	5.50**;63
	81%;6.06**	96%;6.43**	65%;2.14*	5.49**
Eighths	(n=48)	(n=24)	(n=24)	(n=48)
	13.43%;5.46**	23.73%;6.41**	3.13%;2.34*	5.23**;29
	83%;4.62**	100%;4.90**	67%;1.63	5.17**
Tenths	(n=38)	(n=19)	(n=19)	(n=38)
	15.06%;6.43**	27.44%;6.43**	2.67%;1.65	5.43**;23
	82%;3.89**	100%;4.36**	63%;1.15	4.82**

[a] The two groups for the halves are the small firm size half (n=98) and large firm size half (n=98) as described in the previous tables. The two groups for the thirds are formed by first partitioning the sample into three groups based on firm size and then keeping the group with the smallest firm sizes (n=65) and the group with the largest firm sizes (n=65). The two groups for the fourths, eighths, and tenths are formed similarly so as to generate the smallest and largest fourths (n=49 and n=49), the smallest and largest eighths (n=24 and n=24), and the smallest and largest tenths (n=19 and n=19).

[b] The first row reports the mean three-day cumulative abnormal return (CAR) followed by the t-statistic when testing if the mean CAR equals zero. The three days include -1, 0 (the announcement date), and +1. The second row gives the percent of the sample with a positive CAR followed by the binomial z statistic when testing if the percent equals 50%. Although it is arguably more proper to report one-tailed significant levels (since we expect positive ARs), we report traditional two-tailed significant levels.

[c] The first row reports the parametric t-statistic when testing the null hypothesis that the mean CAR for the small group is less positive or equal to the mean CAR for the large group. The final number reported in the first row is the degrees of freedom. The second row reports the z-statistic for the nonparametric Wilcoxon rank-sum test. The t-test and z-test are one-tailed tests.

** Significant at the 1% level.

* Significant at the 5% level.

CAR is 8.31%. This is noticeably greater than the CAR of 5.46% for those with a greater run-up (n=98). Firms undergoing nonconvertible debt-for-common stock transactions (n=122) have a CAR of 8.97%, while those undergoing other senior-for-junior transactions (n=74) have a CAR of only 3.46%. We find that the differences in CARs for the above three pairs of groups are all significant at conventional levels. Similar results are found when we compare firms with the greatest relative size changes versus those with the least. As discussed in the next section, all of the just mentioned results are consistent with the predictions of the major asymmetric information signaling theories.

5. Regression results

In this section, we report the findings of our regression tests. These tests simultaneously examine the information-based hypotheses discussed in Section I. In the process, we weigh and compare the relative importance of differential information and asymmetric information explanatory variables.

5.1. Our Regression Model

The model used in our *OLS* regression analysis is:

$$\text{CAR} = b_0 + b_1\text{LFS} + b_2\text{PRM} + b_3\text{CE1} + b_4\text{TYP} + b_5\text{PCH}.$$

CAR is the three-day cumulative abnormal return expressed in decimal form.

LFS is the logarithm of firm size where firm size is expressed in millions of dollars (we still represent firm size by "Common Stock Value" as defined in Panel D in Table 1).

PRM is 0 if the dollar amount of the premium per junior security being reduced by the firm, as a percentage of its pre-announcement market price, is less than 10%, and 1 if greater than or equal to 10%.

CE1 is the cumulative excess return for the 200-day period from days –220 to –21 before the announcement day. We compute values for CE1 by adjusting stock returns for market returns given by the equal-weighted CRSP OTC market index for OTC firms and CRSP NYSE/AMEX market index for NYSE/AMEX firms.

TYP is 0 if a nonconvertible debt-for-common stock transaction, and 1 if an "other senior-for-junior" transaction.

PCH is the number of shares outstanding prior to the senior-for-junior announcement divided by the number of shares outstanding after the announcement.

Details for the five explanatory variables are given below.

LFS tests for a differential information effect stemming from firm size. Since market participants have less information on small firms, a more positive stock return for a positive news release (such as a pure leverage increase announcement) is hypothesized for small firms. Thus, a negative coefficient is predicted for LFS.

PRM is a control variable used to detect if stock returns are influenced by overt asymmetric information via an announced intent to pay a premium to relinquishing junior security holders. Of the 74 offerings for which the financial press mentions a premium, there are 69 where the premium offered is 10% or more of the market value of the junior security being reduced. We expect a positive coefficient for PRM since the market should view a premium of 10% or more as a message from insiders that the junior security is substantially undervalued.

CE1 represents the firm's market-adjusted stock performance prior to the senior-for-junior announcement. Adverse selection theory suggests that managers will be more inclined to reduce equity-like securities if they think such securities are undervalued. If the magnitude of the undervaluation is negatively related to prior stock price performance, then the extent of the positive news (about the equity being undervalued) will be negatively related to CE1. Thus, a negative coefficient is predicted for CE1.

TYP tests for wealth effect differences stemming from two general classes of senior-for-junior transactions. Adverse selection signaling theory based in Myers and Majluf (1984) suggests a negative coefficient since the market is more likely to reward a firm to the extent a more senior form of borrowing is chosen over a more junior form. Since a debt increase is more likely when TYP = 0, a negative coefficient for TYP may result from a positive debt level signaling effect as predicted by Ross (1977).[9] Regardless, nonconvertible debt-for-common stock transactions (n=122) are expected to have more positive stock returns compared with other less extreme senior-for-junior transactions (n=74).

Table 4. OLS Regression Results for 196 Senior Offerings that Reduce Junior Forms of Financing, 1970-1989

Our regression model used is

$$CAR = b_0 + b_1LFS + b_2PRM + b_3CE1 + b_4TYP + b_5PCH.$$

CAR is the three-day cumulative abnormal return expressed in decimal form.

LFS is the logarithm of firm size where firm size is expressed in millions of dollars (firm size is represented by "Common Stock Value" as defined in Panel D in Table 1).

PRM is 0 if the dollar amount of the premium per junior security being reduced by the firm, as a percentage of its pre-announcement market price, is less than 10%, and 1 if greater than or equal to 10%.

CE1 is the cumulative excess return for the 200-day period from days –220 to –21 before the announcement day. We compute values for CE1 by adjusting stock returns for market returns given by the equal-weighted CRSP NASDAQ index for OTC firms and CRSP NYSE/AMEX index for NYSE/AMEX firms.

TYP is 0 if a nonconvertible debt-for-common stock transaction, and 1 if an "other senior-for-junior" transaction.

PCH is the number of shares outstanding prior to the senior-for-junior announcement divided by the number of shares outstanding after the announcement.

CONSTANT[a] b_0	LFS b_1	PRM b_2	CE1 b_3	TYP b_4	PCH b_5	Adjusted R^2 Value	F Value
0.088	–0.021	0.055	–0.079	–0.029	0.041	0.313	18.74**
2.01*	–5.20**	3.51**	–3.35**	–1.78*	1.68*		

[a] In the first six columns, we report coefficients in the first row and t-statistics in the second row. Except for the constant term, one-tailed t-tests are conducted since each explanatory variable is associated with an information-based theory that has a definite prediction concerning the sign of its coefficient.

** Significant at the 1% level.

* Significant at the 5% level.

PCH captures the extent of the pure leverage increase. Under the assumption that insiders do not sell their holdings this variable represents the percentage of total shares owned by insiders after the senior-for-junior announcement divided by their percentage of total shares owned before the announcement. If insiders are not selling, Leland and Pyle (1977) hypothesize a positive coefficient since greater positive values for PCH are expected to be associated with greater increases in stock ownership proportions for insiders. Cornett and Travlos (1989) report a significant positive coefficient for this signaling variable for their senior-for-junior tests (n=29). It is the only variable that they find to be significant for these tests.[10]

5.2. Regression Results

In Table 4, we report regression results. The table reveals that our regression model generates an F value significant at the 1% level (F = 18.74) and explains about one-third of the total variation in CARs (adjusted R^2 = 0.313). Each coefficient has its predicted sign and is significant at the 5% level or better. The strongest support is for a differential information effect as LFS has a t-statistic with the greatest magnitude (t = –5.20). We also find strong support for asymmetric information effects connected with the offering of a premium and with adverse selection (as PRM and CE1 have respective t-statistics of 3.51 and –3.35). The coefficients for TYP and PCH are significant at the 5% level.

The results for TYP, like CE1, support adverse selection. They are also consistent with a debt level signaling effect as predicted by Ross (1977) and a tax effect as hypothesized by Modigliani and Miller (1963). However, a better test of these two effects is a dummy variable (DEB) where DEB = 0 if the transaction increases debt, else DEB = 1. Thus, to ascertain if TYP best captures an adverse selection effect, we replace TYP with DEB in our regression model. We find that it performs noticeably worse than TYP. Thus, we conclude that our results for TYP best support an adverse selection effect (as opposed to other effects).

The results for PCH lend credence to asymmetric information theory predicated on changes in the fractional ownership of insiders. Because PCH is significantly correlated with the relative amount of debt being issued, it is possible that it also captures a debt level signaling effect. To test this possibility we examine a variable (LEV) that represents the amount of the debt being issued. We define LEV as the planned increase in debt divided by firm value. When inserted into our regression model to replace PCH, we find that LEV is not significant at the 5% level. This result does not lend significant support for the debt level signaling model of Ross (1977).

To investigate potential multicollinearity problems, we compute Pearson and Spearman correlation coefficients and variance inflation factors for our regression tests. The results of these computations reveal that our regression findings are not explained by multicollinearity. Due to space constraints, we do not report the details of these multicollinearity tests.

5.3. Other Regression Results

Tables 2 and 3 indicate that CARs are more sensitive to firms in the small firm size half (n=98). To explore this possibility, we repeat the regression test reported in Table 4 on the small half. We find results similar to the total sample. However, there are several changes worth noting. The adjusted R^2 value increases to 0.40. The coefficient for LFS more than triples in magnitude (from –0.021 to –0.067). This latter result further verifies that the market response is more sensitive to firms in the small half.

When testing the large half (n=98), we find some differences compared to the small half. The adjusted R^2 value falls to 0.21. Signaling via a premium is now the dominant explanatory variable as PRM is the only variable significant at the 1% level. The wealth effect associated with firm size is less important as LFS is now only significant at near the 5% level. The insignificant coefficient for CE1 suggests that adverse selection signaling tied to prior stock price performance is inconsequential for large firms.

To further explore the nature of a differential information effect, we replace LFS with other variables hypothesized to represent the amount of available information on a firm.[11] First, we test a dummy variable (DNB) that equals 0 if the firm in the sample being tested has more articles listed in the *WSJ Index,* for the year before its senior-for-junior announcement, than the median number found for the sample. The median number of articles for our sample is 10. Differential information theory predicts a positive coefficient for DNB since a firm with less available information (for example, a firm where DNB = 1) will convey more positive news for a positive event (such as a senior-for-junior transaction).[12]

When we repeat the tests given in Table 4 with LFS replaced by DNB, we discover that DNB's performance resembles that for LFS (the *t*-statistic for DNB is 3.50). When used simultaneously with LFS, we find that DNB's coefficient has its hypothesized sign but is insignificant (the results for other explanatory variables, including LFS, are essentially unaltered). However, DNB's insignificance can be explained by collinearity with LFS (as Pearson and Spearman *rhos* average close to –0.6).

We also test two other dummy variables significantly correlated with LFS (*rhos* between LFS and these variables are all greater than 0.5) and capable of capturing a differential information effect. First, we test a dummy variable (LST) representing a firm's listing as either AMEX/OTC or NYSE. Second, we test a dummy variable (SIZ) capturing a firm's classification within either the small or large firm size half. Although LST and SIZ are both significant at the 1% level when used to replace LFS, neither performs as well as DNB.[13]

6. Shift in systematic risk results

In this section, we show that the decrease in systematic risk (or stock beta) occurs primarily for firms where less information exists. Since these firms have greater positive CARs, this finding links greater positive stock returns with greater decreases in systematic risk.

6.1. Calculating the Shift in Risk

A firm's change in stock beta captures the shift in systematic risk. We measure this shift in risk (SIR) by using the following definition (which gives a negative SIR for a decrease or downward shift in systematic risk):

> SIR is the *OLS* stock beta for a 200-day post-announcement period (days +41 to +240) minus the *OLS* stock beta for a 200-day pre-announcement period (days –220 to –21).

We use the equal-weighted CRSP NASDAQ index for OTC firms and CRSP NYSE/AMEX index for NYSE/AMEX firms when calculating betas.[14] The pre- and post-announcement periods are removed in time from the initial announcement and (for the most part) the actual offering. So that the extreme changes in beta values cannot influence our findings, our test sample (n=186) excludes outliers (for example, the 5% with the greatest SIR magnitudes).[15]

6.2. Changes in Stock Beta and Stock Returns

The mean (median) pre- and post-announcement period betas are 1.29 (1.33) and 1.17 (1.15). The mean (median) SIR is –0.12 (–0.15).[16] Our median SIR is less than the –0.20 reported by Shah (1994). However, if we delete cash transactions and the senior-for-junior classes not examined by Shah, we get a median of –0.18. Our SIRs range from –1.45 to 1.29 with a standard deviation of 0.55. There are nearly 40% SIRs with positive values. When testing if the percent having a positive SIR equals 50% or more, we find a two-tailed binomial *z*-statistic of –2.79 that is significant at the 1% level.

If greater positive CARs result from greater reductions in systematic risk, then small firms should have SIRs with greater negative values. We find this to be so. For example, the mean (median) pre- and post-announcement period betas are 1.16 (1.16) and 0.98 (0.94) for the small firm size half (n=93), and 1.42 (1.45) and 1.36 (1.26) for the large firm size half (n=93).[17] For the small and large halves, the mean (median) SIRs are –0.18 (–0.23) and –0.06 (–0.08). Thus, SIRs for the small half are about three times more negative than for the large half.

When testing if the mean SIR for the small half sample is equal to or less negative than the mean SIR for the large half sample, we find that the nonpaired parametric *t*-statistic and the nonparametric rank-sum Wilcoxon *z*-statistics are both negative and significant at near the 5% level for the one-tailed test. To test the robustness of this finding with regard to a differential information interpretation, we compare samples based upon available information as proxied by the number of articles in the *WSJ Index* (for example, we compare samples where DNB = 0 and DNB = 1). For this test, we find that the difference between mean SIRs is significant at the 1% level. The mean SIR is only –0.01 when DNB = 0 (for example, when there are more than 10 articles for the year before the initial announcement), but –0.23 when DNB = 1 (for example, when there are 10 or less articles). Thus, the reduction in beta is now totally explained by those firms for which less information exists. Finally, results based upon listing (as described earlier for the variable LST) are also similar to those based upon firm size or articles published in the *WSJ Index*.

In contrast to the above findings, when we analyze samples based upon other characteristics (premium versus no premium, cash versus noncash, those with more positive CE1 values versus those with less positive or negative CE1 values, nonconvertible debt-for-common stock versus "other senior-for-junior"), we find that the mean SIRs between the two tested samples are generally similar and never statistically significant. These results suggest a shift in systematic risk is more a function of characteristics associated with differential information theory than other characteristics--including those associated with asymmetric information theories that significantly explain CARs.

Finally, we test if a shift in systematic risk can add to the explanatory power of our regression model, and thus help account for the positive market response. When our shift in risk variable (SIR) is inserted into our model, we find a negative coefficient that is not quite significant at the 5% level for the one-tailed test ($t = -1.50$) with adjusted R^2 values increasing only slightly (for example, about 0.01). However, when LFS is not used, we find a coefficient for SIR that is significant at the 1% level ($t = -2.32$). Our regression results, together with our change in beta findings, suggest that the differential information effect accompanying senior-for-junior announcements may be partially caused by greater decreases in systematic risk that occur for firms where less information exists. Correlation tests corroborate this conclusion as Pearson and Spearman *rhos* between LFS and SIR average over 0.20.

7. Summary

The purpose of our research is to investigate the nature of the information conveyed by pure leverage increases. To achieve this purpose, we examine announcement period stock returns for 196 senior-for-junior transactions that span two decades. The choice of these transactions enables us to focus on the market response to strict changes in a firm's security mix.

In our initial tests, we investigate the role of differential information as proxied by firm size. We begin by partitioning the sample based upon firm size into a small and large half. The small firm size half has over three times greater positive stock returns than the large firm size half (10.53% versus 3.25%). We show that difference between CARs increases as groups with greater differences in firm size are compared. Our statistically significant differences in CARs between small and large firm size groups are consistent with differential information theory predicated on the notion that less is known about small firms. This causes positive announcements (such as pure leverage increases) to be more informative, and thus more positive, for firms for which less information exists.

Next, we perform regression analysis to test for a variety of wealth effects predicted by differential information and asymmetric information theories. A differential information effect is associated with categories not directly related to insider behavior (for example, the categories of firm size, number of announcements in the financial press, and listing). In contrast, an asymmetric information effect is specifically related to the behavior of insiders and how their actions convey significant information about the firm. Our regression model explains about one-third of the variation in CARs for our senior-for-junior sample. We find that differential information–linked to firm size–is a dominant explanatory variable. This finding is robust for other variables that capture the amount of available information about firms. We also show strong support for asymmetric information effects previously neglected, namely, those effects associated with the offering of a premium and with adverse selection. Although weaker, we also find statistically significant support for an asymmetric information effect caused by changes in ownership proportions for insiders. Finally, we discover that the decrease in systematic risk documented by prior senior-for-junior research is confined to firms for which less information exists. Since it is for these firms that the market response is most positive, we can link the magnitude of positive stock returns with greater decreases in systematic risk. However, our tests indicate that the link is not a dominant explanatory factor when accounting for the positive magnitude of the returns.

Notes

1. Smith (1986), Leland (1994), and Shah (1994) are among those who discuss capital structure theory and evidence.

2. In a paper published since acceptance of this paper for publication, Hull, Mazachek, and Ockree (1998) show that the OTC firm size findings of Hull and Pinches (1994/1995) hold for NYSE/AMEX stock offerings.

3. Hull and Kerchner (1996) and Hull, Mazachek, and Ockree (1998) also note the need for senior-for-junior research to analyze firm size since a firm size effect for these transactions (unlike stock-for-debt transactions) cannot be explained by an issue cost effect. See Hull and Fortin (1993/1994) for more details on the impact of issue costs on announcement period returns.

4. Freeman (1987) discusses classifying firms based upon size. He notes that prior research typically uses the market value of common stock to represent firm size. Our empirical results are robust for other firm size measurements including a measure that considers "firm value" as defined in Panel D in Table 1. Our results are also unchanged if we use constant dollars when calculating firm sizes.

5. As seen in Panel A, there are two classes consisting of seven transactions where warrants are attached to a senior offering that is reducing common stock. Besides these seven observations, there are eight transactions where two senior borrowing types are retiring the same junior security type and 10 transactions where the same senior type is retiring two junior types. For reporting purposes in Panel A, the latter 18 transactions are classified based upon which types are dominant. For example, a nonconvertible debt plus nonconvertible preferred stock-for-common stock transaction is classified as a nonconvertible debt-for-common stock transaction if the dollar value of nonconvertible debt is greater than that of nonconvertible preferred stock.

6. The tests that we conducted are like those reported by Hull and Pinches (1994/1995) for

their OTC sample of stock-for-debt transactions. These tests compare the CARs for small and large firm size groups when the average relative size for each group is the same.

7. When calculating *t*-statistics, stock return variances between samples are assumed unequal if computed *F* values reject the hypothesis that the sample variances are equal.

8. Although not reported in Table 2, as we extend the event period, we find that CAR differences between the small and large firm size halves increase. To illustrate, the three-day CAR difference for days –1, 0, and +1 of about 7% increases to about 12% for the days from –20 through +40. This latter period roughly covers any possible pre-announcement leakage and also any announcements up to the actual offering date.

9. Hull and Kerchner (1997) recently find statistically significant support for an adverse selection theory for a dummy variable stemming from two general classes of junior-for-senior transactions. They also discuss the possibility that such a variable may test signaling predicated on decreases in relative debt levels (or in fractional insider shareholdings) and the agency-based free cash flow theory of Jensen (1986).

10. PCH, like the last three variables listed in Panel D in Table 1, captures the relative change in the security mix. These four variables are significantly correlated (for example, Pearson and Spearman *rhos* between these variables are all greater than 0.39).

11. The additional differential information variables we test in this section are admittedly not inclusive of all possible variables, for example, variables directly specifying the number of analysts following the firm, the number of institutional holders of the firm's stock, the trading volume of the firm's stock, and so forth. However, as discussed by Collins, Kothari, and Rayburn (1987), firm size proxies for such variables.

12. Dierkens (1991) tests DNB when analyzing 197 equity offerings. (Since negative CARs are expected, a negative DNB coefficient is hypothesized for her equity offering tests.) She finds that DNB fares better than three other asymmetric information variables that she examines. This is true when DNB is tested either separately or simultaneously with these three variables. Unlike our paper, she does not distinguish between differential and asymmetric information variables when testing for information effects. Dierkens finds that 16 articles is the cutoff for her sample median (compared to our 10 articles). This suggests that firms in her sample are larger than ours and thus CARs may be less sensitive to the firm sizes in her sample. Like Dierkens, we find that our results are similar if we analyze other cut-off numbers surrounding the cut-off associated with the median number.

13. Two other dummy variables with insignificant coefficients are variables that control for the cash versus noncash nature of the transactions and for the time periods of occurrence. We also repeat our test reported in Table 4 after omitting observations with extreme firm sizes, namely, those 5% of the observations with the most extreme values for firm size. The results for this test are virtually unchanged from those reported in Table 4.

14. Our shift in systematic risk findings are qualitatively similar if betas are calculated

using other methodological variations including the calculation by Scholes and Williams (1977) which controls for nonsynchronous trading.

15. Although our results are similar without deleting outliers, we omit extreme values for SIR because these values can occur randomly and, thus, are independent of the senior-for-junior announcement. For example, consider one of our deleted observations that has pre- and post-announcement period betas of 3.84 and 1.58 (and for which SIR = 1.58 − 3.84 = −2.26). Since an extreme beta of 3.84 typically reverts to a lower value, a substantially lower post-announcement period beta (and thus highly negative SIR) is expected to occur independent of any leverage change announcement.

16. The traditional financial structure literature predicts (absent signaling effects) that an increase in leverage will increase the riskiness of equity. Thus, the mean post-announcement period beta of 1.17 would be smaller were it not for the positive relationship between leverage and risk. Were we to adjust for this increase predicted by traditional thought, the decrease in risk attributed to an information effect should exceed the 0.12 mean (0.15 median) SIR that we report.

17. The lower betas for small firms are surprising given that we expect small firms to be generally more risky. The lower betas cannot be explained by less debt since the average debt to firm value ratio for firms in our small and large halves are similar.

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