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Explaining the Savings From Rule 415:
The Debt Market

PERSON TO
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Shelf registration of new securities began as an experiment by the Commission in March 1982 and was permanently adopted in November 1983 as Rule 415. 1/ The Rule allows companies to file a single registration statement for all the securities they plan to issue over the next two years and then sell some or all of the securities whenever they choose. Since its introduction, shelf registration has been the center of intense controversy. Most corporate issuers contend that shelf registrations have increased competition in the market for new securities and have allowed firms greater flexibility in bringing issues to market, both of which should lower new issue borrowing costs. In contrast, others contend that shelf registrations undermine the performance of due diligence by

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1. This study examines debt securities issued under Section 230.415(a)(1)(i) in the Code of Federal Regulations.

underwriters and thereby increase the risk of underwriting new securities, resulting in higher borrowing costs for issuers.

Currently, only two studies examine debt securities sold by shelf registration. Kidwell, Marr and Thompson find that industrial and utility bond shelf issues sell for between 30 and 40 basis points less than comparable nonshelf issues. 2/ Nearly all of the cost difference is due to higher reoffering yields on nonshelf issues rather than higher underwriter spreads. Rogowski and Sorensen find similar cost savings for a comparable sample of bonds. 3/ Neither of the studies, however, determines the cause of the interest cost savings achieved by shelf issuers.

This study uses a sample of industrial debt issues sold between March 1982 (the beginning of Rule 415) and June 1983 to test the intensity of bidder competition hypothesis. This hypothesis suggests that the interest cost savings achieved by shelf issues stems primarily from the degree of competition for shelf issues as compared to nonshelf issues.

The memo is organized as follows: Section I summarizes the study. Section II discusses the intensity of bidder competition hypothesis. Section III develops the model used to

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2. Kidwell, D.S., Marr, M.W., and Thompson, G.R. "SEC Rule 415: The Ultimate Competitive Bid" Journal of Financial and Quantitative Analysis, June 1984, pp. 183-195.
 3. Rogowski, R.J., and Sorensen, E.G. "Shelf Registrations and the Cost of Capital: A Test of Market Efficiency". Washington State University and the University of Arizona Working Paper, 1983.

test the hypothesis. Section IV presents the results of the tests and Section V concludes the study.

I. Summary

The results presented in this study add to previous studies which examine the SEC's rule to allow shelf registrations for the sale of new security issues. ^{4/} The findings suggest that industrial bond issues sold by shelf registration sell for about 20 basis points less than similar nonshelf sales (negotiated issues), and that the interest cost difference between the two methods of sale is accounted for by the intensity of bidder competition for the bond issues. Thus, the method of sale (shelf or nonshelf) does not influence issuer borrowing cost. Furthermore, there was no interest cost difference between mechanical shelf (negotiated shelf sale) and traditional negotiated sales.

II. The Intensity of Bidder Competition Hypothesis

Competition is an important determinant of new issue borrowing cost. Kessel, applying Stigler's economics of information theory, argued that increased underwriter competition leads to increased search which reduces borrowing cost on

4. Supra notes 2 and 3, also see Bhagat, S., Marr, M.W., and Thompson, G.R. "The Rule 415 Experiment: Equity Markets", University of Utah and Virginia Polytechnic and State University Working Paper.

competitive issues. 5/ This is because knowledge of demand for an issue is not completely known to any investment banker. What information an investment banker does know, however, is incorporated into the price offered for a security. Since underwriters serve different customers, the offering yields (or prices) at which they can sell an issue vary. Therefore, as the number of competing underwriters increases, so does the chance of finding buyers willing to accept the lowest offering yield (or highest price).

Previous studies show that new issue borrowing costs decline as the number of competitive bids increases. 6/ Furthermore, there appears to be little difference in interest cost between negotiated and competitively sold bond issues that receive one or possibly two bids. As the number of competitive bids increases beyond that point, competitive sales usually result in lower borrowing costs. 7/ Thus, competition is an

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5. Kessel, R. "A Study of the Effects of Competition in the Tax-Exempt Bond Market", Journal of Political Economy, July-August, 1971, pp. 706-737; Stigler, G.J. "The Economics of Information", Journal of Political Economy, June 1961, pp. 213-225. Stigler recognized that unless a market is completely centralized, no one person knows all prices quoted. To discover the lowest prices, a buyer must call various sellers. This is what Stigler termed search.
 6. See Kessel Supra note 5 and Ederington, L.H. "Bidding for Securities - The Effect on Issuer's Interest Cost", Journal of Business, Vol. 51, No. 4, 1978, pp. 673-686.
 7. See Ederington Supra note 6 and Sorensen, E.H. "The Impact of Underwriting Method and Bidder Competition Upon Corporate Bond Interest Cost," Journal of Finance, September, 1979, pp. 863-870.

important determinant in the cost relationship between securities sold by different methods of sale.

With the introduction of shelf registration, industrial bonds are now sold by three methods: (1) traditional negotiated sales, (2) mechanical shelf sales, and (3) competitive shelf sales. 8/ A traditional negotiated sale is a contractual arrangement between an issuer and an underwriter in which the underwriter provides origination services in return for the exclusive right to underwrite the issue. A mechanical shelf sale is the same as traditional negotiated sale with respect to the economic relationship between the underwriter and the issuer. 9/ The differences that do exist between the two methods of sale are purely regulatory. With a shelf registration, the issuer saves on out-of-pocket transaction costs of bringing an issue to market and gains financing flexibility. 10/

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8. Industrial bond issues are rarely sold by traditional competitive bid. In this type of sale arrangement, the issuer invites sealed bids from underwriters prepared in accordance to a set of bid documents; the bonds are then awarded to the underwriter whose bid results in the lowest borrowing cost to the issuer.
 9. The term mechanical shelf was coined by the Commission's Division of Corporation Finance.
 10. For a shelf registration, the reduction in out-of-pocket transaction costs occurs primarily because no preliminary prospectus needs to be filed with the Commission for the initial offering, and all future offerings within the two year period are spared the expense of further Commission registration. Financing flexibility is gained by improved market timing and the ability of the issuer to change the terms of the issue before the bond sale. For more details on the benefit of shelf versus nonshelf sales, see Kidwell, Marr and Thompson, Supra note 2.

Finally, a competitive shelf sale is an auction in which the issue is sold to the underwriter whose bid results in the lowest cost for the issuer. The auction usually takes place by telephone and the entire bidding process can be concluded within several hours. Given these types of sales and the results from the competitive-negotiated literature, we expect that: (1) traditional negotiated sales will sell at a borrowing cost similar to mechanical shelf sales and (2) competitive shelf sales should sell at lower borrowing cost than either traditional negotiated or mechanical shelf sales. 11/ The reason for the lower borrowing cost of competitive shelf sales is the introduction of direct competition to the method of sale.

However, not all agree that competitive shelf registrations may result in lower borrowing costs for issuers. Some investment bankers argue that competitive shelf registrations have undermined the due diligence process which may increase new issue borrowing cost. 12/ First, in a shelf offering, the ultimate underwriter

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11. See Sorensen, Supra note 7, Ederington, L.H. "Competitive Versus Negotiated Underwritings of Corporate Bonds" Journal of Finance, March 1976, pp. 17-28, and Fabozzi, F.B., and West, R.R. "Negotiated Versus Competitive Underwritings of Public Utility Bonds: Just One More Time" Journal of Financial and Quantitative Analysis, September, 1981, pp. 323-339.
 12. Due diligence refers to the investigation carried out by an underwriter prior to a public offering. The underwriter attempts to insure that there are no misstatements or omissions in the issuer's registration statement. Section 11(b)(3) of the Securities Act of 1933 requires underwriters to perform due diligence. See Nicholas, C. "The Integrated Disclosure System and Its Impact Upon Underwriter's Due Diligence: Will Investors Be Protected?" Securities Regulation Law Journal, Vol. 11, 1983, pp. 3-43.

need not be named at the filing date and hence it is not worthwhile for underwriters to conduct due diligence at that time. Second, the uncertain sale date of competitive shelf offerings and the speed with which they come to market prevents underwriters from providing thorough due diligence. Finally, the intensity of competitive bidding may have further eroded due diligence. These arguments suggest that underwriters should demand higher spreads and/or higher reoffering yields in competitive shelf offerings as a premium for protection against potential lawsuits arising out of inadequate due diligence.

Furthermore, even if due diligence is not eroded, others argue that the threat of potential competition in negotiated sales (shelf or nonshelf) is sufficient to bring about the effect of direct competition. 13/ The reason is that underwriter compensation and reoffer yields become public knowledge regardless of the method of sale. The threat of loss of future business to other investment bankers will insure that underwriters price securities competitively. The due diligence and potential competition arguments are not consistent with the results of Kidwell, Marr and Thompson or Rogowski and Sorenson. 14/

13. Demsetz, H. "Why Regulate Utilities?" Journal of Law and Economics, November 1968, pp. 55-65.

14. See Kidwell, Marr, and Thompson, Supra note 2, and Rogowski and Sorensen Supra note 3. If the due diligence hypothesis were true, shelf issues should sell at higher reoffering yields than non-shelf issues. The above studies find the opposite.

III. Empirical Techniques

A. The Model

The intensity of bidder competition hypothesis suggests that the interest savings achieved by shelf issuers stems primarily from the degree of competition for shelf issues. To test this hypothesis, a model is developed to explain variations in bond yields of similar treasury issues (YOT). Previous studies suggest that new issue borrowing costs are a function of the size of the issue, the default risk of the issue, the presence of a call provision, the presence of a sinking fund, the prevailing market rate of interest, credit market volatility, competition for the issue, and the method of sale. 15/

The model tested is

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$$(1) \text{ YOT} = f[\text{RATG}, \text{TR}, \text{VOL}, \text{SINK}, \text{CALL}, \text{SIZE}, \text{COMP}, \text{SHELF}]$$

where the sign above each variable shows the expected direction of the partial relationship, and the variables are described below:

YOT = yield spread calculated as follows: yield to maturity of issue minus the yield to maturity of a treasury issue with the same maturity sold on the same day. Daily treasury rates were used as reported in Federal Reserve Statistical Release H.15: Selected Interest Rates. When a treasury rate with a matching

15. See Ederington Supra notes 6 and 7, Fabozzi and West, Supra note 11, Kessel Supra note 5, Kidwell, Marr, and Thompson Supra note 2, Rogowski and Sorensen, Supra note 5, Sorensen Supra note 7.

maturity was not available, the appropriate treasury yield was calculated by interpolating the yields between the two treasury issues with maturities bounding the issue;

RATG = zero-one variables for the highest credit rating given either by Moody's Investor Service or Standard & Poor's Corporation: where Aaa, Aa1, Aa2, Aa3, A1, A2, A3 all = 1, and Baa rated issues are the excluded set;

TR = the average daily interest rate on 10 year and longer U.S. treasury bonds on the date of issue as reported by Moody's Bond Survey;

VOL = the uncertainty in interest rates at the time of issue. VOL is calculated as the mean absolute deviation in the long term daily treasury rate (TR) over twenty days prior to the sale date of the issue as reported in Moody's Bond Survey.

$$VOL = \left[\frac{-1}{\sum_{t-20}^{t-1} \text{abs}(TR_t - TR_{t+1})/20} \right] / TR_0$$

where TR_t is the treasury rate on day t, TR_{t+1} is the treasury rate on day t+1, and TR_0 is the treasury rate on the date of sale;

SINK = zero-one variable for the presence (1) or absence of a sinking fund (0);

CALL = zero-one variable for a callable issue (1) or noncallable issue (0);

SIZE = natural logarithm of issue size in millions of dollars;

COMP = the natural logarithm of the number of bids received by an issue;

SHELF = zero-one variable for the method of sale: shelf issue (1) and nonshelf issue (0).

B. Discussion of the Variables

The dependent variable for the model is the yield spread off a treasury issue with a comparable maturity (YOT). Daily

treasury rates are used to control for inter-day changes in interest rates. This is important because a major argument for shelf registrations is the ability of underwriters to react quickly to changes' in daily interest rates. The YOT model used in the study closely resembles the way in which Wall Street underwriters actually price new securities. The independent variables are standard explanatory variables in models explaining new issue interest cost, so the discussion here is kept to a minimum.

The highest of the Moody's or Standard & Poor's credit ratings are used as a measure of default risk; these include Aaa, Aa1, Aa2, Aa3, A1, A2, and A3 with issues rates Baa serving as the excluded set. Issue size (SIZE) is specified in natural logarithms to capture possible economies of scale in underwriting. The daily long-term treasury rate (TR) is included in the model to control for any effect that changes in the level of interest rates have upon the yield spread (YOT). The presence of a call and sinking provision are measured as dummy variables. Credit market uncertainty is measured by the mean absolute deviation (VOL) of the long-term treasury rate (TR) 20 trading days preceding the issue's sale date.

The number of underwriting syndicates that bid on an issue is included in the model to account for the intensity of underwriter competition. The competition variable (COMP) is specified in natural logarithms to capture the diminishing impact of additional competition (bidders) on issuer borrowing cost. All traditional negotiated and mechanical shelf issues are entered

as receiving one bid. To capture any remaining difference in borrowing cost due to the method of sale, a dummy variable (SHELF) is entered into the regression equation which is equal to one if the bond issue is shelf registered and zero if sold by traditional negotiation.

C. The Data

The data consist of a sample of 111 industrial debt issues rated by Moody's Investor Service and Standard and Poor's Corporation that appear in Drexel Burnham Lambert's Public Offerings of Corporate Securities from March 16, 1982 (the beginning of shelf registration) through June 30, 1983. Because the introduction of shelf issues may have altered the pricing of new security issues, the sample does not include any bond issue sold prior to the introduction of shelf issues. Convertible, extendable, zero coupon bonds, and floating rate coupon securities were excluded from the sample to generate a more homogeneous data set to better allow inter-issue cost comparisons. For shelf issues, data on the number of bids received by an issue are not publicly available; therefore, I wrote the companies to obtain the information. ^{16/} Out of 83 shelf issues, we obtained information on 65 issues, a 78 percent response rate.

16. I wrote to the companies while an Assistant Professor of Finance at Virginia Polytechnic Institute and State University and not while a Commission employee.

Table 1 presents the descriptive statistics for the sample. Though only a first approximation, the average interest cost of shelf issues is about 39 basis points below that on nonshelf issues. All of the nonshelf issues were sold by negotiation and were reported as receiving one underwriter bid. For the 65 shelf issues for which complete data were available, 58 percent (38 issues) were mechanical shelf issues and the balance (42 percent or 27 issues) were competitive sales. All competitive shelf issues received at least two bids, up to a maximum of nine bids.

IV. The Findings

Table 2 shows the regression estimates for YOT. The results resemble those of other studies. ^{17/} The estimates explain over 75 percent of the inter-issue variation for YOT. The control variables have the correct signs (except CALL) and most are statistically significant from zero at the five percent confidence level; the only exceptions are CALL and A3. In general, the dependent variable (YOT) is higher, the lower the issue's credit rating, the higher the market rate of interest at the time of sale, the more unstable credit conditions, if the issue has a sinking fund, and the smaller the size of the bond issue.

17. See Supra note 15.

In Equation (2.1) the coefficient on the method of sale dummy (SHELF) is -0.204 and is statistically significant from zero. This indicates that shelf issues sell for about 20 basis points less than similar negotiated bond issues, after accounting for the other important differences with the independent variables. This finding is similar to the results reported by Kidwell, Marr and Thompson, and Rogowski and Sorensen. 18/

Equation (2.2) contains the same variables as Equation (2.1) plus the variable for the number of underwriter bids (COMP). The COMP variable is statistically significant with a negative sign, suggesting that reoffering yields decline as the number of bids for a bond issue increases. Of particular importance is that when the COMP variable is added to the model, the method of sale variable (SHELF) is no longer statistically significant. 19/ These findings suggest that competition is the primary determinant in the interest cost differential between shelf and nonshelf issues, and that method of sale (shelf or nonshelf) only matters in the former equation because it measures this increased competition.

To examine whether there is an interest cost difference between mechanical shelf and traditional negotiated sales, Equation (2.3) is estimated. In this equation, the competition and method of sale variables (COMP and SHELF) are replaced by

18. See Kidwell, Marr, and Thompson Supra note 2 and Rogowski and Sorensen Supra note 3.

19. The simple correlation between SHELF and COMP is 0.382.

three dummy variables which take into account the method of sale and the competition for an issue. The new variables are constructed as follows: "MSHELF" = 1 if the issue is a mechanical shelf sale; "BID2" = 1 if the issue receives 2 or 3 bids; and "BID4" = 1 if the issue receives four or more bids; and traditional negotiated sales are the excluded.

The results of Equation (2.3) suggest that there is no interest cost difference between mechanical shelf and traditional negotiated sales; the variable MSHELF is not statistically significant. Shelf issues that receive two or three bids sell for 28 basis points less than comparable traditional negotiated sales. As the number of competitive bids increases to four or more bids, the reoffer yields on competitive shelf issues declines even further, selling for 49 basis points less than similar negotiated sales. 20/ In sum, the overall evidence from Table 2 suggests the interest cost difference between shelf and nonshelf issues stems from the intensity of bidding competition and not the method of sale.

20. To test the hypothesis of the equality of the coefficients of MSHELF, BID2, and BID4, F-tests are performed. The hypothesis in matrix form is represented by $LB=C$ (that is, $MSHELF - BID2 = 0$, $BID2 - BID4 = 0$) where the F statistic is $(Lb-c)'(L(X'X)^{-1}L' - L^{-1})(Lb-c)$ divided by the appropriate degrees of freedom and where b is an estimate of B. See SAS User's Guide: Statistics, SAS Institute, North Carolina, 1982, p. 48 for a discussion of the computation of the F statistic. The F-values obtained are $(MSHELF - BID2) = 0, 2.48$, probability at 11 percent; and $(BID2 - BID4) = 0, 2.11$, probability at 15 percent.

V. Conclusion

This study uses a sample of 111 industrial debt issues sold between March 1982 and June, 1983. The purpose is to test the intensity of bidder competition hypothesis, which argues that the interest cost savings achieved by shelf issues stems primarily from the degree of competition for shelf issues as compared to nonshelf issues. The findings suggest that industrial bond issues sold by shelf registration sell for about 20 basis points less (holding all other important factors constant) than similar nonshelf sales (negotiated issues). Further, the differences in interest cost between the two methods of sale are accounted for by the intensity of bidder competition for the bond issues.

The findings support the Commission's adoption of Rule 415. Shelf registration appears to have increased competition in the market for new debt issues, providing substantial benefits for both consumers and investors. Consumers benefit through reduced cost of products or services; investors benefit through increases in firm profitability and higher security prices.

Table 1

Mean Statistics for
Shelf and Non-Shelf Issues
(March 16, 1982-June 30, 1983)

Characteristic	Total Sample	Shelf ^a	Non-shelf ^b
Number of Issues	111	83	28
Yield off Treasury (basis pts.)	121.89	111.87	151.18
Reoffer Yield (percent)	12.41	11.97	13.74
Underwriting Spread (\$/bond)	0.73	0.69	0.84
Issue Size (\$ million)	108.97	105.06	121.78
Years to Maturity	14.85	15.29	13.78
Sinking Fund (%)	40.17	42.17	35.71
Callable Before Maturity (%)	79.46	80.72	75.00
<u>Bond Ratings (%)</u>			
AAA	4.46	4.82	3.57
AA	40.18	43.38	32.14
A	43.76	40.96	50.00
BAA	11.60	10.84	14.29
<u>Underwriter Bids</u>			
1	66	38	28
2 to 3	15	15	0
4 or more	12	12	0

^a Mechanical shelf issues were reported as receiving one underwriter bid; all competitive shelf issues received two or more bids.

^b All non-shelf issues were sold by negotiation and were reported as receiving one underwriter bid.

Table 2

Regression Estimates for the Intensity of Bidding
 Competition Hypothesis: Reoffering Yield the Dependent Variable

Explanatory Variable	Equation (2.1)		Equation (2.2)		Equation (2.3)	
	Coef.	T-value	Coef.	T-value	Coef.	T-value
<u>Controls</u>						
CONSTANT	2.046	2.08	2.563	2.70	2.566	2.69
Aaa	-1.355	-5.95	-1.371	-6.32	-1.372	-6.30
Aa1	-1.178	-6.12	-1.165	-6.36	-1.169	-6.32
Aa2	-1.348	-9.18	-1.233	-8.51	-1.232	-8.48
Aa3	-1.041	-6.93	-1.007	-7.02	-0.994	-6.82
A1	-1.288	-6.71	-1.321	-7.23	-1.336	-7.23
A2	-0.657	-4.80	-0.614	-4.69	-0.603	-4.55
A3	-0.180	-1.17	-0.206	-1.40	-0.203	-1.38
INT	0.121	2.50	0.112	2.41	0.110	2.37
VOL	0.314	4.97	0.319	5.30	0.323	5.19
CALL	0.097	0.95	0.010	0.10	-0.007	-0.07
SINK	0.493	5.70	0.497	6.02	0.500	5.99
LNSIZE	-0.169	-2.59	-0.203	-3.20	-0.201	-3.16
<u>Competition</u>						
SHELF	-0.204	-2.01	-0.110	-1.09		
COMP			-0.224	-3.03		
MSHELF					-0.105	-1.00
BID2					-0.281	-2.20
BID4					-0.491	-3.44
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Adjusted R ²	0.758		0.780		0.778	
F-Value	23.137		24.356		22.589	
Dep. Mean	1.274		1.274		1.274	
Root MSE	0.347		0.330		0.331	
Sample Size	93		93		93	