

A Study

by

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Update - Rule 415 and Equity Markets

The views expressed herein are those of the Office of the Chief Economist only. The Commission has expressed no view on this study.

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Rule 415, which was permanently adopted by the Commission in November 1983, allows a firm to register all the securities that it reasonably expects to sell over the next two years and then sell those securities whenever it chooses. 1/ This procedure is known as shelf registration. Investment bankers and corporate issuers vigorously debate the effect of Rule 415 on firms' issuing cost for new securities. Some (mostly investment bankers) argue that Rule 415 increases new issue costs while others (mostly

1/ This study investigates securities issued under Section 230. 415(a)(1)(i) in the Code of Federal Regulations. This study does not investigate securities which could be sold by shelf registration before March 1982 such as securities sold for dividend or interest reinvestment plans or employee benefit plans of the issuer.

issuers) argue that Rule 415 decreases new issue costs. ^{2/} In addition, many investment bankers argue that placing common stock "on the shelf" depresses the price of a firm's outstanding shares of stock. Most issuers, in contrast, fail to believe this argument of price depression.

This memo examines the influence of shelf registration on the issuing cost of new common shares for a company. More specifically, using a sample of all (344) new common stock issues of NYSE and Amex companies made from March 17, 1982 through December 31, 1983, we investigate: (a) whether an issuer selling common stock under Rule 415 incurs a lower cost than an issuer selling common stock by a traditional method of sale, and (b) whether shelf registrations depress stock prices more than traditional registrations. In addition, the study discusses concerns raised by the earlier SEC study on Rule 415 by Gary Gray in his paper "The Investment Banking Process

^{2/} For example, Thomas Saunders of Morgan Stanley argues "all the evidence continues to support (the position) that for equity you can get a better execution and a better price and timing by not using a shelf." In contrast, Frank Woy, the Executive Vice President for Finance at Montana Power says that his company's experience with shelf registration for two million shares of common stock (shows that the shelf method) was "significantly cheaper" than a traditional method of sale. Harry Conger, Chairman of Homestake Mining estimates that his company saved nearly \$3 million by using a shelf procedure instead of a traditional method of issue. See Paikert, C. "Off the Shelf" Investment Dealers' Digest, March 29, 1983, p. 7-8 and "Stock Issuers Warm Up to Shelf Registration" Business Week, September 5, 1983, p. 82 for other comments about equity shelves.

for Primary Equity Securities and the Effects of SEC Rule 415" (unpublished manuscript). The answers to these questions provide insight into the wisdom of the recent Commission decision adopting shelf registration for equity.

The memo is organized as follows. Section I summarizes the study. Section II examines the various propositions put forth by interested parties in the shelf registration debate. Section III outlines the model used in testing for differences in new issuing costs between shelf and nonshelf issues and presents the methodology which tests for the possibility that shelf registrations depresses the price on outstanding common shares more than traditional registrations. Section IV discusses the data used in the study. Section V presents the results. Last, Section VI discusses Gary Gray's study "The Investment Banking Process for Primary Equity Securities and the Effects of SEC Rule 415".

I. SUMMARY

With an expanded sample (from 19 shelf issues to 93 shelf issues), the results are similar to the earlier OCE memo (OCE-83-3) which found that shelf registrations benefited issuers. In particular, issuing cost of equity securities sold under Rule 415 is about 13 percent less for syndicated offerings than comparable non-shelf securities and about 51 percent less for non-syndicated offerings than comparable non-shelf securities. For a \$58.8 million dollar stock issue (the

average in our sample), these percentages are equal to cost savings of about \$370,000 an issue for syndicated issues and about \$800,000 an issue for non-syndicated issue. For the total sample, the savings per issue amount to about \$478,000 an issue. In addition, our evidence does not support the hypothesis that shelf registrations depress stock prices at announcement more than traditional registrations. Last, the study finds that a portfolio of shelf securities underperforms a portfolio of non-shelf securities by about 0.66 percent during the 20 trading days after registration of the issues; however the difference in the portfolio performances is not statistically significant.

II. THE SHELF REGISTRATION DEBATE

A. Arguments Supporting Rule 415

Proponents of Rule 415 argue that since this rule increases the issuing corporation's alternatives in their choice of method for raising equity, Rule 415 can only benefit the corporation. ^{3/} The following reasons are cited to explain why offerings made under Rule 415 are likely to cost less than offerings made using more traditional methods.

Offering dates can be timed to take advantage of favorable market conditions. In a shelf offering an issuing company can make the decision to go to the market and then sell an issue within minutes. It is argued that this feature will allow an issuer to make an offering when the demand for its shares and

^{3/} Mathematical optimization theory provides a useful analogy to this argument: The maxima (minima) from an unconstrained maximization (minimization) problem is at least as big (small) as that from a constrained problem, and in general it is bigger (smaller).

its share price reaches a temporary peak. Before Rule 415, SEC regulations required a minimum delay of 48 hours between the decision to make the offering and the actual sale.

The shelf offering process may intensify competition among underwriters and this may lead to lower issuing costs. An inverse relationship between the intensity of competition among underwriters (as proxied by the number of underwriters bidding on an issue) and lower issuing costs has been extensively documented by, among others, Kessel. ^{4/} There are reasons which suggest that a shelf registration will increase the number of underwriters bidding for an offering. First, if the issuer does not like the terms of any of the underwriters in a formal competitive bidding offering, then the issuer must start the costly bidding process over again. However, the costs of restarting the bidding process in a shelf offering are considerably smaller. Second, traditional underwritings have large fixed cost components with the SEC registration statement accounting for a major share of these fixed costs. This leads to economies of scale and induces the issuer to make one large rather than many small offerings. With a shelf registration,

^{4/} Kessel (Kessel, R. "A Study of the Effects of Competition in the Tax-Exempt Bond Market," July-August, 1971, pp. 706-737, Journal of Political Economy, uses Stigler's theory of information search to explain the observed behavior of reoffering yields for competitively sold municipal bond issues. Kessel finds that, in general, reoffering yields decline as the number of bidding underwriters increases. He explains this by noting that as the number of bidding underwriters increases, the probability of finding an investor with a reservation price also increases.

after the registration statement is filed, the fixed costs of an offering are fairly small. Under Rule 415 the issuer may find it cost-effective to make many small offerings through various underwriters. 5/

There are additional reasons why issuing costs are likely to be less for shelf offerings. 6/ First, there may be savings in the direct costs incurred by the issuer. These savings occur, for example, in the costs of printing and distributing documents prior to the pricing of the offering, in the costs of preparing and filing the registration statement, as well as in other items. 7/ Second, an institutional investor may buy the new shares directly from the issuing corporation. In such instances, since no underwriters are involved, underwriter spread is zero.

5/ Small offerings may benefit issuers in another way. Bhagat and Frost (Bhagat, S. and Frost, P.A. "Issuing Costs to Existing Shareholders in Competitive and Negotiated Underwritten Equity Offerings," University of Utah and University of Washington Working Paper, 1984) argue that issuing costs increase with the riskiness of the offering. They show that this risk increases with the size of the offering. This suggests that as offering size decreases issuing costs also tend to decrease.

6/ As discussed later, there are three components of issuing costs: issuer expenses, underwriter spread, and underpricing. Here, only the first two of these costs are discussed.

7/ Shelf offerings do not require the preparation or distribution of detailed prospectuses. Also, the shelf procedure allows multiple offerings to be made from a single registration statement.

B. Arguments Against Rule 415

Opponents of Rule 415 have argued that this rule may not be in the best interest of the shareholders of the issuing corporation. Many investment bankers argue that when an issuing corporation registers new shares using Rule 415 and places them on the shelf for later offering(s), this depresses the price of the firm's outstanding shares of stock. 8/ It is argued that the stock price falls since putting the shares on the shelf increases their potential supply without any off-setting increase in demand. This issue is often referred to as the "market overhang" problem.

Investment bankers also argue that Rule 415 will break up the traditional full-service relationship between the issuing corporation and the investment bankers. In the past investment bankers would sometimes provide "free" advice to corporations on matters unrelated to equity financing (for example, merger activities) with the expectation that the company would bring their underwriting business to them when they made an offering.

8/ Jason Elsas of Salomon Brothers notes, "My personal opinion is that placing common stock on the shelf, as distinguished from merely registering it under Rule 415, is not a good approach, and I wouldn't recommend it for most issuers...my experience has been that the uncertainty surrounding shares registered with no manager named plus the overhang problem of those shares depresses the price of a company's stock from a level it may otherwise have obtained." See, Monahan, G.R., "Are Companies Capping Stock Prices by Using Shelves?" Investment Dealers' Digest, January 4, 1983, pp. 6-7.

Under Rule 415 this traditional relationship may be severed with companies forced to pay for these "free" investment banking services. 9/ Also, some investment bankers argue that the higher spreads in traditional offerings compared to shelf offerings are attributable to greater services provided in traditional offerings. These services include the marketing and stabilization activities of the underwriters which may result in a higher offering price than would otherwise be the case.

Opponents of Rule 415 also argue that in a shelf offering underwriters may not be able to discharge adequately their traditional due diligence responsibilities. 10/ In a shelf

9/ It is suspected that in a traditional full-service relationship the issuing corporation eventually has to pay the investment banker through possibly a higher underwriter spread. However, for tax-related reasons, it is in the interest of the issuing corporation to compensate the investment bankers separately for underwriting services and consulting advice unrelated to raising new equity. Expenses incurred for consulting advice unrelated to raising new equity are tax-deductible, whereas expenses for raising new equity are not. See, Smith, C.W., "Alternative Methods for Raising Capital: Rights versus Underwritten Offerings," Journal of Financial Economics, 5, pp. 273-307.

10/ 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. Due diligence is required of the underwriter according to Section 11(b)(3) of the Securities Act of 1933. For a discussion of due diligence see Nicholas (Nicholas, L., "The Integrated Disclosure System and its Impact Upon Underwriters' Due Diligence: Will Investors Be Protected?" Securities Regulation Law Journal, Vol. 11, 1983 pp. 3-43).

offering the ultimate underwriter is typically not named at the time of the filing and hence it is not worthwhile at that point in time for any one underwriter to conduct due diligence.

Second, the uncertainty surrounding the timing of the shelf offering and the speed with which a shelf offering can be made prevents underwriters (after they are appointed) from providing thorough due diligence services. Third, the intensification of the bidding among underwriters has further eroded due diligence. 11/ These arguments suggest that underwriters should demand higher spreads in shelf offerings as a premium for protection against potential lawsuits arising out of possibly inadequate due diligence. Also, investors may offer less (for the shares issued through the use of the shelf procedure) to compensate for bearing any uncertainty arising out of inadequate due diligence.

III. EMPIRICAL TECHNIQUES

The above discussion suggests two empirically testable propositions regarding the costs and benefits of Rule 415. The first proposition concerns the relative issue costs of shelf and nonshelf offerings. The second proposition concerns the market overhang originating from shelf registrations. We discuss these propositions below.

11/ Ex-Commissioner Thomas notes, "The Rule puts the issuer in the driver's seat by enabling it to play off one underwriter against another and thus defeat reasonable requests for investigation or disclosure" (SEC News Release, "The Shelf Rule: An Interim Appraisal, by Commissioner Barbara Thomas," April 29, 1983).

A. Issuing Costs

This discussion of issuing costs is based on Bhagat and Frost. 12/ There are three components of the costs of an underwritten equity offering. First is the commission paid the investment banker(s) for providing the underwriting services. Second is the cost borne by the issuing company, for example, accounting fees, filing fees, opportunity costs of the issuing firm's management time spent in planning the offering, etc. The third component of this cost is underpricing of the new shares. 13/

The determinants of issuing costs include risk of the offering, size of the offering, information costs, and the method of distribution. The measure of the risk of an underwritten equity offering is based on how the new offering affects the variance of the underwriter's portfolio returns. This is the approach of Bhagat and Frost who find that the measure of the risk of an offering depends upon the ownership structure of the underwriting firm. 14/ If the residual claims

12/ Bhagat, S. and Frost, P.A. Supra note 5.

13/ The empirical measure of underpricing (besides measuring underpricing) is also designed to capture the benefits that accrue to the issuer from possible propitious "timing" of the offering. Underpricing is measured as (last trade price/public offering price) -1.0. If the offering price is greater than the last trade price then this benefits the issuer. The source of these benefits is in the timing ability of the underwriters; it is assumed that if the underwriter did not time the offering, then it might have been made at the previous day's (lower) price.

14/ Bhagat, S. and Frost, P.A., Supra note 5.

on the underwriting firm are publicly traded then systematic risk is the relevant measure of risk of the offering. If the underwriting firm is a partnership then the risk of the offering is given by the product of the size of the offering and unsystematic risk. Assuming that the ownership structure of the underwriting firms in our sample is in between the above mentioned extremes, both systematic and unsystematic risk (and size of the offering) are used as measures of risk of the offering.

The size of an offering also affects issuing costs in another way. It is commonly believed that there are scale-economies in the sale of a new issue. Hence, a priori, we expect issuing costs (as a percentage of the proceeds) and issue size to be inversely related. Kessel and Ederington, among others, find this inverse relationship for bond offerings. 15/ Additionally, Hansen and Pinkerton suggest the following fixed cost components in an equity offering: legal and accounting fees which result from the registration statement filing process, registrar's fees, and overhead portions of printing and engraving expenses. 16/

15/ Kessel, Supra note 4; Ederington, L.H. "Uncertainty, Competition, and Costs in Corporate Bond Underwritings," Journal of Financial Economics, December, 1974, pp. 1531-1543; Ederington, L.H., "Competitive versus Negotiated Underwritings of Corporate Bonds," Journal of Finance, March 1976, pp. 17-28.

16/ Hansen, R. and Pinkerton, J., "Direct Equity Financing: A Resolution of a Paradox," Journal of Finance, July, 1982, 651-665.

Information costs are the third component of issuing costs. These costs were first suggested by Kessel in the context of bond offerings. In an underwritten equity offering the underwriter has to search out the highest bidders for the new shares. The investors also have to assess their demand for new shares. 17/ We assume that in periods of great uncertainty these information costs and hence issuing costs will be greater. We use the variance of the market's returns at the time of the offering as a measure of this uncertainty.

The method of distribution of the new offering also determines issuing costs. If an underwriter knows that a particular offering can be sold to an institution, he will not form a syndicate. If the cost savings that result from not forming a syndicate are passed on to the issuer in the form of a lower spread, then the underwriter spread will be lower for non-syndicated offerings.

The type of company (utility or industrial) may influence issuing costs. More specifically, utility companies are frequent participants in the capital markets while industrial companies are less frequent participants. For example, in our sample of 139 utility issues only 7 utilities did not have an equity issue in the last 4 or 5 years. In contrast, in our sample of 205 industrial issues 138 did not have an equity issue in the last 4 or 5 years. In addition, evidence in the debt market

17/ Kessel, Supra note 4.

suggests that underwriting spreads are less on utility issues than industrial issues. 18/

Based on the above discussion we can compare the issuing costs of shelf and nonshelf offerings with the help of the following regression equation:

$$C_i = \theta_1 + \theta_1 \cdot \beta_i + \theta_2 \cdot \text{Var}(\tilde{\epsilon}_i) + \theta_3 \cdot (\log X_i) + \theta_4 \cdot \text{Var}(\tilde{R}_{m,i}) + \theta_5 \cdot \text{SYND}_i + \theta_6 \cdot \text{SHELF}_i + \theta_7 \cdot \text{UTIL} + \tilde{U}_i; \quad (1)$$

where,

C_i = the issuing cost for offering i , which is equal to cash spread + underpricing + issuer expenses. Cash spread is underwriter commission expressed as a percentage of the public offering price. Underpricing equals (last trade price/public offering price) - 1.0; this is scaled up by a factor of 100. Issuer expenses are expenses incurred by the issuing corporation in making the new offering (other than underwriter commission) expressed as a percentage of the gross amount. The variable $(100 - C_i)$ may be interpreted as the number of cents the issuing corporation receives per dollar of equity raised;

β_i = the systematic risk of offering i . This is estimated using 150 daily returns from 170 trading days to 21 trading days before announcement of the issue;

$\text{Var}(\tilde{\epsilon}_i)$ = the unsystematic risk of offering i measured as the variance of the residuals of the market model. The market model is estimated using 150 daily returns from 170 trading days to 21 trading days before announcement of the issue;

$\text{Var}(\tilde{R}_{m,i})$ = the market variance around the time of the offering i . The market variance is the variance of the equally weighted market index based on all NYSE and Amex companies and is estimated using the 10 daily returns from 5 days before the offering through 4 days after the offering;

18/ Kidwell, D.S., Marr, M. W., and Thompson, G. R. "SEC Rule 415 -- The Ultimate Competitive Bid" Journal of Financial and Quantative Analysis, forthcoming; Rogowski, R.J. and Sorensen, E. H. "Shelf Registrations and the Cost of Capital: A Test of Market Efficiency," Washington State University and University of Arizona Working Paper, 1983.

$\log(X_i)$ = natural logarithm of issue size in \$ millions;

$SYND_i$ = 1 if offering i is syndicated and 0 otherwise;

$SHELF_i$ = 1 if offering i is made under Rule 415 and 0 otherwise;

$UTIL_i$ = 1 if offering is utility and 0 otherwise; and

u_i = the usual regression error term.

It is expected that θ_1 , θ_2 , θ_4 , and θ_5 will be significantly positive for the reasons noted above while θ_7 will be significantly negative. The sign of θ_3 is ambiguous. In this paper the most interesting coefficient is θ_6 . If θ_6 is significantly positive this would suggest that issuing costs for shelf offerings are greater, and vice-versa.

B. Market Overhang

The market overhang argument is based on the price pressure hypothesis. This hypothesis suggests that the announcement of a new equity offering depresses share prices and that the magnitude of the drop in the share price is directly related to the relative issue size. 19/ The market overhang argument assumes

19/ See, Hess and Bhagat (Hess, A., and Bhagat, S., "A Test of the Price Pressure Hypothesis Using Announcement Data," University of Washington and University of Utah Working Paper, 1984) for a discussion of this hypothesis. It is sometimes argued that a share price drop on the announcement day (of a new offering) is itself evidence in favor of the price pressure hypothesis. However, besides price pressure effects, the observed share price changes on the announcement day may be the result of a combination of an additional six effects. These are investment project effects, signaling effects, managerial incentive effects, effects due to the changes in capital structure, effects due to the financing costs of the offering and liquidity effects; Bhagat (Bhagat, S., "The Effect of Pre-emptive Right Amendments on Shareholder Wealth," Journal of Financial Economics, 12, pp. 289-310., discusses these effects in detail. Also, see G. Huberman "External Financing and Liquidity", Journal of Finance, July 1984, pp. 895-910 for a discussion of the liquidity effect. Hence, looking at the sign (positive or negative) of the announcement period return will tell us very little about price pressure.

the validity of the price pressure hypothesis and furthermore argues that the price pressure effect is more pronounced for shelf offerings than for traditional offerings. We investigate the market overhang argument by (a) analyzing the share price changes around the announcement day of the new offering and (b) comparing the announcement period abnormal returns of shelf and nonshelf offerings with their relative issue size. Part (a) of the analysis is described in detail in the Appendix. Part (b) of the analysis is discussed below.

The announcement period abnormal returns are determined using the standard one factor market model technique. 20/ Let $\tilde{R}_{j,t}$ represent the unadjusted stochastic rate of return (including both dividends and price changes) at event date t for firm j making the announcement. For each announcing firm, time is measured relative to the event (the announcement) with the announcement date denoted as day 0 in event time. We assume that the market model as indicated in (2) is a satisfactory representation of the stochastic process generating returns $\tilde{R}_{j,t}$ for firm j at event date t . This model is given by

$$\tilde{R}_{j,t} = \alpha_j + \beta_j \tilde{R}_{m,t} + \tilde{\epsilon}_{j,t} \quad (2)$$

20/ The reason for picking the one factor market model technique over several other techniques is the evidence in Brown and Warner (Brown, S.J. and Warner, J.B., "Using Daily Returns in Event Studies," University of Rochester Working Paper, 1983). They find that the one-factor market model technique suffers no systematic disadvantage in detecting abnormal performance when compared to the other techniques. Also, the one-factor market model technique seems to offer a slight advantage when the events are clustered in calendar time, which is the case in this study.

where α_j and β_j are firm j specific and time independent parameters, $\tilde{R}_{m,t}$ is the stochastic return on the market index m at event time t , and $\tilde{\epsilon}_{j,t}$ is the stochastic error term for firm j and reflects the effect of events specific to j at event time t . The estimated normal return for j at t conditional on the realization of $R_{m,t}$ is defined as

$$\hat{\gamma}_{j,t} = \hat{\alpha}_j + \hat{\beta}_j R_{m,t} \quad (3)$$

where $\hat{\alpha}_j$ and $\hat{\beta}_j$ are estimates of α_j and β_j , respectively. These estimates are obtained using the 150 daily returns from event day -170 through event day -21. The estimated abnormal return for j at t is calculated as

$$\tilde{\epsilon}_{j,t} = R_{j,t} - \hat{\gamma}_{j,t}. \quad (4)$$

The announcement day is the day on which the firm filed its registration statement at the SEC. The announcement period consists of the announcement day and the (trading) day after. Hence the announcement period abnormal return for j is

$$AR_j = \hat{\epsilon}_{j,0} + \hat{\epsilon}_{j,1}. \quad (5)$$

The market overhang argument is tested with the help of the following regression equation. 21/

$$AR_j = \lambda_0 + \lambda_1(RELSIZE_j) + \lambda_2(SHELF_j \times RELSIZE_j) + \tilde{v}_j, \quad (6)$$

where,

RELSIZE $_j$ = the ratio for announcement j of the announced number of new shares (in the registration statement) to the outstanding number of shares; and

21/ See Hess and Bhagat (Supra note 19) for a theoretical discussion of this regression equation.

$SHELF = \begin{cases} 1 & \text{if announcement } j \text{ is for a shelf-registered offering} \\ 0 & \text{otherwise.} \end{cases}$

In (6) λ_1 indicates the price pressure effects for nonshelf announcements, $(\lambda_1 + \lambda_2)$ indicates the price pressure effects for shelf announcements, and λ_2 indicates the difference between the price pressure effects for nonshelf and shelf announcements.

The price pressure hypothesis suggests that both λ_1 and $(\lambda_1 + \lambda_2)$ are significantly negative. The market overhang argument implies that λ_2 is significantly negative.

IV. DATA AND SAMPLE CONSTRUCTION

Data were gathered on all primary public offerings greater than \$3,000,000 of all NYSE and Amex companies made from March 17, 1982 through December 31, 1983. The sample was then restricted to offerings of those firms on which data are available on the CRSP tapes (Center for Research in Security Prices, University of Chicago, 1983). The required data from CRSP consists of daily returns from 170 trading days pre-announcement to 20 trading days post-announcement. There were 344 primary equity offerings during this period for which all necessary data could be found. 22/

22/ Fifteen issues were excluded because of no filing date (1 issue), debt-equity swaps (6 issues), issue data missing (1 issue), deferred settlements (4 issues), and no CRSP data (3 issues).

Data on issuer name, issue date, issue price, last sale price (on NYSE or Amex), issue size, underwriter compensation, method of distribution, and type of offering (shelf or nonshelf) were obtained from Drexel, Burnham, and Lambert's Public Offerings of Corporate Securities, 1982 and 1983. The data for utilities were cross-checked for accuracy and completeness using Ebasco Service's Analysis of Public Utility Financing, 1982 and 1983. Data for industrial issues were checked using the Commission's Registration and Offering Statistics File.

For most shelf issues, data are not publicly available on offering price or underwriter compensation; therefore, we wrote the companies to obtain the necessary information. ^{23/} We failed to obtain the required information for one shelf issue. Also, the data for issuer expenses for some shelf issues are not available. Since the involved companies could not provide us with this data, we estimated issuer expenses based on an average of their 3 previous issues. If an issuer did not have 3 previous issues within the past five years, we used the latest estimate available. This procedure biases the tests of our hypotheses in favor of finding shelf offerings to be more costly, because most issuers argue that issuer expenses are less under shelf procedures.

^{23/} I wrote to companies while an Assistant Professor at Virginia Polytechnic Institute and State University and not while a Commission employee.

Tables 1 and 2 present the descriptive statistics for the sample. Table 1 is for industrial issues; Table 2 is for utility issues. Though only a first approximation, the average cost on shelf sales is 2.22 cents less per dollar of stock raised than that of nonshelf sales for industrial issues and 0.81 cents less per dollar of stock raised than that of nonshelf sales for utility issues. For industrial firms, shelf issues tend to be larger than nonshelf issues (\$62 million versus \$44 million) while for utility firms, shelf issues tend to be smaller than nonshelf issues (\$59 million versus \$84 million). As a percent of outstanding shares, shelf issues tend to be smaller than nonshelf issues. For industrial firms as well as utility firms shelf issues have a longer duration from registration date to offering date than nonshelf issues. (For industrial issues, about 19 trading days for shelf issues and 11 trading days for nonshelf issues; for utility issues, about 28 trading days for shelf issues and 12 trading days for non-shelf issues). Finally, more nonshelf offerings tend to be syndicated (91.8 percent for nonshelf industrials and 71.7 percent for nonshelf utilities versus 69.6 percent for shelf industrials and 36.2 percent for shelf utilities).

V. EMPIRICAL RESULTS

A. Preliminary Testing

Equity issues may be sold with or without the aid of an underwriting syndicate. ^{24/} For example, if an underwriter

^{24/} A underwriting syndicate is a group of investment banking firms formed to spread the risk associated with the purchase and distribution of a new issue of securities. Typically, the larger the issue, the more firms are involved in the syndicate.

knows that a particular offering can be sold to an institution, he will not form a syndicate. These issues may be sold like "block trades" and because they are likely sold to institutions, underwriting spreads on such issues are lower because institutional sales commissions are smaller than retail sales commissions. Therefore, the cost structure of the two types of distribution method (syndicated and non-syndicated) may be different.

For this reason, a statistical pooling test is performed to determine whether data from syndicated offerings are poolable with non-syndicated offerings. ^{25/} The results indicate that syndicated and non-syndicated offering data are not poolable. Therefore, to eliminate any bias in the estimated coefficients, separate regression equations are estimated for syndicated and non-syndicated offerings.

B. Issuing Costs

Table 3 presents the estimated coefficients for Equation 1. The model explains about 60 percent of the inter-issue variation for issuing cost for syndicated offerings while explaining

^{25/} The F values obtained from the pooling tests (taken from Neter, J. and Wasserman, W. Applied Linear Statistical Models, Homewood, Illinois, Richard D. Irwin, 1974), for the slope shift and the intercept shift are 2.91 and 12.99. Both of these F-values are significant at the .10 percent level. A similar test was performed for industrial and utility issues. See discussion on page 11 for reasons that utility issues may have lower issuing costs than industrial issues. The results from this test indicate that only an intercept term is needed to capture the differences between the two groups of data.

about 48 percent of the inter-issue variation for issuing cost for non-syndicated offerings. Most of the estimated coefficients of the independent variables (except β_1) have the correct signs and are significantly different from zero at the .10 level. ^{26/} In general, for both syndicated and non-syndicated offerings, issuing cost increases directly with the unsystematic risk of the offering. The sign of the estimated coefficient of $\log(X_i)$ suggest that issuing costs (per dollar of equity raised) decreases as the size of the offering increases. Also, issuing costs are lower for utility issues than industrial issues.

The estimated coefficients of SHELF in Table 3 indicates that shelf registered equity offerings have lower issuing costs of about 0.630 cents per dollar of equity raised for syndicated offerings and about 1.363 cents per dollar of equity raised for nonsyndicated offerings. The average issue size of the 344 equity offerings in the sample is \$58.8 million which implies that the issuing cost difference between shelf and nonshelf issues is about \$370,000 for syndicated offerings and about \$800,000 for nonsyndicated offerings in favor of the shelf method. This result may be attributed to the greater competition among investment bankers for shelf issues. This is consistent with the results of studies that have investigated the

^{26/} We have no explanation for the perverse results on β_1 .

effect of the shelf offering process on issuing costs in the debt market. 27/

C. Market Overhang

The evidence above suggests that issuing costs are on average lower for shelf offerings. However, because of possible price pressure the shelf method may still be less advantageous to the issuing firm. The market overhang argument suggests that announcements of shelf equity offerings may depress share prices more (holding constant the relative issue size) than announcements of nonshelf equity offerings. If this is true, then the benefits to the shareholder of the issuing company from lower issuing costs might be offset by the greater drop in share price for shelf offerings relative to traditional offerings. Table 4 presents the regression results for the market overhang argument as indicated in Equation (6). Recall that the price pressure hypothesis suggests that both λ_1 and $(\lambda_1 + \lambda_2)$ are significantly negative. Also recall that the market overhang argument implies that λ_2 is significantly negative. The Table 4 results indicate that neither λ_1 (-0.015) nor $(\lambda_1 + \lambda_2)$ $((-0.015) + (-0.032))$ is significantly negative. This evidence is inconsistent with the price pressure hypothesis. In addition, the estimate of λ_2 is not significantly different

27/ See Kidwell, D.S., Marr, M.W., and Thompson, G.R., Supra note 18.

from zero. This evidence does not support the market overhang argument that the price pressure effect is more pronounced for shelf announcements.

VI. COMMENTS ON GARY GRAY'S PAPER

This section of the memo discusses the paper "The Investment Banking Process for Primary Equity Securities and the Effects of SEC Rule 415" written by Gary Gray. Gray's results support the basic findings of an earlier SEC memo (CE-83-3) by Sanjai Bhagat and Wayne Marr; that is, issuers using Rule 415 save in underwriting spread compared to issuers using traditional methods of sale. However, Gray argues that the stock price performance of a portfolio of shelf issues underperforms a similar portfolio of nonshelf issues. This underperformance, he argues, is enough to offset any savings that issuers obtain by using shelf registration. Gray also has several minor criticisms of the study's methodology. 28/

With an expanded sample, (from 19 shelf issues to 93 shelf issues - an increase in shelf issues of almost 500 percent) we perform a similar test to the Gray's paper; that is, we look at the stock price performance for a portfolio of shelf stocks

28/ For example, Gray criticizes the SEC study for not dividing the sample into utility firms and industrial firms before performing our analysis. We correct for this in the present study; that is, we use a dummy variable to control for whether the issue is a utility or industrial firm. The results do not change when this dummy variable is included in our model.

and a portfolio of non-shelf stocks and compare their performance from the filing date forward 20 trading days. Our evidence suggests that the nonshelf portfolio outperforms the shelf portfolio by about 0.66 percent over a 20 day period after announcement of the registration; however the difference (0.66 percent) in the portfolio performance is not statistically significant. 29/

29/ See Appendix for the abnormal returns for the total sample, shelf sample, and non-shelf sample. The t-statistic for the difference in means between the two samples is 0.46 which suggests that the means are not different from one another.

APPENDIX

This appendix presents the abnormal returns around the offering's announcement day for the total sample, the sample of firms using the shelf procedure in making the offering, and the sample of firms using the more traditional methods. The announcement day is denoted as event day 0 in the Tables. See Dann, L., "Common Stock Repurchases: An Analysis of Returns to Bondholders and Stockholders," Journal of Financial Economics, 9, pp. 113-138, for a detailed description of the technique and the statistical tests employed to test the null hypothesis that the announcement period abnormal returns are zero.

Tables 5, 6, and 7 contain the event study results for the total sample, the shelf sample, and the non-shelf sample respectively. The announcement period abnormal returns for the total sample, shelf sample, and non-shelf sample are -1.346 percent (t-statistic = -8.840), -1.285 percent (t-statistic = -4.569), and -1.369 percent (t-statistic = -7.46) respectively. This negative return on the announcement day of an equity offering has been well documented in the finance literature, for example, see Korwar, A.N., "The Effect of New Issues of Equity: An Empirical Investigation," University of Iowa Working Paper, 1983. The cumulative abnormal returns in each of the three samples appears reasonable.

TABLE 1

Sample Statistics by Method of Distribution - Industrials
(March 17, 1982 through December 31, 1983)

| Variable | <u>Total Sample</u> n = 205 | | <u>Shelf</u> n = 46 | | <u>Non-Shelf</u> n = 159 | |
|---|--------------------------------|-----------|------------------------|-----------|-----------------------------|-----------|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Issuing Cost | 5.406 | 2.806 | 3.686 | 2.167 | 5.904 | 2.778 |
| Cash spread | 4.293 | 1.455 | 3.064 | 1.730 | 4.649 | 1.147 |
| Underpricing | 0.452 | 1.619 | 0.202 | 0.681 | 0.523 | 1.797 |
| Issuer expenses | 0.661 | 0.602 | 0.419 | 0.405 | 0.731 | 0.633 |
| Size (\$ mil) | 47.550 | 48.987 | 61.520 | 53.585 | 43.509 | 46.982 |
| β_i | 1.253 | 0.564 | 1.168 | 0.496 | 1.278 | 0.581 |
| Var ($\tilde{\epsilon}_i$) | 5.913 | 4.011 | 4.270 | 2.619 | 6.389 | 4.220 |
| size of issue as a percent of outstand- ing shares | 13.872 | 9.420 | 10.326 | 7.128 | 14.897 | 9.767 |
| trading days between filing and offering | 13.107 | 18.614 | 18.935 | 32.744 | 11.421 | 11.368 |
| % of offerings syndicated | 86.821 | - | 69.565 | - | 91.824 | - |

Notes:

Issuing Cost: = cash spread + underpricing + issuer expenses. (100 - issuing Costs) may be interpreted as the number of cents the issuing corporation receives per dollar of equity raised.

Cash Spread: Underwriting commission expressed as a percentage of the public offering price.

Underpricing: (Last trade price/public offering price) -1.0. This is scaled up by a factor of 100.

Issuer Expenses: Expenses incurred by the issuing corporation in making the new offering (other than underwriter commission) expressed as a percentage of the gross amount.

TABLE 2

Sample Statistics by Method of Distribution - Utilities
(March 17, 1982 through December 31, 1983)

| Variable | Total Sample n = 139 | | Shelf n = 47 | | Non-Shelf n = 92 | |
|---|-------------------------|-----------|-----------------|-----------|---------------------|-----------|
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. |
| Issuing Cost | 2.612 | 1.688 | 2.074 | 1.009 | 2.886 | 1.892 |
| Cash spread | 2.649 | 1.162 | 2.015 | 0.968 | 2.974 | 1.123 |
| Underpricing | -0.488 | 0.624 | -0.280 | 0.613 | -0.594 | 0.606 |
| Issuer expenses | 0.450 | 0.597 | 0.340 | 0.224 | 0.506 | 0.711 |
| Size (\$ mil) | 75.432 | 128.098 | 59.119 | 68.838 | 83.765 | 149.269 |
| β_i | 0.443 | 0.230 | 0.408 | 0.161 | 0.460 | 0.258 |
| Var ($\tilde{\epsilon}_i$) | 1.413 | 1.065 | 1.206 | 0.411 | 1.519 | 1.265 |
| size of issue as a percent of outstand- ing shares | 8.943 | 7.572 | 6.309 | 3.896 | 10.289 | 8.593 |
| trading days between filing and offering | 17.029 | 23.398 | 27.532 | 36.734 | 11.663 | 7.874 |
| % of offerings syndicated | 59.712 | - | 36.170 | - | 71.74 | - |

Notes:

Issuing Cost: = cash spread + underpricing + issuer expenses. (100 - Issuing Costs) may be interpreted as the number of cents the issuing corporation receives per dollar of equity raised.

Cash Spread: Underwriting commission expressed as a percentage of the public offering price.

Underpricing: (Last trade price/public offering price) - 1.0. This is scaled up by a factor of 100.

Issuer Expenses: Expenses incurred by the issuing corporation in making the new offering (other than underwriter commission) expressed as a percentage of the gross amount.

TABLE 3

Issuing Cost Regressions by Method of Syndication

| Explanatory Variable | Syndicated Offerings Equation (3.1) | | Non-Syndicated Offerings Equation (3.2) | |
|------------------------------|--|---------|--|---------|
| | Coef. | t-value | Coef. | t-value |
| Constant | 16.015 | 10.98 | 10.499 | 4.63 |
| β_i | -1.954 | -7.35 | -0.410 | -0.81 |
| Var ($\tilde{\epsilon}_i$) | 0.373 | 9.55 | 0.153 | 1.67 |
| Log (X_i) | -0.976 | -7.08 | -0.583 | -2.86 |
| Var ($R_{m,i}$) | 0.204 | 0.70 | -0.235 | -0.78 |
| UTIL | -2.163 | -6.94 | -1.305 | -2.27 |
| <u>Offering Method</u> | | | | |
| SHELF | -0.630 | -2.17 | -1.363 | -4.54 |
| Adjusted R ² | 0.611 | | 0.484 | |
| F-Value | 66.445 | | 11.890 | |
| Dep. Mean | 4.791 | | 2.661 | |
| Root MSE | 1.793 | | 1.332 | |
| Number | 261 | | 83 | |

Note: The dependent variable for Equations 3.1 and 3.2 is issuing cost (C_i). The combined sample consists of 344 primary equity issues sold by industrial and utility companies listed on the NYSE or Amex from March 31, 1982 through December 31, 1983. β_i is the systematic risk, Var ($\tilde{\epsilon}_i$) the unsystematic risk, Log (X_i) the size of offering i , and Var ($R_{m,i}$) the market volatility around the day of the offering. SHELF _{i} =1 if the offering is a shelf-offering and 0 otherwise. UTIL =1 if the issue is a utility.

TABLE 4

Market Overhang Regression

| Explanatory Variable | Equation 4 Coef. t-value | |
|---|-----------------------------|-------|
| Constant | -1.102 | -3.66 |
| RELSIZE _i | -0.015 | -0.75 |
| SHELF _i x RELSIZE _i | -0.032 | -0.86 |
| Adjusted R ² | | |
| | -0.002 | |
| F-Value | 0.672 | |
| Dep. Mean | -1.349 | |
| Root MSE | 3.274 | |
| | 344 | |

Note: Announcement period abnormal return is the dependent variable. In Equation 4, RELSIZE_i = announced number of new shares for offering i taken from the registration statement divided by the firm's outstanding number of shares. The sample consists of all primary equity offerings made by NYSE and Amex listed companies from March 17, 1982 through December 31, 1983.

APPENDIX

TABLE 5

Abnormal Returns of 344 NYSE and Amex Listed Companies that Announced New Equity Offerings During March 17, 1982 through December 31, 1983. Event Day 0 is the Announcement Day.

| <u>EVENT DAY</u> | <u>DAILY ABRET</u> | <u>CUM DAILY</u> | <u>%NEG</u> | <u>#FIRMS</u> |
|------------------|--------------------|------------------|-------------|---------------|
| -20 | 0.01 | 0.01 | 53.2 | 344 |
| -19 | -0.04 | -0.03 | 55.5 | 344 |
| -18 | -0.03 | -0.07 | 57.3 | 344 |
| -17 | -0.00 | -0.07 | 56.7 | 344 |
| -16 | -0.09 | -0.16 | 53.8 | 344 |
| -15 | -0.07 | -0.22 | 57.3 | 344 |
| -14 | 0.23 | 0.01 | 48.3 | 344 |
| -13 | 0.09 | 0.10 | 57.8 | 344 |
| -12 | 0.13 | 0.23 | 50.3 | 344 |
| -11 | 0.09 | 0.32 | 47.7 | 344 |
| -10 | -0.02 | 0.31 | 51.5 | 344 |
| -9 | -0.02 | 0.28 | 52.9 | 344 |
| -8 | 0.04 | 0.32 | 55.5 | 344 |
| -7 | -0.01 | 0.31 | 53.5 | 344 |
| -6 | 0.04 | 0.35 | 56.7 | 344 |
| -5 | 0.03 | 0.38 | 56.7 | 344 |
| -4 | 0.03 | 0.41 | 54.4 | 344 |
| -3 | 0.06 | 0.46 | 50.0 | 344 |
| -2 | -0.05 | 0.41 | 52.9 | 344 |
| -1 | -0.52 | -0.11 | 63.7 | 344 |
| 0 | -1.06 | -1.17 | 68.9 | 344 |
| 1 | -0.29 | -1.45 | 61.0 | 344 |
| 2 | -0.32 | -1.77 | 59.9 | 344 |
| 3 | -0.04 | -1.81 | 56.4 | 344 |
| 4 | 0.32 | -1.49 | 47.7 | 344 |
| 5 | 0.13 | -1.36 | 49.7 | 344 |
| 6 | 0.06 | -1.31 | 52.3 | 344 |
| 7 | -0.01 | -1.32 | 52.9 | 344 |
| 8 | -0.00 | -1.32 | 52.3 | 344 |
| 9 | -0.22 | -1.54 | 59.9 | 344 |
| 10 | -0.16 | -1.71 | 52.0 | 344 |
| 11 | -0.14 | -1.84 | 56.1 | 344 |
| 12 | 0.09 | -1.75 | 51.7 | 344 |
| 13 | 0.01 | -1.74 | 54.7 | 344 |
| 14 | -0.07 | -1.82 | 58.1 | 344 |
| 15 | -0.25 | -2.07 | 57.0 | 344 |
| 16 | 0.05 | -2.02 | 51.5 | 344 |
| 17 | -0.10 | -2.12 | 57.7 | 343 |
| 18 | 0.09 | -2.03 | 50.1 | 341 |
| 19 | -0.19 | -2.22 | 57.5 | 339 |
| 20 | -0.18 | -2.40 | 60.2 | 339 |

Day Zero Plus One Mean Abnormal Ret (%) = -1.369

T Statistic = -7.460

APPENDIX

TABLE 6

Abnormal Returns of 93 NYSE and Amex Listed Companies that Announced New Equity Offerings During March 31, 1982 through December 31, 1983. Event Day 0 is the Announcement Day.

| <u>EVENT DAY</u> | <u>DAILY ABRET</u> | <u>CUM DAILY</u> | <u>%NEG</u> | <u>#FIRMS</u> |
|------------------|--------------------|------------------|-------------|---------------|
| -20 | -0.00 | -0.00 | 53.8 | 93 |
| -19 | 0.10 | 0.10 | 53.8 | 93 |
| -18 | -0.04 | 0.06 | 61.3 | 93 |
| -17 | 0.11 | 0.18 | 52.7 | 93 |
| -16 | -0.42 | -0.24 | 62.4 | 93 |
| -15 | -0.25 | -0.49 | 55.9 | 93 |
| -14 | 0.29 | -0.20 | 45.2 | 93 |
| -13 | 0.11 | -0.09 | 58.1 | 93 |
| -12 | 0.04 | -0.05 | 48.4 | 93 |
| -11 | -0.05 | -0.10 | 50.5 | 93 |
| -10 | 0.03 | -0.07 | 46.2 | 93 |
| -9 | 0.24 | 0.17 | 46.2 | 93 |
| -8 | -0.01 | 0.16 | 61.3 | 93 |
| -7 | -0.15 | 0.01 | 55.9 | 93 |
| -6 | 0.20 | 0.22 | 41.9 | 93 |
| -5 | 0.28 | 0.50 | 51.6 | 93 |
| -4 | 0.36 | 0.86 | 47.3 | 93 |
| -3 | 0.47 | 1.33 | 45.2 | 93 |
| -2 | -0.13 | 1.20 | 55.9 | 93 |
| -1 | -0.47 | 0.73 | 54.8 | 93 |
| 0 | -0.79 | -0.07 | 63.4 | 93 |
| 1 | -0.49 | -0.56 | 62.4 | 93 |
| 2 | -0.49 | -1.05 | 69.9 | 93 |
| 3 | 0.12 | -0.93 | 52.7 | 93 |
| 4 | 0.09 | -0.84 | 52.7 | 93 |
| 5 | -0.20 | -1.04 | 52.7 | 93 |
| 6 | 0.04 | -1.00 | 60.2 | 93 |
| 7 | -0.06 | -1.06 | 58.1 | 93 |
| 8 | -0.07 | -1.13 | 51.6 | 93 |
| 9 | -0.40 | -1.53 | 59.1 | 93 |
| 10 | -0.10 | -1.62 | 48.4 | 93 |
| 11 | -0.35 | -1.97 | 60.2 | 93 |
| 12 | -0.08 | -2.05 | 47.3 | 93 |
| 13 | -0.06 | -2.12 | 51.6 | 93 |
| 14 | -0.06 | -2.18 | 55.9 | 93 |
| 15 | -0.13 | -2.31 | 53.8 | 93 |
| 16 | 0.01 | -2.29 | 57.0 | 93 |
| 17 | -0.12 | -2.41 | 57.6 | 92 |
| 18 | -0.12 | -2.53 | 57.6 | 92 |
| 19 | -0.26 | -2.80 | 61.5 | 91 |
| 20 | -0.08 | -2.88 | 56.0 | 91 |

Day Zero Plus One Mean Abnormal Ret (%) = -1.285

T Statistic = -4.569

APPENDIX

TABLE 7

Abnormal Returns of 251 NYSE and Amex Listed Companies that Announced New Equity Non-shelf During March 17, 1982 through December 31, 1983. Event Day 0 is the Announcement Day.

| <u>EVENT DAY</u> | <u>DAILY ABRET</u> | <u>CUM DAILY</u> | <u>%NEG</u> | <u># FIRMS</u> |
|------------------|--------------------|------------------|-------------|----------------|
| -20 | 0.01 | 0.01 | 53.0 | 251 |
| -19 | -0.10 | -0.09 | 56.2 | 251 |
| -18 | -0.03 | -0.12 | 55.8 | 251 |
| -17 | -0.04 | -0.16 | 58.2 | 251 |
| -16 | 0.04 | -0.13 | 50.6 | 251 |
| -15 | 0.00 | -0.12 | 57.8 | 251 |
| -14 | 0.21 | 0.09 | 49.4 | 251 |
| -13 | 0.08 | 0.17 | 57.8 | 251 |
| -12 | 0.16 | 0.33 | 51.0 | 251 |
| -11 | 0.15 | 0.48 | 46.6 | 251 |
| -10 | -0.03 | 0.45 | 53.4 | 251 |
| -9 | -0.12 | 0.33 | 55.4 | 251 |
| -8 | 0.06 | 0.38 | 53.4 | 251 |
| -7 | 0.04 | 0.42 | 52.6 | 251 |
| -6 | -0.03 | 0.40 | 62.2 | 251 |
| -5 | -0.07 | 0.33 | 58.6 | 251 |
| -4 | -0.09 | 0.24 | 57.0 | 251 |
| -3 | -0.10 | 0.14 | 51.8 | 251 |
| -2 | -0.02 | 0.12 | 51.8 | 251 |
| -1 | -0.54 | -0.42 | 66.9 | 251 |
| 0 | -1.16 | -1.57 | 70.9 | 251 |
| 1 | -0.21 | -1.79 | 60.6 | 251 |
| 2 | -0.25 | -2.04 | 56.2 | 251 |
| 3 | -0.09 | -2.13 | 57.8 | 251 |
| 4 | 0.40 | -1.73 | 45.8 | 251 |
| 5 | 0.25 | -1.48 | 48.6 | 251 |
| 6 | 0.06 | -1.42 | 49.4 | 251 |
| 7 | 0.01 | -1.41 | 51.0 | 251 |
| 8 | 0.02 | -1.39 | 52.6 | 251 |
| 9 | -0.16 | -1.55 | 60.2 | 251 |
| 10 | -0.19 | -1.74 | 53.4 | 251 |
| 11 | -0.06 | -1.80 | 54.6 | 251 |
| 12 | 0.16 | -1.64 | 53.4 | 251 |
| 13 | 0.03 | -1.61 | 55.8 | 251 |
| 14 | -0.08 | -1.69 | 59.0 | 251 |
| 15 | -0.30 | -1.98 | 58.2 | 251 |
| 16 | 0.07 | -1.92 | 49.4 | 251 |
| 17 | -0.10 | -2.02 | 57.8 | 251 |
| 18 | 0.17 | -1.85 | 47.4 | 249 |
| 19 | -0.16 | -2.01 | 56.0 | 248 |
| 20 | -0.21 | -2.22 | 61.7 | 248 |

Day Zero Plus One Mean Abnormal Ret (%) = -1.369

T Statistic = -7.460