Alternate Methods for Raising Capital

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ALTERNATIVE METHODS FOR RAISING CAPITAL

Rights Versus Underwritten Offerings

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This paper provides an analysis of the choice of method for raising additional equity capital by listed firms Examination of expenses reported to the SEC indicates that rights offerings involve significantly lower costs, yet underwriters are employed in over 90 percent of the offerings The underwriting industry, finance textbooks, and corporate proxy statements offer several justifications for the use of underwriters However estimates of the magnitudes of these arguments indicate that they are insufficient to justify the additional costs of the use of underwriters The use of underwriters thus appears to be inconsistent with rational, wealth-maximizing behavior by the owners of the firm The paper concludes with an examination of alternate explanations of the observed choice of financing method

1. Introduction and summary

In this paper I examine an apparent paradox Based on a comparison of costs, simple finance theory suggests that listed firms should use rights offerings to raise additional equity capital, rather than employing underwriters Yet the majority of firms choose underwritten offerings, rather than rights offerings

In an underwritten offering, underwriters contract to purchase shares from the issuing firm at a price usually set within 24 hours of the offering, and then resell the shares to the public In a rights offering the shareholder receives a right from the firm giving him the option to purchase new shares for each share owned In section 2, I show that with the proper specification of the subscription price, the proceeds of a rights offering are identical to the proceeds of an underwritten offering

Not identical, however, are costs In section 3, I examine the out-of-pocket costs of underwritten and rights offerings reported to the Securities and Exchange

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Commission for issues registered under the Securities Act of 1933 between January 1971 and December 1975. Rights offerings are significantly less expensive. I also examine additional out-of-pocket expenses associated with both types of offerings. These include extras (options sold to underwriters), unreported expenses such as employee compensation, and the costs of rights offerings imposed directly on the owners of the firm. With these costs considered, I find rights offerings still are less expensive than underwritten offerings.

It has been suggested that selling efforts by underwriters raise stock prices while rights offerings lower them. In section 4 I study price behavior around the date of the offering. I find no empirical support for the hypothesis that abnormal positive returns are associated with underwritten offerings. Moreover, underwriters appear to set the offer price below the market value of the stock by at least 0.5 percent. While stock prices fall when rights are issued, the fall equals the market value of the rights received by the shareholder. Examination of the total rate of return to shareholders around the offer date indicates no abnormal returns; thus the wealth of the firm's owners is not reduced by a rights offering.

Section 5 provides an examination of other benefits presumed to accrue from the use of underwriters. Finance texts, corporate proxy statements, and the underwriting industry itself claim the existence of advantages in timing, insurance, distribution of ownership and from future consulting advice. My estimates of the magnitudes of the costs and benefits associated with these arguments are not sufficient to outweigh the lower costs of rights offerings as a means of raising capital. I can find no differential legal liability associated with the use of rights offerings which might explain the observed use of underwriters. Furthermore, there is no apparent difference in the sets of firms employing the alternative methods which could attribute the reported cost differences to selection bias.

In section 6, I offer a two-part hypothesis which is consistent with the observed frequency of employment of underwriters, with their higher costs, by the majority of listed firms. First, since managers' and directors' interests are different from those of shareholders in general, their financing decisions are not always in the best interests of the owners; benefits flow to management from the use of underwriters although not to shareholders. Second, I hypothesize that the cost to shareholders of monitoring their directors and managers is greater than the cost imposed by the choice of the more expensive financing method.

In section 7 I briefly present my conclusions.

A detailed description of the institutional arrangements for rights offerings and underwritten offerings is not easily available; I have provided one in Appendix 1. The reader unfamiliar with this institutional material will find it valuable to read this appendix before the body of the paper.

Appendix 2 presents a Black–Scholes (1973) option pricing analysis of rights issues and underwriting contracts, given here since general equilibrium analyses of these contracts have not been published.

2. Comparison of proceeds from rights and underwritten offerings

In a firm commitment underwritten offering, the underwriting syndicate purchases the new shares from the firm at an agreed upon price, and offers the shares for sale to the public at the offer price If the shares cannot be sold at the offer price, the underwriting syndicate breaks and the shares are sold for whatever price they will bring The underwriters bear the risk associated with adverse price movements, the proceeds to the firm are guaranteed Of course the difference between the offer price and the proceeds to the firm are expected to compensate the underwriter for bearing this risk

In a rights offering, each shareholder receives one right for each share owned This right is an option issued by the firm to purchase new shares The right states the relevant terms of the option, specifying the number of rights required to purchase each new share, the subscription price for each new share, and the expiration date of the option Since issuing rights is costly, it is in the firm's interest to insure the success of the offering A lower subscription price for the rights provides this insurance, a lower subscription price raises the market value of the right and reduces the probability that at the expiration date of the rights offering the stock price will be below the subscription price There is a corresponding fall in the market value of the stock, but this fall is like a stock split It does not affect the wealth of the owners of the firm [1]

If the shareholder does not exercise his rights, or does not sell his rights to someone who will exercise the rights, his wealth is reduced by the market value of the rights Thus the firm can make the probability of failure of the rights offering arbitrarily small by setting the subscription price low enough

Thus, since rights offerings and underwritten offerings can be specified so that the amount of capital raised by each is essentially equivalent, the decision as to which method to employ depends on the costs, the firm should employ that method which has lower net costs

3. Out-of-pocket expenses of rights and underwritten issues

"Expenses involved in a preemptive common stock rights offering are significantly greater than expenses involved in a direct offering of common stock

[1]The adjustment for the 'split effect' of a rights offering can be calculated as follows The ex-rights price of the shares, P_x, equals the with-rights price, P_w, minus the value of the right, R

$$P_x = P_w - R.$$

Ignoring the 'option value' of the right, the market value of a right is the difference between the ex-rights price and the subscription price, P_s, divided by the number of rights required to purchase one share, n

$$R = (P_x - P_s)/n$$

Substituting the second expression into the first and simplifying yields

$$P_x = (nP_w + P_s)/(n+1)$$

to the public due to additional printing and mailing costs, expenses associated with the handling of rights and the processing of subscriptions, higher underwriters' commissions and the longer time required for the consummation of financing." [2]

3.1. Reported out-of-pocket expenses

To examine the out-of-pocket expenses referred to in the quotation above (from Commonwealth Edison's 1976 proxy statement) I obtained a tape from the Securities and Exchange Commission covering the reported costs of all issues registered under the Securities Act of 1933 between January, 1971 and December, 1975. The tape contains data covering the following costs: (1) compensation received by investment bankers for underwriting services, (2) legal fees, (3) accounting fees, (4) engineering fees, (5) trustee's fees, (6) listing fees, (7) printing and engraving expenses, (8) Securities and Exchange Commission registration fees, (9) Federal Revenue Stamps, and (10) state taxes.

To restrict my analysis to equity issues by listed firms, I established the following criteria for inclusion: (1) the offering is of common stock and contains no other classes of securities; (2) the company's stock is listed on the New York Stock Exchange, American Stock Exchange, or a regional stock exchange prior to the offering; and (3) any associated secondary distribution is less than 10 percent of the gross proceeds of the issue. Table 1 is based on the issues meeting these criteria.

The data summarized in table 1 contradict Commonwealth Edison's Proxy Statement. My information, consistent with findings of previous SEC studies,[3] indicates that costs are *highest* for underwritten public offerings, and *lowest* for pure rights offerings. Furthermore, the difference in costs is striking. For a $15 million issue, the reported cost difference between an underwritten public offering and a pure rights offering is 4.83 percent, or $720,000; and for a $100 million issue the cost difference is 3.82 percent, or $3,820,000.[4] Yet underwriters were employed in over 93 percent of the issues examined.

3.2. Extras

Systematic understatement of the costs of underwriting presented in table 1 occurs because extras are omitted. Extras refer to the warrants which are associated with some underwritten issues and are used as partial payment to the underwriter. The warrants are options which are usually convertible into the

[2]Commonwealth Edison Proxy Statement, 1976.

[3]See SEC (1940, 1941, 1944, 1949, 1951, 1957, 1970, 1974).

[4]One empirical regularity in the data presented in table 1 should be noted. To a first approximation, the differences in costs among financing methods are explained by the differences in underwriter compensation. Compare 'Other Expenses' for Underwriting and Rights with Standby Underwriting with 'Total Costs' for Rights.

Table 1

Costs of flotation as a percentage of proceeds for 578 common stock issues registered under the Securities Act of 1933 during 1971–1975. The issues are subdivided by size of issue and method of financing: underwriting, rights with standby underwriting, and pure rights offering.[a]

	Underwriting				Rights with standby underwriting				Rights	
Size of issue ($ millions)	Number	Compensation as a percent of proceeds	Other expenses as a percent of proceeds	Total cost as a percent of proceeds	Number	Compensation as a percent of proceeds	Other expenses as a percent of proceeds	Total cost as a percent of proceeds	Number	Total cost as a percent of proceeds
Under 0.50	0	–	–	–	0	–	–	–	3	8.99
0.50 to 0.99	6	6.96	6.78	13.74	2	3.43	4.80	8.24	2	4.59
1.00 to 1.99	18	10.40	4.89	15.29	5	6.36	4.15	10.51	5	4.90
2.00 to 4.99	61	6.59	2.87	9.47	9	5.20	2.85	8.06	7	2.85
5.00 to 9.99	66	5.50	1.53	7.03	4	3.92	2.18	6.10	6	1.39
10.00 to 19.99	91	4.84	0.71	5.55	10	4.14	1.21	5.35	3	0.72
20.00 to 49.99	156	4.30	0.37	4.67	12	3.84	0.90	4.74	1	0.52
50.00 to 99.99	70	3.97	0.21	4.18	9	3.96	0.74	4.70	2	0.21
100.00 to 500.00	16	3.81	0.14	3.95	5	3.50	0.50	4.00	9	0.13
Total/Average	484	5.02	1.15	6.17	56	4.32	1.73	6.05	38	2.45

[a]Issues are included only if the company's stock was listed on the NYSE, AMEX or regional exchanges prior to the offering, any associated secondary distribution represents less than ten percent of the total proceeds of the issue, and the offering contains no other types of securities. The costs reported are (1) compensation received by investment bankers for underwriting services rendered, (2) legal fees, (3) accounting fees, (4) engineering fees, (5) trustees' fees, (6) listing fees, (7) printing and engraving expenses, (8) Securities and Exchange Commission registration fees, (9) Federal Revenue Stamps, and (10) state taxes.

stock of the firm at prices ranging from well below to considerably above the offering price When the underwriters acquire these warrants at a price below their market value, this represents a form of compensation to the underwriter, and it is not included in table 1

Although extras have historically been most often associated with new issues, their use in the compensation of underwriters of seasoned firms is not unusual For the years 1971–1972, the SEC (1974) reported that of the 1,599 issues which were underwritten, 530, or 33 1 percent, included extras However, since extras were included primarily with the smaller offerings, the total dollar volume of issues with extra compensation was only 7 percent of the gross proceeds from all underwritten offerings

The average exercise price of the warrants granted as a percentage of the offering price was 11 72 percent A lower bound on the value of the option is the difference between the subscription price of the offering and the exercise price of the extras, here that is 88 28 percent of the subscription price [5] Since these warrants are typically purchased by the managing investment banker at a minimal price, usually one to ten cents, the options appear to be significantly underpriced The SEC also found that the average ratio of shares granted the underwriters through extras to the number of shares offered in the underwriting was 7 99 percent To assess the impact on the figures reported in table 1, assume that the value of the warrant is 80 percent of the offering price, that the underwriter pays 5 percent of the offering price for the extras, and that the ratio of warrants received as extras to shares offered through the underwriting is 0 07, then the compensation represented by the extras would be 4 95 percent of the total proceeds These numbers suggest that for the issues employing extras, the figures in table 1 understate the underwriters' compensation on the order of 50 to 100 percent

3 3 Unreported out-of-pocket expenses

Such items as the opportunity cost of the time of the firm's employees and postage expenses[6] are not included in the summary of costs reported in table 1 However, unreported employee expenses are unlikely to explain the deviations reported in table 1 For a $15 million issue, the $720,000 difference would not be explained if 20 employees with an average salary of $30 thousand worked

[5] This is a conservative estimate of the value Merton (1973) has demonstrated that the lower bound on the value of an option is the difference between the stock price and the discounted exercise price

[6] Although postage expenses are not reported to the SEC, estimates were obtained from summaries of expenses reported to the New York State Public Utilities Commission for a sample of firms For the sample, the maximum postage expense as a percentage of total proceeds was one-tenth of one percent Even if this were understated by a factor of ten, it would be of insufficient magnitude to explain even the smallest reported difference in costs Moreover, the marginal postage expense could be reduced to zero by mailing the rights with other required mailings, such as dividend checks or quarterly reports

full time on a rights offering for a year For a $300 million issue the difference in reported costs of underwriting versus a rights issue exceeds $11 million, it would require over 350 man-years to explain this difference

It should be noted that expenses allocated to raising capital do *not* reduce the tax liability of the firm [7] These expenses are deducted from the capital account without affecting the income statement Thus, the use of internal resources can lower the tax liability of the firm if it is more expensive for the Internal Revenue Service to monitor the allocation of internal resources between capital raising activities and other activities In the above examples, if the firm's marginal tax rate is 50 percent, and if they were able to deduct all their wages for tax purposes, the required number of man-years to explain the reported cost differential would be doubled

There are strong reasons to believe that table 1 also omits significant unreported costs of the issuing firm's employees' time for underwritten offerings There are important parameters (e g , the offering price and the fee structure) which must be negotiated between the underwriter and the representatives of the firm, these parameters have wealth implications for the owners of the firm as well as the underwriter Such negotiation can be lengthy and usually directly involves top management These unreported costs of underwriting must be significantly greater than the costs of setting a subscription price for a rights issue, since the subscription price has no wealth implications for the owners of the firm as long as it is low enough to ensure that the rights will be exercised

Moreover, with an underwritten issue the firm has the same tax incentives to substitute internal for external resources if it is more expensive for the IRS to monitor the allocation of costs of internally acquired resources to capital raising activities than of those which are externally acquired Thus, it is not clear that rights offerings employ fewer unreported internal resources than do underwritten offerings

3 4 Costs imposed directly on shareholders

If a shareholder chooses to sell his rights, he incurs transactions costs and tax liabilities These costs, although not borne by the firm, are relevant because they affect the wealth of the owners [8]

[7] If the firm sells bonds rather than stock, the costs of selling the issue can be amortized over the life of the issue In no case, however, may these costs be expensed either for tax or reporting purposes

[8] There is a limited benefit from issuing rights to the owners of the firm under Regulation T, the Federal Reserve regulation restricting margin credit For an owner who wishes to borrow to acquire additional stock, Reg T provides for the establishment of a 'Special Subscription Account' which lowers the effective margin requirement by permitting a customer to purchase on an installment basis a margin security acquired through the exercise of subscription rights expiring within 90 days Under this provision, 75 percent of the market value of the acquired stock can be borrowed initially Quarterly installments are required over a 12 month period to bring the position up to proper margin

To determine the impact of the selling costs, let us assume generally extreme values for the relevant parameters For small dollar transactions (less than $1,000), the brokerage fee can be as much as 10 percent And for rights, the bid-ask spread can be as high as 10 percent, this represents another selling cost If half the bid-ask spread is taken as an implicit selling cost the total cost can be as much as 15 percent of the value of the rights To make the figures comparable to those in table 1, calculate transactions costs as a fraction of the proceeds of the offering to the firm The 15 percent must be multiplied by the ratio of the value of the rights to the total proceeds For the offerings in the sample, this ratio was approximately 10 percent If all individuals sold their rights, transactions costs would be 1 50 percent of the proceeds, a figure less than the difference in transactions costs for any reported issue size [9] But rights offerings are generally 50 percent subscribed by existing shareholders who do not bear these transactions costs [10] Therefore this cost appears to be less than one percent

Selling rights also has tax consequences for the shareholder For tax purposes, the cost basis of the stock must be allocated between the stock and the rights when the rights are received based on the market values of the rights and stock at that time [11] The acquisition date of the rights for tax purposes is the date on which the stock issuing the rights is acquired If the stock has risen in value since it was acquired, a relevant cost of employing a rights offering is the difference between the shareholder tax liability incurred now and the present value of the taxes which would have been paid had the rights issue not occurred [12]

To determine the impact of this cost again postulate generally extreme values for the relevant parameters Assume (1) that the marginal tax rate for the average shareholder is 50 percent (note this would be an unattainably high rate if the capital gain were long term), (2) that in the absence of the rights offering the taxes could have been postponed forever (3) that the allocated cash basis for the rights is 50 percent of the current rights price (4) that the ratio of the value of the rights to the proceeds of the issue is 10 percent, and (5) that only 20 percent of the current stockholders subscribe to the rights offering In this

[9] Note that since the expenses associated with raising equity capital are not tax deductible, these figures are comparable without further adjustment

[10] Estimates vary but ballpark figures on how investors react [to rights offerings] are as follows 50% exercise their rights 40% sell out for cash, and 10% do nothing [Vanishing Rights' (May 2, 1977) *Barron's* p 25]

[11] If the fair market value of the rights is less than fifteen percent of the fair market value of the stock, the shareholder can choose to set the basis of the rights at zero leaving unaffected the basis of the stock The shareholder might choose this alternative if the cost of the bookkeeping exceeded the present value of the tax saving or if he anticipated being in a higher tax bracket when his remaining holdings were sold

[12] See Bailey (1969) for a discussion of the effective rate of capital gains tax, discounted to reflect the liability deferral

case, the cost would be 2 percent of the capital raised by the firm This is less than any reported cost differential in table 1 [15]

One other argument involving shareholder-borne costs has been offered by Weston and Brigham (1975) They argue that in a rights offering some stockholders may neither exercise nor sell, and by allowing their rights to expire unexercised they incur a loss [16] However, if an oversubscription privilege is employed with the offering, current owners in the aggregate receive full market value for the shares sold Admittedly, the oversubscription privilege affects the distribution of wealth among the owners, but it does not impose costs on owners as a whole

4. Security price behavior associated with rights and underwritten offering

4 1 Rights offerings lower the stock price

"A rights offering, under market conditions then existing, could well have a long-term depressing effect on the market price of the stock " [17]

Given the investment policy of the firm, a rights offering *will* lower the price of the stock in both the short run and in the long run as AT&T s Proxy Statement suggests But this is irrelevant to the choice of financing methods because the drop in price is *not* a reduction in the wealth of the owners and thus cannot be considered a cost of a rights issue

The fall in the stock price when rights are issued can be illustrated by the following argument Rights give the shareholders the option to purchase new shares at less than market prices Other things equal, the total market value of the firm after a rights offering, V, will then be the previous value, V' plus the subscription payments, S

$$V = V' + S \tag{1}$$

The per share price before the offering is V'/n, where n is the number of old shares If m new shares are sold, the per share price after the offering, $(V'+S)/(n+m)$ must be less than the price per share before the offering [18]

[15] If taxes were important, firms would avoid rights offerings when share prices had risen However the evidence presented in table 2 shows that, on average, firms have had abnormal positive price changes during the 12 months before an offering

[16] Stockbrokers holding securities for safekeeping do not allow the warrants to expire unexercised If no instructions are received, the broker will sell the rights immediately before expiration

[17] American Telephone and Telegraph Co , Notice of 1976 Annual Meeting and Proxy Statement

[18] Also note that arbitrage profits must not be available When a stock trades ex rights, a right is issued for each share outstanding At the ex rights date, the expected change in the stock price must equal the expected value of the right, or profit opportunities would exist if the sum of the ex rights value of the stock plus the value of the right at the ex rights date were

The fall in the stock price on the ex rights day is similar to the expected fall in the stock price at the ex dividend date. The two cases differ only in what is distributed – in the latter instance cash, in the former rights. Thus, the fall in the stock price simply reflects the fact that the shareholders have been given a valuable asset, the right.

The argument that the fall in the stock price is a relevant cost of a rights offering also appears in two related forms: (1) if an underwriter is used, the firm can raise a greater amount of capital with the same number of shares; (2) a rights offering lowers the earnings per share of the firm.[19] Both statements are true but if the fall in the stock price equals the market value of the rights, then the impact of the additional shares issued through the rights offering is the same as that of a stock split and the wealth of the owners of the firm is unaffected.

To examine whether, after correcting for the expected normal fall in the stock price, there were also abnormal price changes,[20] I studied the 853 rights offerings on the CRSP master file between 1926 and 1975. Following Fama, Fisher, Jensen and Roll (1967), I estimated the regression,

$$R_{jt} = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt}, \tag{2}$$

where R_{jt} is the return to security j in month t, adjusted for capital structure changes (including rights offerings) and R_{mt} is the return to the market portfolio in month t. I estimated (2) for each of the 853 offerings, using data from the CRSP monthly return file, excluding the 25 months around the date of the offering. Setting $t = 0$ for the month of the rights offering, I used the estimated α_j and β_j to calculate the ε_{jt} for each security for the 25 months around the offering. I then calculated the average residual over all firms for each month in the interval -12 to $+12$. The average residuals were then cumulated from month -12 to the event month. The results are presented in table 2 and figure 1.

In the months subsequent to 'event month minus two' the average residuals

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systematically different from the value of the stock immediately before the ex rights date, then profits could be made by taking an appropriate position in the stock upon the announcement of the rights issue.

[19]'Thus, if the amendment [to remove the preemptive right from the corporate charter] is adopted, the company will be able to obtain the amount of capital needed through the issuance of fewer shares. Over a period of time this will result in slightly less dilution, higher equity value per share and better earnings per share.' [Commonwealth Edison Proxy Statement, 1976.]

[20]E.g., Commonwealth Edison suggests, 'Selling pressures often unduly depress both stock and rights values during the two or three week offering period which is a practical necessity when stock is sold with preemptive rights. Because the majority of stockholders do not exercise their rights but offer them for sale, the market value of the rights is driven far too low. Outsiders are then able to benefit by selling large amounts of stock during the offering period while buying rights for almost nothing and then exercising their rights to purchase stock at a discount to cover their sales. As a result, rights offerings tend to cost the company more than the rights themselves are worth to the stockholders who get them.'

are all insignificantly different from zero[21] and there is no significant sign pattern in the time series of average residuals. The cumulative average residuals in table 2 are also at approximately the same level three months before the

Table 2

Summary of average residual and cumulative average residual analysis of 853 rights offerings between 1926 and 1975 for the 25 event months [−12 to +12] surrounding the offer date.

Event month	Average residual	Cumulative average
−12	0.00721	0.00721
−11	0.01004	0.01725
−10	0.00255	0.01980
− 9	0.00629	0.02609
− 8	0.00388	0.02997
− 7	0.01062[a]	0.04059
− 6	0.00750	0.04809
− 5	0.00622	0.05431
− 4	0.01334[a]	0.06765
− 3	0.00662	0.07427
− 2	0.01624[a]	0.09051
− 1	−0.00649	0.08401
0	−0.00739	0.07663
+ 1	0.00779	0.08441
+ 2	0.00412	0.08853
+ 3	0.00405	0.09258
+ 4	−0.00110	0.09149
+ 5	−0.00047	0.09102
+ 6	0.00053	0.09155
+ 7	−0.00338	0.08817
+ 8	−0.00387	0.08430
+ 9	0.00256	0.08686
+10	−0.00264	0.08422
+11	−0.00013	0.08408
+12	−0.00476	0.07933

[a]Greater than 2σ. (Computation of the standard deviation is described in footnote 21.)

offering, on the date of the offering and 12 months after the offering. The significant positive residuals prior to the offer date are to be expected because of selection bias; firms which raise capital tend to have been doing well.

[21]As an estimate of the dispersion of an average residual, the approximation

$$\sigma^2 = (\sigma^2_M/r^2)(1-r^2)/N$$

was employed where σ^2_M is the variance of the market return, r^2 is the squared correlation coefficient between the return to an asset and the market return, and N is the number of securities in the sample. If σ_M is 0.089 [from Black Jensen Scholes (1972)], $r^2 = 0.25$, and $N = 853$ then $\sigma^2 = 0.000028$ and $\sigma = 0.00528$.

The results presented in table 2 are consistent with previous studies of this question Nelson (1965) examined all the rights offerings by firms listed on the New York Stock Exchange between January 1, 1946 and December 31, 1957. He found after the price series is adjusted for the 'split effect' in the rights offerings and general market movements are removed, prices six months after a rights offering are not significantly different from prices six months before the offering [22] Scholes (1972) found that the price of shares generally rose in value before the issue, fell 0 3 percent during the month of the issue, but experienced no abnormal gains or losses after the issue

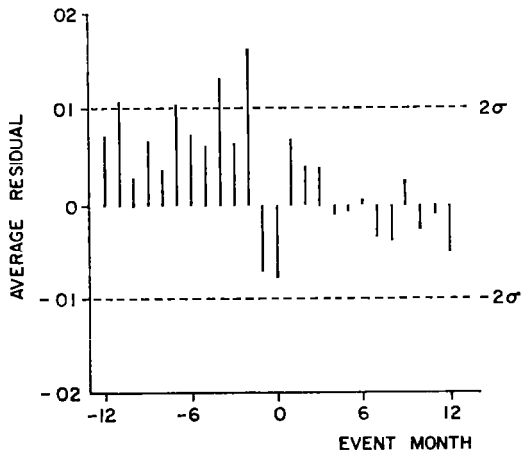

Fig 1 Plot of average residuals for 853 rights offerings between 1926 and 1975 for the 25 event months [−12 to +12] surrounding the offer date

4 2 Underwriters increase the stock price

Some argue that underwriters cause an increase in the stock price (1) by increasing 'public confidence' through external certification of the legal, accounting, and engineering analyses and (2) by the selling efforts of the underwriting syndicate.[23]

To examine the behavior of stock prices around the offer date of underwritten offerings and rights offerings, I obtained the returns for those securities which were included both in the sample of 578 firms covered in table 1 and on the CRSP daily return file There were 344 underwritten offerings and 52 rights offerings in this sample I set the offer date equal to day zero for all offerings and formed a portfolio of underwritten offerings and a portfolio of rights offerings I weighted securities in the portfolio of underwritten offerings so that

[22]The 'split effect' adjustment used by Nelson is derived in footnote 1

[23]See e g Brigham (1977, pp 473–474)

the two portfolios had equal betas. Then I calculated the difference in the portfolio returns for the 130 days before and 130 days after the offerings. The difference in average returns between two portfolios with equal risk will measure abnormal returns from either underwritten offerings or rights offerings. Table 3 presents the results for the period 20 days before the offering to 20 days after the offering; and figure 2 graphically presents the results for the period 40 days before to 40 days after the offering.

The average difference in returns to the two portfolios over the 260 days around the offer date is +0.00006, with a sample standard deviation of 0.00265. Therefore rights offerings have marginally higher returns during the 40 days around the offer date, but there is no obvious abnormal price behavior around the offer date for either underwritten offerings or rights offerings.

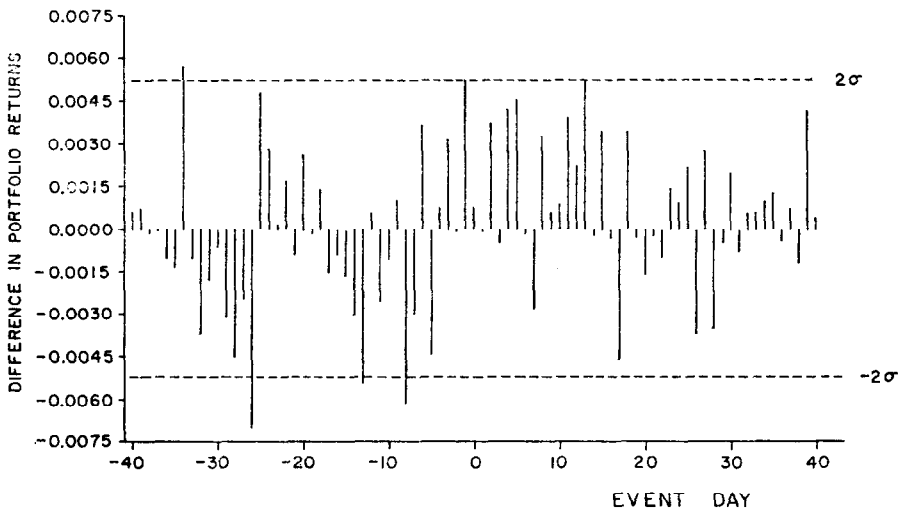

Fig. 2. Differences in daily returns between a portfolio of 52 rights offerings and a portfolio of 344 underwritten offerings for the 81 event days [−40 to +40] surrounding the offer date. (Portfolio weights are adjusted so that the two portfolios have the same beta.)

That underwriters are unable to generate abnormal positive price behavior should not be surprising. The firm always has the option of disclosing more information than is required by the Securities and Exchange Commission. The firm will expend resources on certification by external legal, accounting, and engineering firms until the net increase in the value of the firm is zero. Since the firm can contract for external certification of any disclosure, the benefit of whatever 'expert' valuation by the investment banker associated with an underwriting is limited to the difference in costs between certification through the underwriting process and independent certification.

But if underwriters are employed they influence the firm's decision about the

Table 3

Differences in daily returns between a portfolio of 52 rights offerings and a portfolio of 344 underwritten offerings between January 1971 and December 1975 for the 41 event days [−20 to +20] surrounding the offer date (Portfolio weights are adjusted so that the two portfolios have the same beta)

Event day	Rights average return	Underwritten average return	Difference (rights-und)	Cumulative difference
−20	−0 000361	−0 003007	0 002646	0 002646
−19	−0 001642	−0 001523	−0 000120	0 002526
−18	0 000072	−0 001361	0 001433	0 003959
−17	−0 001325	0 000175	−0 001500	0 002458
−16	−0 001134	−0 000231	−0 000902	0 001556
−15	−0 002865	−0 001229	−0 001636	−0 000080
−14	−0 002245	0 000732	−0 002977	−0 003057
−13	−0 004471	0 000949	−0 005420	−0 008477
−12	0 001722	0 001110	0 000611	−0 007866
−11	−0 002834	−0 000264	−0 002570	−0 010436
−10	−0 001226	−0 000125	−0 001102	−0 011538
− 9	0 001961	0 000960	0 001000	−0 010537
− 8	−0 004966	0 001151	−0 006117	−0 016654
− 7	0 001031	0 001327	−0 000296	−0 016950
− 6	0 002433	−0 001257	0 003690	−0 013260
−	−0 002373	0 002069	−0 004442	−0 017702
− 4	0 002180	0 001384	0 000797	−0 016905
− 3	0 001978	−0 001284	0 003262	−0 013642
− 2	−0 000570	−0 000557	−0 000013	−0 013656
− 1	0 004425	−0 000803	0 005228	−0 008428
0	0 001413	0 000583	0 000829	−0 007598
1	−0 000000	0 000054	−0 000054	−0 007653
2	0 003127	−0 000605	0 003732	−0 003921
3	−0 001182	−0 000700	−0 000482	−0 004403
4	0 003059	−0 001195	0 004254	−0 000149
5	0 005288	0 000710	0 004577	0 004428
6	0 000311	0 000477	−0 000166	0 004262
7	−0 002551	0 000206	−0 002757	0 001505
8	0 004396	0 001072	0 003324	0 004829
9	0 000851	0 000221	0 000630	0 005458
10	0 001601	0 000720	0 000881	0 006339
11	0 004703	0 000768	0 003934	0 010273
12	0 002369	0 000099	0 002271	0 012544
13	0 004764	−0 000502	0 005267	0 017811
14	−0 000734	−0 000495	−0 000239	0 017572
15	0 002944	−0 000527	0 003471	0 021043
16	−0 001089	−0 000790	−0 000299	0 020744
17	−0 001809	0 003065	−0 004874	0 015870
18	0 001228	−0 002196	0 003424	0 019294
19	0 000169	0 000458	−0 000289	0 019004
20	−0 000823	0 000711	−0 001534	0 017471

level of disclosure The underwriters will request that level of disclosure for which the marginal private costs and benefits to the underwriter are equal Given the legal liability of underwriters under the 1933 Act, the incentives of the firm and underwriter can differ Any divergence from the level of disclosure which maximizes the market value of the firm imposes a cost on the shareholders, and underwriters do ask for 'comfort letters' from accountants, frequently requiring expensive auditing procedures not produced without underwriters Thus, I conclude that the disclosure incentives of the underwriters lead to an over-investment in information production However, the costs of this over-investment should be reflected in the figures in table 1

4 3 Do underwriters underprice the securities?

In Ibbotson's (1975) study of unseasoned new issues he found that the offer price on average is set 11 4 percent below the market value of the shares If seasoned new issues are also underpriced, the difference between market value and offer price would represent another cost of employing underwriters

There are reasons to believe that underwriters underprice the seasoned new issues For a firm commitment underwriting agreement the Rules of Fair Practice of the National Association of Securities Dealers[24] require that once the offer price is set, the underwriter cannot sell the shares at a higher price. If the offer price is set above the market value of the shares excess supply results If the offer price presents a binding constraint to the underwriter, the limit order placed with the specialist by the managing underwriter results in the purchase of additional shares at the offer price If continued this purchasing would cause the underwriting syndicate to break Since very few underwriting syndicates break,[25] the implication must be either that the offer price is generally set below the market value of the shares, or that the offer price constraint can be circumvented

There are two ways in which the offer price could be circumvented First, for hot issues (i e , underpriced issues for which there is significant excess demand) the underwriters allocate the shares to preferred customers One way to achieve preferred customer status is to purchase issues for which there is an excess supply Second, underwriters employ 'swaps' In a swap, the underwriter buys another security from a customer while selling the underwritten security at the offer price Through this tie-in sale, the underwriter can shift the profit or loss These two tying arrangements allow the underwriter to minimize the impact of the regulation

[24]Although the rules of fair practice were established by the NASD, and not Congress or the SEC, there is little difference in the impact These rules are a response to the SEC's self regulatory position If the SEC found them unsatisfactory the SEC could establish superseding regulation

[25]See *History of Corporate Finance for the Decade* (1972)

To see if seasoned new issues are underpriced I calculated the return from the closing price the day prior to the offer date to the offer price, and the return from the offer price to the close on the offer date For the 328 firms with the requisite data, the average return from the close to the offer price is −0 0054 and the average return from the offer price to the close on the offer date is +0 0082 For the 260 days around the offer date the average daily return is 0 0005 with a sample standard deviation in the time series of average returns of 0 0013 Therefore, both figures, although much smaller than the 11 4 percent found by Ibbotson, are significantly different from the average daily return [26] Thus the underpricing imposes an additional cost on the owners of the firm of between 0 5 and 0 8 percent of the proceeds of the issue, a cost which is not reflected in table 1

5. Miscellaneous arguments favoring underwritten offerings

5 1 *Insurance*

It is frequently argued that employing an underwriter provides an 'insurance policy', reducing uncertainty of the offering's success [27] In effect, the firm

[26]One difference between Ibbotson's unseasoned issues and the seasoned issues examined here is that the unseasoned shares trade on the OTC market One hypothesis which has been suggested to explain the differences in the results is that the underpricing is a method of compensating the underwriter for maintaining a secondary market in the security Although the argument can explain why underwriter's compensation (including underpricing costs) for unseasoned issues is higher than for seasoned issues it does not explain the differential underpricing

[27]Another type of 'insurance' might be relevant If material errors are found in the registration statement of a public issue, parties who allege damage can bring suit The suit typically names as co-defendants the firm, the board of directors of the firm, the firm s accountants, and the firm s underwriter If the underwriter assumes a large share of the liability for the error, sheltering the firm from suit, then the underwriter will receive a normal compensation for bearing that risk

Direct evidence on the hypothesis that underwriters reduce the firm's liability in case of a suit is expensive to obtain, economic studies of securities fraud suits have not been published However indirect evidence suggests that this factor cannot be of a sufficiently large magnitude to make this an important factor in the choice of underwritten issues over rights issues First, damage must be demonstrated – i e in addition to finding a material misstatement in the registration statement, the share price must have fallen after the offering Second, the underwriters explicitly seek to limit their liability as much as is legally feasible '[Issuer-Underwriter Indemnification] agreements are universally used in today s underwriting These agreements, although varying in specific language provide essentially for indemnification of the 'passively' guilty party by the party whose omissions or misstatements were the source of the liability ' (See 'The Expanding Liability of Security Underwriters', *Duke Law Journal*, Dec 1969, pp 1191–1246) Thus underwriters contracts seek to minimize their exposure in this area Third if the courts imposed a significant share of the responsibility for material errors on the underwriter, it would be expected that accounting firms would recognize this by offering lower rates for securities work to firms employing underwriters This does not seem to be the case At least when this issue was raised with several partners of eight big accounting firms, this effect was denied The judicial procedure tends to make the liability of each of the groups of defendants in this type of suit virtually independent.

purchases an option to sell the shares to the underwriter at the offer price (See Appendix 2) Note four things about this option First, in an underwritten issue, the offer price is not set generally until within 24 hours of the offering when the final agreement is signed, and hence the net proceeds are not determined until that time Second, as shown in section 4 3, the offer price on average is set below the market value of the stock Thus, the firm purchases a one-day option to sell shares at a discount of $\frac{1}{2}$ percent below their market value Third, subject to certain conditions specified in the letter of intent, the underwriter has the option of backing out of the tentative agreement until the date the final agreement is signed Thus, the 'insurance policy' is of limited value because its effective duration is short Fourth, as argued above, the subscription price for a rights offering can be set low enough so that the probability of failure of the rights offering becomes arbitrarily close to zero So an alternate source of 'self-insurance' is available through the rights offering For these reasons, the possible value of the 'insurance policy' associated with underwritten issues must be small

5 2 *Timing*

Commonwealth Edison claims that the proceeds of an underwritten issue are available to the firm sooner than in a rights issue [28] But timing benefits provided by underwriters must be small First, the settlement date for an underwritten issue is generally seven days after the offer date, while the settlement date for a rights offering is generally seven days after the expiration of the offering Since the offering generally lasts about 18 days, any reasonable estimate of the cost in terms of the lost interest which would be imposed on the firm by waiting that short period of time would have to be small Second, since it is not expected that the rights will be exercised prior to their expiration,[29] the owners of the firm have the use of the funds during the period of the offering Thus, the time period which entails an opportunity cost of the funds is reduced to a seven- to ten-day period both for rights and underwritten offerings Third, if the services provided by the underwriter and transfer agents are competitively supplied, the fees charged will reflect the opportunity cost of the funds at their disposal This would imply that the timing cost is impounded in the figures in table 1 And fourth, unless there is an unforeseen urgency associated with obtaining the funds, the firm can simply initiate the rights procedure at an earlier date

Moreover, under certain circumstances, the registration procedure with the SEC is simpler when a rights issue is employed It is my belief that with a rights offering, the SEC is more likely to presume a regular dialogue between the firm and its owners and thus impose less restrictive disclosure requirements There-

[28] Commonwealth Edison Proxy Statement, 1976
[29] See Merton (1973) or Smith (1976)

fore, the time until the registration becomes effective can be expected to be shorter with a rights offering than with an underwritten offering. This shorter registration time reduces the total time from the point where the decision is made to raise additional capital to the receipt of the proceeds.

5 3 *Distribution of ownership*

Weston and Brigham (1975) argue that underwriters provide a wider distribution of the securities sold, 'lessening any possible control problem' Since change in control may result in a change in management, this is likely to be a relevant issue for the current management. Yet it is not clear that possible control problems should be a concern of the owners I know of no reason to believe that one group of owners is any better (i e , will price the firm any higher) than another group

Furthermore, it is not obvious that underwriters will achieve a wider distribution of ownership than will a rights offering For most rights offerings of listed firms, the consensus among investment bankers is that the subscription rate of the current owners of the firm ranges from 20 to 50 percent It is difficult to estimate what percentage of an underwritten issue is purchased by the current owners of the firm, but there is no reason to believe it is zero Further, underwritten issues seem to attract more institutional interest, resulting in large block purchases and therefore more concentration of ownership

These factors preclude any general conclusions about the effect of financing method on ownership distribution With this uncertainty it is not clear that management, even if concerned with control issues, should prefer the use of an underwriter

5 4 *Consulting advice*

Van Horne (1974) suggests that 'advice from investment bankers may be of a continuing nature, with the company consulting a certain investment banker or group of bankers regularly' It is more expensive for the firm to compensate the investment banker for future consulting services by including in the underwriting fee a payment for the present value of the expected advice Costs incurred in raising capital are not tax deductible, they directly reduce the capital account and do not enter the income statement Thus, compared to separate billing for services rendered, paying for future consulting through a higher underwriting fee doubles its cost for a firm with a marginal tax rate of 50 percent

5 5 *Expected legal costs*

If there were a law, regulation, or merely an unresolved judicial principle which might impose additional liability on a firm using rights offerings, then the

expected legal costs of using rights could explain the observed use of underwriters But I can find no differential legal liability associated with the use of rights offerings

5 6 *Selection bias*

If the firms which employ rights offerings were systematically different from the firms which employ underwritten offerings, then the observed cost differences could be attributable to selection bias It could be that if the firms which employed underwriters had used rights, their expenses would have been greater

There is a significant difference in the betas of the firms in the two groups I calculated the betas for those firms in the sample which were listed on the New York Stock Exchange and included on the daily CRSP tape The average beta for the 344 underwritten offerings is 0 731 with a standard deviation of 0 560, and the average beta for the 52 rights offerings is 0 493 with a standard deviation of 0 330 But I can find no other systematic difference between the two populations

Examination of the data shows similar distributions of firms across industries, 80 8 percent of the firms employing rights and 73 2 percent of the firms employing underwritten offerings were utilities (electric, gas, or telephone companies) I attempted to predict the choice of underwritten versus rights offering based on the following variables (1) the percentage of the firm which is sold through the offering, (2) the market value of the firm, and (3) the variance of the returns on the stock The r^2 for the regression is 0 016 None of the t statistics for the variables appears to be significant

Although differences exist between the two sets of firms, the nature and magnitude of the differences seem insufficient to account for the observed cost differences

6. A monitoring cost hypothesis

6 1 *Why not monitor the choice of financing method?*

My examination of alternative financing methods suggests that rights offerings are significantly less expensive than underwritten offerings Yet underwriters are employed in over 90 percent of the offerings studied One hypothesis consistent with the evidence is (1) managers and members of the board of directors receive benefits from the use of underwriters which do not accrue to the other owners of the firm, and (2) the expenses which would be imposed on the owners of the firm by monitoring the managers and directors in the choice of financing method are greater than the costs without monitoring

Managers or members of the board of directors may recommend that offerings be underwritten because their welfare increases as a by-product of the use of

underwriters in several ways [30] First, firms frequently include an investment banker as a member of the board of directors It is in his interest to lobby for the use of underwriters, particularly the use of his investment banking firm as managing underwriter Second, there is the possibility of 'bribery' This may be simply consumption for the managers and directors through 'wining and dining' by the underwriters But there is a more important possibility In an underwritten issue, if the offer price is set below the market value of the shares, the issue will be oversubscribed To handle this excess demand, underwriters ration the shares In the rationing process the underwriters presumably favor their preferred customers, and preferred customer status could be given to key management people or members of the board of directors of firms employing the underwriter This form of payment would be virtually impossible to detect, since the shares the officer of Company A would favorably acquire are those of Company B and would therefore call for no disclosure [31]

Further possible benefits to managers include the reduction of possible control problems, if underwritten offerings produce a wider distribution of ownership than rights offerings Finally, managers whose compensation is a function of reported profits will prefer an underwriter's fee which includes a payment for future consulting advice, the manager's compensation will be higher because payment through underwriting does not affect reported profits while separate billing for consulting does

Jensen and Meckling (1976) show that the costs which the managers and directors can impose on the other owners of the firm are limited by the costs of monitoring their activities Thus the cost to shareholders of monitoring the method of raising capital must be greater than the costs imposed by the financing method chosen Given the dispersion of ownership in modern corporations, the benefit to any single shareholder from voting his shares is small Thus the costs that he would rationally incur in voting are small,[32] and the resources the shareholder would rationally devote to deciding whether a 'yes' or 'no' vote is more in his interest are few Moreover, voting procedures in most corporations ensure that management has a disproportionate voice in the outcome Management is often assigned votes by proxy, and in many firms management has the

[30]Certain management compensation plans, such as stock option plans, make managers' compensation a function of the price of the firm's shares If the compensation plan were not adjusted to reflect the effect of the rights offering on the share price, management could be expected to provide a strong lobby in favor of employing underwriters In fact, however, employee stock option plans have general clauses calling for adjustment of the terms of the plan to reflect relevant capital structure changes Furthermore, most plans include specific reference to rights issues Thus, agency costs resulting from compensation plans do not seem to offer an explanation of the observed behavior

[31]This argument is similar to that of Manne (1966), especially Chapter V

[32]See Downs (1957) Basically, if a person owns 100 shares in a firm, his vote only matters if the vote is tied or his 'side' would have lost by 100 votes or less The probability is low that out of 50 million votes, the issue will split that way Thus the expected benefit (benefit times probability) of voting is very small

power to vote unreturned proxies They are also permitted to vote proxies on specific questions when the stockholder does not specify a choice These factors raise the cost of monitoring management

6 2 *The preemptive right as a monitoring tool*

There appears to be a low cost method of monitoring the use of underwriters the preemptive right The preemptive right is a provision which can be included in a firm s charter requiring the firm to offer any new common stock first to its existing shareholders But the inclusion of the preemptive right does not solve the problem firms can still employ underwriters through a standby under-

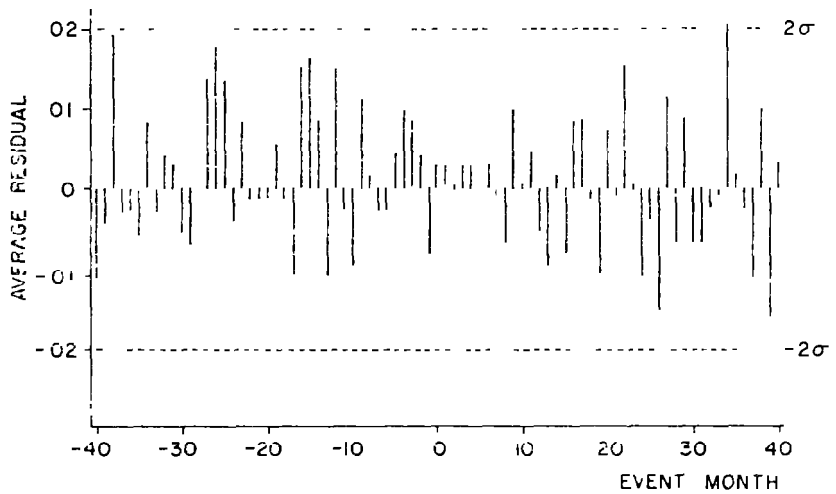

Fig 3 Plot of average residuals from 89 firms which removed the preemptive right from their corporate charter for the 81 event months [−40 to +40] surrounding the month of removal

writing agreement Since the figures in table I suggest a negligible difference in costs between a firm commitment underwritten offering and a rights offering with a standby underwriting agreement what becomes important is not a requirement to use rights, but a prohibition against using underwriters

To test the hypothesis that the impact of removing the preemptive right from the corporate charter is negligible, I collected a sample of 89 firms listed on the New York Stock Exchange which have removed the preemptive right The results of this study are presented in table 4 and figure 3 The average residual in the month of removal is 0 277 percent, and the mean average residual for the six prior months is 0 309 percent There is no apparent impact

I believe the results in table 4 provide a plausible explanation for why the intellectual level of the argument involving the preemptive right is so low on both sides of the question For example, the above quotes from Commonwealth

Table 4

Summary of residual analysis of 89 firms which removed the preemptive right from their corporate charter for the 81 event months [−40 to +40] surrounding the month of removal

Event month	Average residual	Cumulative average residual	Event month	Average residual	Cumulative average residual
−40	−0 00995	−0 00995	1	0 00363	0 11718
−39	−0 00382	−0 01376	2	0 00028	0 11745
−38	0 01999	0 00623	3	0 00293	0 12038
−37	−0 00258	0 00365	4	0 00276	0 12315
−36	−0 00160	0 00205	5	0 00101	0 12415
−35	−0 00414	−0 00209	6	0 00336	0 12751
−34	0 00842	0 00633	7	−0 00017	0 12734
−33	−0 00238	0 00395	8	−0 00537	0 12196
−32	0 00483	0 00878	9	0 00963	0 13159
−31	0 00375	0 01254	10	0 00002	0 13162
−30	−0 00419	0 00834	11	0 00406	0 13568
−29	−0 00632	0 00202	12	−0 00446	0 13122
−28	0 00082	0 00284	13	−0 00855	0 12266
−27	0 01337	0 01621	14	0 00210	0 12476
−26	0 01839	0 03460	15	−0 00696	0 11780
−25	0 01440	0 04900	16	0 00903	0 12683
−24	−0 00397	0 04503	17	0 00752	0 13435
−23	0 00800	0 05303	18	−0 00096	0 13339
−22	−0 00102	0 05201	19	−0 00942	0 12397
−21	−0 00007	0 05195	20	0 00701	0 13097
−20	−0 00072	0 05123	21	−0 00021	0 13077
−19	0 00602	0 05725	22	0 01591	0 14668
−18	−0 00067	0 05658	23	0 00090	0 14758
−17	−0 01032	0 04626	24	−0 01043	0 13715
−16	0 01575	0 06201	25	−0 00281	0 13434
−15	0 01608	0 07809	26	−0 01389	0 12046
−14	0 00828	0 08637	27	0 01069	0 13115
−13	−0 00943	0 07694	28	−0 00566	0 12548
−12	0 01496	0 09190	29	0 00901	0 13449
−11	−0 00183	0 09007	30	−0 00592	0 12857
−10	−0 00833	0 08174	31	−0 00624	0 12233
− 9	0 01103	0 09277	32	−0 00240	0 11993
− 8	0 00138	0 09415	33	−0 00071	0 11922
− 7	−0 00185	0 09230	34	0 02059	0 13981
− 6	−0 00170	0 09060	35	0 00183	0 14165
− 5	0 00508	0 09568	36	−0 00263	0 13901
− 4	0 00998	0 10566	37	−0 01103	0 12799
− 3	0 00816	0 11382	38	0 00971	0 13770
− 2	0 00477	0 11859	39	−0 01524	0 12246
− 1	−0 00782	0 11078	40	0 00300	0 12546
0	0 00277	0 11355			

Edison's Proxy Statement are demonstrably false, and the quote from AT&T's Proxy Statement is irrelevant The primary lobbying effort in favor of the preemptive right is from Lewis D Gilbert, John J Gilbert and Wilma Soss who regularly introduce proposals to reincorporate the preemptive right into the corporate charter of corporations which have removed it However, their reason for the use of rights is so that shareholders can maintain their proportionate interest in the firm For large firms this 'benefit' has negligible value [33]

6 3 *Other considerations*

It should be emphasized that the monitoring cost hypothesis is consistent with both observed institutional arrangements and rational, wealth-maximizing behavior by the stockholders Rational behavior implies that actions will be taken if the benefits exceed the costs I have pointed out certain costs associated with the voting mechanism within corporations inclusion of an investment banker on the board of directors, and certain management compensation plans These practices, while costly, would still be in the stockholders' best interests if there are offsetting benefits

Furthermore, the monitoring cost hypothesis does not imply that there are rents which accrue to the underwriting industry There are two available 'technologies' with which additional equity capital can be raised If the underwriting industry is competitive, the underwriting fees reported in table 1 would reflect a normal return to the resources required in employing that technology

However, the monitoring cost hypothesis does present some problems I do not observe the costs of monitoring management Hence the hypothesis is not directly tested Furthermore, while the incentives set up through the voting mechanism suggest that it is plausible that monitoring costs are large enough to explain the observed use of underwriters, competition in the market for management should reduce the required monitoring expenditures If the use of rights offerings is in the best interests of stockholders, then it will pay potential managers to incur bonding costs to guarantee not to use underwriters

7. Conclusions

In my examination of the choice of method for raising additional equity capital by listed firms I demonstrate that properly constructed rights offerings provide proceeds which are equivalent to those of an underwritten offering Furthermore, estimates of expenses from reports filed with the Securities and

[33] For a firm with 50 million shares outstanding, a ten percent increase in the number of outstanding shares would change the percentage ownership for someone with 100 shares only in the sixth decimal place With so many inexpensive alternate ways for a stockholder to maintain his proportionate interest in the firm the proportionate interest argument lacks importance

Exchange Commission indicate that rights offerings involve lower out-of-pocket costs than underwritten offerings Yet underwriters are employed in over 90 percent of the issues Examination of the arguments to justify the use of underwriters advanced by the underwriting industry, finance textbooks, corporate officers, and securities lawyers suggest that none of the arguments are capable of explaining the observed choice of financing method in terms of rational, wealth-maximizing behavior by the stockholders of the firm

The one hypothesis I find which is consistent with the available evidence relates to the costs of monitoring management Although direct expenses imposed on shareholders are higher per dollar raised through the use of underwriters, I hypothesize that management derives benefits from their use From the shareholders' standpoint, the firm's use of underwriters is optimal because the cost of monitoring management exceeds the savings in out-of-pocket expenses from using rights If this hypothesis is correct, then the present value of the stream of differences in costs reported in this paper provides a lower bound on the costs of getting shareholders together to monitor and control management on the method of raising capital Thus, the present value of the differences in costs establishes a lower bound on the expected costs of control mechanisms such as proxy fights, tender offers, and takeover bids

The monitoring cost hypothesis does present some problems I do not observe directly the costs of monitoring management While it is possible that the monitoring costs are large enough to explain the observed choice of underwriters, consideration of competition in the market for management reduces the plausibility of this hypothesis But if the monitoring cost hypothesis is rejected, then the observed choice of financing method cannot be explained in terms of rational, wealth-maximizing behavior by the owners of the firm, unless it can be shown that I have either ignored or misestimated a relevant cost of using rights or benefit from using underwriters

Appendix 1: A description of the institutional arrangements for rights and underwritten offerings

A description of the procedures followed in the various types of offerings specified in sufficient detail to answer the questions addressed in this study is not available This appendix provides that information Some of this material comes from written sources [34] However, much of the material comes from conversations with underwriters, corporate financial officers, and SEC officials.

Underwritten offerings

The firm typically selects an underwriter in one of two ways – either by competitive bidding or by negotiated underwriting In competitive bidding, the firm

[34] See Weston and Brigham (1975), SEC (1974), and Pessin (1976)

files appropriate papers with the SEC, then specifies the terms of the issue and has potential underwriters submit sealed bids Government regulation requires the use of this procedure by electric utility holding companies the primary users of competitive bidding In a negotiated underwriting bid, the important variables in the underwriting contract are determined by direct negotiation between firm and underwriter

Negotiated underwriting begins with a series of pre-underwriting conferences, when decisions as to the amount of capital, type of security, and other terms of the offering are discussed Several general forms of the underwriting agreement can be employed [35] The first is a 'firm commitment' underwriting agreement, under which the underwriter agrees to purchase the whole issue from the firm at a particular price for resale to the public Almost all large underwriters employ this form In the second form, a 'best efforts' underwriting, the underwriter acts only as a marketing agent for the firm The underwriter does not agree to purchase the issue at a predetermined price, but sells the security for whatever price it will bring The underwriters take a predetermined spread and the firm takes the residual A variant of this agreement employs a fixed price but no guarantee on the quantity to be sold The third possibility is an 'all-or-nothing' commitment which requires the underwriter to sell the entire issue at a given price, usually within thirty days, otherwise the underwriting agreement is voided

If the corporation and underwriter agree to proceed,[36] the underwriter will begin his underwriting investigation, in which he assesses the prospects for the offering This investigation includes an audit of the firm s financial records by a public accounting firm, which aids in preparing the registration statements required by the Securities and Exchange Commission A legal opinion of the offering will be obtained from lawyers who typically participate in writing the registration statement Reports may also be obtained from the underwriter s engineering staff when applicable

Before a company can raise capital through a public offering of new stock it must comply with the Federal Law that governs such a sale – the Securities Act of 1933, and the Securities Exchange Act of 1934 The Securities and Exchange Commission, established to administer both laws, requires full disclosure of all pertinent facts about the company before it makes a public offering of new stock The firm must file a lengthy registration statement with the SEC setting forth data about its financial condition For underwritten issues,

[35]The underwriter may make a 'standby commitment' during a rights offering under which he will purchase and distribute to the public any amount of the rights issue not purchased by the present security holders This form will be discussed further below

[36]Agreements are usually subject to conditions, most allow the underwriters to void their obligation in the event of specified adverse developments For example, a negative finding in the lawyer's or auditor's reports may allow voiding the contract

the firm usually files the form S-1 or S-7 registration statement Form S-7 is less expensive, but requires certain conditions to qualify [37]

The SEC has 20 days to examine the registration statement for material omissions or misrepresentations If any error is found, a deficiency letter is sent to the corporation and the offering is delayed until the deficiency is corrected If no deficiency letter is sent, a registration statement automatically becomes effective 20 days after filing, except when the SEC notifies the firm that the commission's workload is such that it requires more time to review the registration statement [38] The firm will typically amend the registration statement to include the offer price and the offer date after the SEC has examined the rest of the statement This procedure allows the firm and underwriter to postpone the effective date of the registration statement until they agree the offering should proceed

In addition to the registration requirements under the Securities Act of 1933, firms must qualify their securities under the state securities laws, the so-called 'Blue Sky Laws', in those states where the securities are to be sold Some states are satisfied with SEC approval, others require a registration statement be filed with state securities commissioners

The underwriter usually does not handle the purchase and distribution of the issue alone, except for the smallest of security issues The investment banker usually forms a syndicate of other investment bankers and security dealers to assist the underwriting [39] During the waiting period between the filing and the offer date, no written sales literature other than the so-called 'red herring'

[37]For example, the majority of the board of directors have been members for the last three years, there have been no defaults on preferred stock or bond payments for the past 10 years, net income after taxes was at least $500,000 for the past five years, and earnings exceeded any dividend payments made over the past five years

[38]In 1960 and 1961, delays of four to six months occurred for this reason

[39]Prior to the passage of the Securities Act in 1933 most new issues were purchased by an originating house The originating house would resell the issue at a small increase in price to a so-called banking group, generally a few large houses The banking group would then sell the issue to an underwriting group, which in turn sold it to a selling syndicate – each sale occurred at a fractional increase in price The selling syndicate members, however, were liable for their proportional interest of any securities remaining unsold Late in the 1920s it became frequent practice to make the final group a so-called selling group, the members of which had no liability except for securities which they had purchased from the underwriting syndicate

The Securities Act, as amended shortly after its passage, contained a provision limiting an underwriter s liability for misstatements and omissions in the registration statement to an amount not 'in excess of the total price at which securities underwritten by him and distributed to the public were offered to the public' This Act changed the method of wholesaling securities, the use of the joint syndicate in handling registered securities disappeared Because of the provisions of the Act, it was to the advantage of the manager of the offering to have his fellow participants purchase direct from the company, since then the manager's liability under the Act became limited to the amount which the firm itself underwrote Liability for transfer taxes that would have been payable on the sale by the manager to the underwriters was thus avoided At the present time, underwriters of securities registered under the Act contract to buy directly from the issuer even though the manager of the offering signs the agreement with the issuer on behalf of each of the underwriting firms

prospectus[40] and 'tombstone' advertisements[41] are permitted by the SEC However, oral selling efforts are permitted, and underwriters can and do note interest from their clients to buy at various prices These do not represent legal commitments, but are used to help the underwriter decide on the offer price for the issue Underwriters typically attempt to obtain indications of interest for approximately 10 percent more shares than will be available through the offering [42]

Before the effective date of the registration, the corporation's officers meet with the members of the underwriting group Given the personal liability provisions of the 1933 Act, this meeting is often identified as a due diligence meeting An investment banker who is dissatisfied with any of the terms or conditions discussed at this session can still withdraw from the group with no legal or financial liability Discussed at this meeting are (1) the information in the firm's registration statement, (2) the material in the prospectus, (3) the specific provisions of the formal underwriting agreement As a rule, all the provisions of the formal underwriting agreement are set except the final sales price

The 'Rules of Fair Practice' of the National Association of Security Dealers require that new issues must be offered at a fixed price and that a maximum offering price be announced two weeks in advance of the offering However, the actual offering price need not be established until immediately before the offering date In fact, the binding underwriting agreement which specifies the offer price is not normally signed until within 24 hours of the effective date of the registration

Once the underwriter files the final offering price with the SEC, the underwriters are precluded from selling the shares above this price The SEC permits the managing underwriter to place a standing order with the specialist to buy the stock at the public offer price If the underwriter buys more than 10 percent of the shares to be issued through this order, the syndicate usually breaks, permitting the stock to be sold below the offer price The syndicate can also be broken if the managing underwriter feels that the issue cannot be sold at the offer price [43] On the other hand, if all the indications of interest become orders

[40]The red herring prospectus derives its name from the required disclaimer on the front printed in red

A registration statement relating to these securities has been filed with the Securities and Exchange Commission but has not yet become effective Information contained herein is subject to completion or amendment These securities may not be sold nor may offers to buy be accepted prior to the time the registration statement becomes effective This prospectus shall not constitute an offer to sell or the solicitation of an offer to buy nor shall there be any sale of these securities in any state in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state

[41]The very limited notice of the offering permitted is often presented in a form resembling the inscription on a tombstone – hence the name

[42]This procedure is like 'over-booking' on airplane flights

[43]Syndicates break infrequently, my impression is that this occurs less than five percent of the time See *History of Corporate Finance For the Decade* (1972)

for shares, the issue is oversold In that case the managing underwriter typically sells additional shares short and covers these short sales in the aftermarket

The final settlement with the underwriter usually takes place seven to ten days after the registration statement becomes effective At that time, the firm receives the proceeds of the sale, net of the underwriting compensation

Rights offering

Offering of stock to existing shareholders on a pro rata basis is called a rights offering Each stockholder owning shares of common stock at the issue date receives an instrument (formally called a warrant) giving the owner the option to buy new shares [44] One warrant or right is issued for each share of stock held [45] This instrument states the relevant terms of the option (1) the number of rights required to purchase one new share, (2) the exercise price (or subscription price) for the rights offering, (3) the expiration date of the rights offering

Before the offering, the firm must file a registration statement for these securities For rights offerings, the firm typically files either a form S-1 or S-16 registration S-16 is simpler, but has usage requirements similar to those of form S-7

After the SEC approves the registration statement, the firm establishes a holder of record date The stock exchange establishes the date five business days earlier as the ex rights date [46] All individuals who hold the stock on the ex rights date will appear in the company's records on the holder of record date and will receive the rights However, the rights can be traded on a 'when issued' basis Usually trading begins after the formal announcement of the rights offering To ensure that there is adequate time for the stockholders to exercise or sell their rights, the New York Stock Exchange requires that the minimum period during which rights may be exercised is 14 days Rights trade on the exchange where the stock is listed

Issuing rights is costly in terms of management s time, postage and other expenses, so it is in the best interest of the firm to ensure the success of the offering Therefore, the firm has an incentive to set the subscription price of the rights low enough to ensure that the rights will be exercised But some of

[44]In the 1880s it was customary to require a stockholder to appear in person in the office of the corporation to subscribe to the issue After the 1880s, it became customary to send out a printed slip of paper so the stockholders could sign and subscribe for the stock without actually having to appear Later, it became the practice to make these slips of paper transferable, so that they could be sold Around 1910 the engraved form of warrant was first issued

[45]The Uniform Practice Code of the National Association of Security Dealers, Inc , provides that subscription rights issued to security holders shall be traded in the market on the basis of one right accruing on each share of outstanding stock, except when otherwise designated by the National Uniform Practice Committee Thus, the price quotation will be based on a single right even though several rights may be necessary to purchase one new share

[46]This procedure is comparable to that used in setting the ex dividend date

the warrants of most offerings do expire unexercised These unexercised rights can be offered through an over-subscription privilege to subscribing shareholders on a pro rata basis Shares not distributed through the rights offering or through the over-subscription privilege can be sold by the firm either to investment bankers or directly to the public

Rights offerings with a standby underwriting agreement

A formal commitment with an underwriter to take the shares not distributed through a rights offering is called a standby underwriting agreement Several types of fee schedules are generally employed in standby underwriting agreements A single fee may be negotiated, the firm paying the underwriter to exercise any unexercised rights at the subscription price A two fee agreement employs both a standby fee', based on the total number of shares to be distributed through the offering and a take-up fee , based on the number of warrants handled The take-up' fee may be a flat fee or a proportioned fee [47] These agreements generally include a profit sharing arrangement on unsubscribed shares (e g , if the underwriter sells the shares for more than the subscription price, this difference in prices is split between the underwriter and the firm according to an agreed formula)

Underwriters are prohibited from trading in the rights until 24 hours after the rights offering is made [48] After that time, they can sell shares of the stock short and purchase and exercise rights to cover their short position in the stock, thus hedging the risk that they bear

Appendix 2: A contingent claims analysis of rights and underwriting contracts

The derivation of general equilibrium pricing implications of rights and underwriting contracts has not been presented Black and Scholes (1973) suggest the approach I employ to value rights, but they do not carry out the analysis or present the solution Ederington (1975) provides a model of under-

[47] A proportioned fee involves more than one price for the shares handled by the underwriter For example there may be one price for the first 15% of the issue, a higher price for from 15% to 30% of the issue, and a still higher price for any of the issue over 30% which is unexercised through the rights offering and must be purchased by the underwriter

[48] Through the late 1940s underwriters were prohibited from trading in the rights during the offering This arrangement increased the underwriter s risk because the 14-day time period allowed large adverse price movements in the stock The NYSE instituted a study in 1947 after the failure of three rights offerings They found than on 43 rights offerings which had been successful the total underwriting profit was approximately $2 4 million, while on the three unsuccessful offerings, their losses were in excess of $3 million Underwriters were reportedly refusing to sign standby agreements unless the offering period were as short as five days Since this violated NYSE rules no NYSE listed firms used rights issues with standby underwriting agreements In response to this impasse, the NYSE now allows underwriters to trade in the rights 24 hours after the rights offering is made

writer behavior, but his model assumes underwriters maximize expected profits, and thus does not represent a general equilibrium solution in a market where the agents are risk averse The option pricing framework employed here will yield a solution which is consistent with general equilibrium, no matter what the risk preferences of the agents in the market.

I employ the contingent claims pricing techniques to derive a specification of the equilibrium value of these contracts For valuing both contracts I assume

(1) There are homogeneous expectations about the dynamics of firm asset values and of security prices The distribution of firm values at the end of any finite time interval is log normal The variance rate, σ^2, is constant
(2) Capital markets are perfect There are no transactions costs or taxes and all traders have free and costless access to all available information Borrowing and perfect short sales of assets are allowed Traders are price takers in the capital markets
(3) There is a known constant instantaneously riskless rate of interest, r, which is the same for borrowers and lenders
(4) Trading takes place continuously, price changes are continuous and assets are infinitely divisible
(5) The firm pays no dividends

Rights offerings

To derive the equilibrium value of the rights offering I make the following assumptions about the specification of the rights offering

The total proceeds to the firm if the rights are exercised is X (the exercise price per share times the total number of shares sold through the rights issue) The rights expire after T time periods If the rights are exercised, the shares sold through the offering will be a fraction, γ, of the total number of shares outstanding ($\gamma \equiv Q_R/(Q_S+Q_R)$, where Q_R is the number of shares sold through the rights offering and Q_S is the existing number of shares) Any assets acquired with the proceeds of the rights offering are acquired at competitive prices [49]

Given the above assumption, Merton (1974) has demonstrated that any contingent claim, whose value can be written solely as a function of asset value and time must satisfy the partial differential equation

$$\frac{\partial f}{\partial t} = \frac{1}{2}\frac{\partial^2 f}{\partial V^2}\sigma^2 V^2 + rV\frac{\partial f}{\partial V} - rf, \tag{A1}$$

[49] This last assumption is necessary to avoid the problem of the dependence of the dynamic behavior of the stock price on the probability of the rights being exercised

where $f(V, t)$ is the function representing the value of the contingent claim [e.g., $R = R(V, t)$]. To solve this equation, normally two boundary conditions are required, one in the time dimension and one in the firm value dimension.

To derive the appropriate boundary condition in the time dimension, note that when the time to expiration is zero, R^*, the value of the rights at the expiration date will be either zero (in which case the rights will not be exercised) or, if the rights are valuable and are exercised, their value is their claim on the total assets of the firm, $\gamma(V^*+X)$ (where V^* is the value of the firm's assets and X is the proceeds from the exercise of the rights) minus the payment the right-holders must make, X:

$$R^* = \text{Max}[0, \gamma(V^*+X)-X], \tag{A2}$$

where:

V^* is the value of the firm's assets at the expiration date of the issue.

X is the proceeds to the firm of the exercise of the rights.

γ is the fraction of new shares issued through the rights offering to the total shares of the firm (both old and new).

The most natural boundary condition in the firm value dimension is that when the value of the firm is zero, the value of the rights issue, R, is zero. However, the first assumption, that the distribution of firm values is log normal, insures that V can never be zero; therefore, this boundary condition will never be binding.

This equation can be solved by noting that no assumptions about risk preferences have been made, thus the solution must be the same for any preference structure which permits equilibrium. Therefore choose that structure which is mathematically simplest.[50] Assume that the market is composed of risk-neutral investors. In that case, the equilibrium rate of return on all assets will be equal. Specifically, the expected rate of return on the firm, and the rights will equal the riskless rate. Then the current rights price must be the discounted terminal price:

$$R = e^{-rT} \int_{((1-\gamma)/\gamma)X}^{\infty} [\gamma V^*-(1-\gamma)X]L'(V^*)dV^*, \tag{A3}$$

where $L'(V^*)$ is the log normal density function.

Eq. (A3) can be solved to yield:[51]

[50]See Cox and Ross (1976) or Smith (1976). For a mathematical derivation of this solution technique, see Friedman (1975), especially page 148.

[51]See Smith (1976, p. 16) for a theorem which can be employed to immediately solve (A3) to yield (A4).

$$R = \gamma VN\left\{\frac{\ln(\gamma V/(1-\gamma)X)+(r+\sigma^2/2)T}{\sigma\sqrt{T}}\right\}$$
$$-e^{-rT}(1-\gamma)XN\left\{\frac{\ln(\gamma V/(1-\gamma)X)+(r-\sigma^2/2)T}{\sigma\sqrt{T}}\right\}$$
$$= R(V, T, X, \gamma, \sigma^2, r) \tag{A4}$$

where $\partial R/\partial V$, $\partial R/\partial T$, $\partial R/\partial\gamma$, $\partial R/\partial\sigma^2$, $\partial R/\partial r > 0$ and $\partial R/\partial X < 0$

The indicated partial effects have intuitive interpretations Increasing the value of the firm, decreasing the exercise price (holding the proportion of the firm's shares offered through the rights offering constant), or increasing the proportion of the firm's shares offered through the rights offering (holding the total proceeds of the issue constant) increase the expected payoff to the rights and thus increases the current market value of the rights offering An increase in the time to expiration of the riskless rate lowers the present value of the exercise payment, and thus increases the value of the rights Finally, an increase in the variance rate gives a higher probability of a large increase in the value of the firm and increases the value of the rights

Underwriting agreements

To analyze the appropriate compensation to the underwriter for the risk he bears in the distribution of the securities make the following assumptions about the underwriting contract

Underwriters submit a bid, B, today which specifies that on the offer date, T time periods from now, the underwriter will pay B dollars and receive shares of stock representing fraction γ of the total shares of the firm He can sell the securities at the offer price and receive a total payment of Ω, or (if the share price is below the offer price) at the market price, $\gamma(V^*+B)$ If his bid is accepted, he will be notified immediately

Again, (A1) can be employed where $f(V, t)$ is the function representing the value of the underwriting contract (i e , $U-U(V, t)$) The boundary condition for this problem is

$$U^* = \text{Min}[\gamma(V^*+B)-B, \Omega-B] \tag{A5}$$

This assumes that at the offer date the underwriter will pay the firm B dollars The shares which the underwriter receives represent a claim to a fraction γ of the total assets of the firm, V^*+B If the offer price is greater than the value of the shares, $\gamma(V^*+B)$, then the underwriter will be unable to sell the shares at the offer price, hence he will receive $\gamma(V^*+B)$ If, at the offer date the offer price is less than the value of the shares, the underwriter receives the offer price Therefore, the boundary condition is that at the offer date the underwriting contract is worth the minimum of the market value of the shares minus the bid, B, or the proceeds of the sale at the offer price minus the bid

Again, the above solution technique can be employed to solve (A1) subject to (A5). In a risk-neutral world, the expected value of the underwriting contract can be expressed as [52]

$$U = \int_0^{(\Omega/\gamma)-B} [\gamma(V^*+B)-B]L'(V^*)\mathrm{d}V^* + \int_{(\Omega/\gamma)-B}^{\infty} [\Omega-B]L'(V^*)\mathrm{d}V^*. \tag{A6}$$

Note that this can be rewritten as

$$U = \int_0^{\infty} [\gamma(V^*+B)-B]L'(V^*)\mathrm{d}V^* - \int_{(\Omega/\gamma)-B}^{\infty} \gamma\left[V^*-\left(\frac{\Omega}{\gamma}-B\right)\right]L'(V^*)\mathrm{d}V^* \tag{A7}$$

Eq (A7) can be solved for the risk-neutral case to yield

$$U = \mathrm{e}^{rT}\gamma V-(1-\gamma)B-\mathrm{e}^{rT}\gamma V N\left\{\frac{\ln(\gamma V/(\Omega-\gamma B))+(r+\sigma^2/2)T}{\sigma\sqrt{T}}\right\} + (\Omega-B\gamma)N\left\{\frac{\ln(\gamma V/(\Omega-\gamma B)+(r-\sigma^2/2)T}{\sigma\sqrt{T}}\right\} \tag{A8}$$

Examination of (A8) reveals that the underwriting contract is equivalent to a portfolio consisting of a long position in the firm, a cash payment, and writing a call on γ of the firm with an exercise price equal to $(\Omega-\gamma B)$

$$U = \mathrm{e}^{rT}\gamma V-(1-\gamma)B-\mathrm{e}^{rT}C(\gamma V, T, \Omega-\gamma B) = \mathrm{e}^{rT}\gamma V-(1-\gamma)B-\mathrm{e}^{rT}\gamma C\left(V, T, \frac{\Omega}{\gamma}-B\right), \tag{A9}$$

where $C(\ )$ is the Black-Scholes call option function

If the process of preparing and submitting a bid is costless, then in a competitive equilibrium, the value of the underwriting contract must be zero [53]

[52] Since the contract calls for the payment only at t^*, to find the current value of the underwriting contract does not require discounting

[53] If this were not the case, arbitrage profits could be earned by acquiring an underwriting contract and establishing the above hedge

Therefore the bid which would represent a normal compensation for the risk he bears is implicitly defined by the equation [54]

$$B - e^{rT}\frac{\gamma}{1-\gamma}\left[V - C\left(V, T, \frac{\Omega}{\gamma} - B\right)\right] = 0 \tag{A10}$$

The firm generally receives less than the market value of the stock[55] given the specification of the underwriting contract, if the equilibrium stock price at the offer date is above the offer price then the initial purchaser of the issue receives 'rents', he obtains the shares for less than the market value of the shares Therefore, if the offer price in the underwriting agreement represents a binding constraint to the underwriter, then in a perfect market underwriting must be a more expensive method of raising additional capital than is a rights issue Therefore, under these conditions, underwriting would not be employed

The above analysis implicitly assumes that the terms of the underwriting contract represent a binding constraint to the underwriter, i e, if the security price is above the offer price, then the offer price presents a constraint to the underwriter and a pure profit opportunity to the potential investor However, in a market without transactions costs, this could not be the case If the security price is above the offer price there will be excess demand for the issue To the extent that the underwriter can, through the rationing process, extract those profits, they will accrue to the underwriter rather than to the initial purchaser In this situation competition among underwriters would ensure that the profits were in fact garnered by the firm In that case the offer price presents no effective constraint and the competitive bid becomes simply

$$B = e^{rT}\left(\frac{\gamma}{1-\gamma}\right)V \tag{A11}$$

Therefore, if through tie-in sales or other means the offer price in an underwriting agreement can be circumvented, then underwriting is no more expensive a method of raising additional capital than a rights offering

[54]This equation implicitly defines the bid because B appears twice in the equation The explicit solution for equilibrium bid can be found by standard numerical analysis techniques

[55]A sufficient condition for the bid to be less than the market value of the shares is that $(1-\gamma)$ be less than e^{rT} Since T is generally a matter of days, this condition should be met

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