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Introduction

THIS PAPER examines the stock market response to the events leading to the merger between Cities Service and Occidental Petroleum. These events include: a friendly and a hostile bid for Cities Service by Mesa Petroleum; a friendly and two hostile bids for Mesa Petroleum by Cities Service; a merger agreement between Gulf Oil and Cities Service; Cities Service's repurchase of stock held by Mesa and a standstill agreement between Mesa and Cities; Gulf Oil's termination of its merger agreement with Cities Service; and two friendly bids and one hostile bid by Occidental Petroleum for Cities Service.

The effects of mergers, tender offers, targeted repurchases and standstill agreements have been studied extensively. These studies examine the average impact of each event individually by analyzing the average abnormal return for a sample of firms involved. This study complements this literature in two ways. First, it demonstrates the extent to which the empirical results of the prior studies can be used to forecast the market reaction to takeover announcements. Second, while there are many advantages to averaging techniques, the large sample sizes used in prior studies prohibit a detailed examination of the stock market response to the variety of events that precede takeovers. Thus, the prior studies focus on one or two information release dates for one type of event. However, the interaction between events affects the observed stock market response and its interpretation. This detailed examination of the stock price changes associated with the sequence of announcements that preceded the merger between Cities Service and Occidental Petroleum, therefore, complements the existing studies by providing evidence on the predictive ability of the existing empirical evidence and by demonstrating the importance of examining the sequence of events that preceded the merger.

The results of this paper are generally consistent with the findings of earlier studies although there are some discrepancies. Shareholders of the target firm, Cities Service, realized an abnormal return of about 12.5 percent which translates into an abnormal equity value change of about $352 million. This result is consistent with the results of Dodd [5] and Asquith [1], although the magnitude of this abnormal return is substantially less than the average abnormal return of 34 percent for target firms reported by Dodd. The abnormal return for the successful bidder, Occidental Petroleum, is virtually zero. This result is consistent with the findings of Asquith, but is inconsistent with Dodd, who reports negative

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abnormal returns for successful bidders, and with tender offer studies by Dodd/Ruback [6], Kummer/Hoffmeister [7], and Bradley [2] that report positive abnormal returns for successful bidding firms. The shareholders of Gulf Oil, which bid for Cities and later withdrew its bid, incurred abnormal stock returns of about −17.6 percent or an abnormal equity value change of about −$1.1 billion. Most of these losses occurred on the day Gulf announced its bid for Cities. This result is broadly consistent with Dodd's finding of a −6.47 percent average abnormal return for a sample of 47 bidding firms that terminated merger proposals. The fourth firm involved in the Cities takeover, Mesa Petroleum, realized an abnormal return of about −5.9 percent. However, it is difficult to classify Mesa as a target or a bidder since Cities bid for Mesa and Mesa bid for Cities.

Stock Market Reactions to Major Events in the Cities Service Takeover

Before presenting the stock price response accociated with the announcements of major events in the Cities Service takeover, three factors that affect their interpretation are worth highlighting.

First there were many news reports relating to the Cities Service takeover during June, July and August of 1982. The content of these reports, varied substantially.[1] Thus, the definition of a "major announcement" is somewhat arbitrary. This section discusses the stock price changes associated with the fourteen different major announcements described in Table 1.

Second, the realized stock returns are adjusted for market-wide movements to focus on the component of the returns that is due to the takeover. This adjustment is accomplished by estimating a market model regression over the two year period 1980 through 1981 for each firm involved in the Cities Service takeover.[2] These estimates are summarized in Table 2. The R^2 (in the fourth column of Table 2) indicates the market model explains between 26 and 41 percent of the variability of the firms' common stock returns. Also, for all four firms the coefficient $\hat{\beta}$ is statistically significant. The estimated market models define the historic relation between the firms' common stock return and the market return. Thus these market models provide the expected or normal return for each firm conditional on the realized market return. The abnormal returns are the difference between the realized returns and the normal returns.

Third, common stock prices incorporate the expected value of future uncertain opportunities. Measured abnormal returns, therefore, reflect unanticipated percentage changes in expected values. This means that abnormal returns can be unambiguously interpreted for unanticipated events. For anticipated events, the sign of the abnormal return can also be unambiguously interpreted when the uncertain events become certain. However, the magnitude of the abnormal return cannot be interpreted because the expected impact of the event is incorporated

[1] The chronology of news events is not reproduced here because of space constraints. Copies are available from the author.

[2] Fama (7) provides a detailed description of the market model.

into stock prices prior to its occurrence. Several events during 1981 suggest that a Cities Service takeover may have been anticipated. First, Cities Service was involved in merger negotiations with Conoco. These negotiations were terminated when Seagram Company announced a hostile tender offer for Conoco. Second, 7.2 percent of Cities Service's stock was purchased by Nu West Group Ltd. This stock was repurchased by Cities. Third, U.S. Steel was rumored to be interested in purchasing Cities. U.S. Steel's interest in Cities presumably evaporated with the merger between U.S. Steel and Marathon Oil. Fourth, Mesa Petroleum purchased four percent of Cities Service.

It is difficult to gauge the extent to which these events led to the anticipation of a Cities Service takeover. On one hand, the termination of the negotiations with Conoco, the repurchase of the Nu West holdings of Cities, and the U.S. Steel-Marathon merger offset the effects of takeover anticipations. Also, while Mesa retained its interest in Cities, the anticipation of a takeover bid by Mesa seems unlikely because Mesa is much smaller than Cities. On the other hand, the active interest in Cities and the Dupont-Conoco and U.S. Steel-Marathon mergers may have led investors to anticipate an eventual Cities Service takeover. One way to assess the degree to which a Cities Service takeover was anticipated is to compute the abnormal return for Cities Service in 1981. If a Cities Service takeover was anticipated, positive abnormal returns would be observed. Using a market model estimated in 1980 as a benchmark, the abnormal return for Cities in 1981 is about 10 percent which is not statistically significant. However, this test is imprecise due to the variability of Cities stock over the year.

With these considerations in mind, the analysis of the Cities Service takeover begins on May 28, 1982 when Cities Service announced that Mesa Petroleum intended to bid for Cities Service. The rumored bid price was between \$45 and \$50 per share of Cities Service. Table 1 presents the abnormal returns associated with the major events for Cities Service, Mesa Petroleum, Gulf Oil, and Occidental Petroleum. The first line of Table 1 indicates that this announcement is associated with an abnormal return of 5.23 percent for Cities Service. The t-statistic of 2.01 indicates that this abnormal return is statistically significant. This significant abnormal return for Cities Service is easily explained. On May 27, 1981 the closing price of Cities Service common stock was \$35.50. The May 28, 1982 announcement increased the probability that Cities Service would be acquired at a premium. The abnormal return for Mesa Petroleum on May 28, 1982 is 5.91 percent with a t-statistic of 2.43. This significant abnormal return for the rumored bidder can be interpreted in a variety of ways. For example, the positive abnormal return for Mesa could be interpreted as a signal that a bid for Cities Service at \$45 to \$50 a share was a positive net present value investment. Alternatively, the market could have been anticipating that Mesa would itself become a takeover target.

Several announcements are incorporated in the abnormal returns for Cities Service and Mesa on June 1, 1982. First, in a defensive move, Cities Service bid \$17 a share for 51 percent of Mesa Petroleum. Based on Mesa's closing price of \$16.75 on May 28, the Cities bid contained a premium of about 1.5 percent which is small relative to typical takeover premiums. Second, Mesa offered to acquire Cities Service in a friendly merger for \$50 a share for 45.9 percent of Cities (Mesa

Table 1

Major Events in the Cities Service Takover and Corresponding Percentage Abnormal Returns of Participating Firms (t-statistics in parentheses)[a]

Date[b]	Event	Cities Service	Mesa	Gulf	Occidental
5/28/82	Cities Service believes that Mesa Petroleum intends to bid for Cities Service.	5.23 (2.01)	5.91 (2.43)	1.10 (0.60)	1.04 (0.58)
6/1/82	Cities Service bids $17 per share for 51 percent of Mesa. Mesa offers to acquire Cities Service in a friendly merger for $50 per share for 45.9 percent of Cities and $50 of Mesa securities for the remaining Cities shares.	3.56 (1.37)	16.69 (6.87)	1.82 (1.00)	0.90 (0.51)
6/7/82	Mesa bids $45 per share for 15 percent of Cities Service.	−4.76 (−1.83)	0.57 (0.23)	0.72 (0.39)	−0.03 (−0.02)
6/8/82	Cities Service announces a friendly merger bid of $21 per share for 51 percent of Mesa and 0.45 shares of Cities for each remaining share of Mesa.	−1.46 (−0.56)	3.43 (1.41)	2.62 (1.43)	0.03 (0.02)
6/14/82	Cities Service raises its tender bid to $21 per share for 51 percent of Mesa Petroleum.	5.70 (2.20)	−1.99 (−0.82)	0.73 (0.40)	1.07 (0.60)
6/17/82– 6/18/82	Gulf Oil agrees to acquire Cities Service for $63 a share for 51 percent of Cities and $63 of fixed income securities for the remaining shares. Mesa Petroleum received tenders for 43 percent of Cities.	43.38 (11.81)	0.32 (0.09)	−14.19 (−5.48)	0.23 (0.09)
6/21/82	Cities Service repurchases stock held by Mesa at $55 a share. Cities and Mesa drop hostile bids for each other and related litigation.	0.95 (0.37)	−15.83 (−6.51)	0.56 (0.31)	0.79 (0.45)
8/2/82	FTC obtains a temporary restraining order.	−20.97 (−8.07)	0.21 (−0.09)	−0.66 (−0.36)	1.02 (0.58)
8/6/82– 8/9/82	Gulf terminates its offer for Cities Service.	−28.50 (−7.76)	−1.29 (0.38)	3.67 (1.42)	0.07 (0.03)
8/16/82– 8/17/82	Occidental Petroleum bids $50 for 50 percent of Cities Service and an exchange of fixed income securities for the remaining Cities shares. Cities rejects the Occidental merger proposal.	4.87 (1.32)	−8.02 (−2.33)	−0.40 (−0.15)	−3.77 (−1.50)
8/18/82– 8/19/82	Occidental announces a tender offer for 49 percent of Cities Service at $50 per share.	12.97 (3.53)	−0.32 (−0.09)	−0.65 (−0.25)	3.99 (1.59)

8/23/82	Mobil decides not to bid for Cities Service. Amerada Hess considering purchase of Cities refining, transportation and marketing operations.	−10.82 (−4.16)	−3.04 (−1.25)	−2.26 (−1.23)	0.48 (0.27)
8/24/82	Cities Service's directors call Occidental's tender offer inadequate, but do not urge shareholders to reject it.	6.21 (2.39)	7.15 (2.94)	0.62 (0.34)	−0.25 (−0.14)
8/25/82– 8/26/82	Cities Service accepts a revised bid by Occidental Petroleum. The bid includes $55 per share for 45 percent of Cities and an exchange of zero coupons and preferred stock for the remaining shares.	−1.40 (−0.38)	3.25 (0.95)	−0.66 (−0.26)	2.70 (1.08)

[a] The t-statistic are calculated as:

$$T = \frac{PE_{jt}}{\sqrt{\mathrm{Var}(PE_{jt})}}$$

where PE_{jt} is the prediction error from the estimates market models (see Table 2) and $\mathrm{VAR}(PE_{jt})$ is the variance of the prediction error:

$$\mathrm{Var}(PE_{jt}) = \sigma_j^2\left(1 + \frac{1}{N} + \frac{(R_{mt} - \bar{R}_m)^2}{(N-1)\mathrm{Var}(R_m)}\right)$$

where σ_j^2 is the residual variance from the market model regression; N is the number of observations used to estimate the market model; R_{mt} is the market return on day t; $\bar{R}_m$ and $\mathrm{Var}(R_m)$ are the mean and variance of the market return over the estimation period.

[b] The dates listed are the trading days that the information reached the market. Multiple days are listed when the day on which the information reached the market is ambiguous or when trading in one of the firms was suspended.

Table 2

Market Model Regression Coefficients for Participants in Cities Service Takeover Estimated Over the Period 1/2/80–12/31/81[a]

$$R_{jt} = \alpha_j + \beta_j R_{Mt} + \varepsilon_t$$

(t-statistics in parentheses)

Firm	$\hat{\alpha}_j$	$\hat{\beta}_j$	R^2	Durbin-Watson
Cities Service	0.0011	1.61	0.26	1.78
	(0.96)	(13.24)		
Gulf Oil	0.0001	1.61	0.41	1.97
	(0.13)	(18.78)		
Mesa Petroleum	0.0005	1.84	0.34	1.77
	(0.51)	(16.14)		
Occidental	−0.0001	1.48	0.39	2.09
	(−0.15)	(17.82)		

[a] R_{jt} is the common stock return of firm j on day t; R_{mt} is the return to the S&P 500 index on day t; α_j and $\hat{\beta}_j$ are estimated regression coefficients. There are 506 daily observation in this two year period.

already owned 5.1 percent of Cities) and $50 of Mesa securities for the remaining shares. The combined effect of both of these announcements is an insignificant abnormal return of 3.56 percent (t-statistic of 1.37) for Cities service and a significant abnormal return of 16.69 percent (t-statistic of 6.87) for Mesa Petroleum. In interpreting these abnormal returns note that it was unlikely that Cities Service would accept the friendly merger bid since its Board of Directors had previously announced its opposition to the takeover. Also, it was unlikely that Cities Service's bid for Mesa would be successful because it represented a premium of only 1.5 percent. Indeed, Mesa's closing price on June 1, 1982 exceeded Cities Service's bid price by $2.50. The insignificant abnormal return for Cities is not, therefore, surprising. The large significant positive abnormal for Mesa is, however, difficult to interpret. Perhaps the abnormal return reflects an increase in the probability that Mesa would become a takeover target.

On June 7, 1982, Mesa bid $45 a share for 15 percent of Cities Service. The small percentage of Cities Service tendered for by Mesa reflects Mesa's inability or hesitancy to obtain financing for a larger offer. Mesa reserved the right to accept more than 15 percent of Cities Service. Surprisingly, this bid is associated with a negative abnormal return of 4.76 percent for Cities Service. Since the terms of the tender offer were less favorable to Cities Service's shareholders than the June 1 merger proposal, one explanation for the negative abnormal return on June 7 is that Mesa's tender offer price and percent tendered for were less than the market had anticipated.

Cities Service announced a friendly merger bid of $21 a share for 51 percent of Mesa Petroleum and 0.45 shares of Cities Service stock for the remaining Mesa shares on June 8, 1982. Based on Cities Service closing price of $36.25 on June 7, the 0.45 shares of Cities had a value of $16.31. This bid is associated with insignificant positive abnormal returns for Mesa and insignificant negative abnormal returns for Cities Service. Cities Service continued to pursue Mesa by revising its hostile tender offer to $21 per share for 51 percent of Mesa.

On June 17, 1982, Gulf Oil announced an agreement to acquire Cities Service for \$63 a share for 51 percent of Cities and \$63 of fixed income securities for the remaining shares. The bid by Gulf was substantially above Mesa's \$45 tender offer for Cities and thus it appeared that Mesa's offer had failed. The stock market reaction to the merger agreement between Gulf and Cities Service was dramatic. The price of Cities Service rose \$15.375 to \$53.125. The abnormal return for Cities Service is 43.38 percent with a t-statistic of 11.81. This abnormal return translates into an abnormal equity value change of \$1,252 million. In contrast, the abnormal return for Gulf was −14.19 percent with a t-statistic of −5.48 which corresponds to an abnormal change in equity value of \$−914 million. The difference between these equity value changes, \$338 million, presumably represents the expected value of the synergy between the two merging firms.

While Gulf's bid signalled the probable failure of Mesa Petroleum's bid for Cities, it did not terminate Cities Service's \$21 a share tender offer for Mesa. This occurred on June 21, 1982 when Cities Service and Mesa terminated their hostile bids for each other and related litigation. At that time, Cities Service repurchased its stock held by Mesa at \$55 a share and Mesa agreed not to attempt a hostile takeover of Cities for five years. As indicated in Table 1, Cities' stockholders realized an insignificant abnormal return on June 21. Mesa Petroleum's stockholders, however, incurred significant losses of 15.83 percent. This result conflicts with the findings of studies of standstills and targeted repurchases. Bradley and Wakeman [3] report an average abnormal return of −7.88 percent for 21 firms whose targeted repurchases were associated with merger cancellations. Dann and DeAngelo [4] find average abnormal returns of −4.56 percent for 30 firms that obtained standstill agreements. These studies, therefore, predict negative abnormal returns for Cities Service whereas no abnormal returns are realized by Cities and significant negative abnormal returns are incurred by Mesa. An explanation for this difference is that while a repurchase or standstill typically indicates that the seller of the stock will not continue to pursue the buyer, the July 21 announcement indicates that Cities, the buyer, would abandon its attempt to acquire the seller, Mesa Petroleum.

The proposed merger between Gulf and Cities Service was reviewed under the Hart-Scott-Rodino Anti-trust Improvements Act of 1976 by the Federal Trade Commission (FTC). The act prohibits the bidder from acquiring the stock of the target firm until the review is completed. The FTC extended the reviewing period by requesting additional data from Gulf on July 2, 1982. Gulf provided the additional information July 19 and the review period ended on July 29, 1982.

The FTC obtained a temporary restraining order against Gulf on July 30, 1982. The FTC cited three areas in which a merger between Gulf and Cities Service could lessen competition: gasoline distribution, kerosene jet fuel and pipeline transportation. In a press release, Gulf stated that it would oppose the FTC action but would continue to negotiate with the FTC to overcome the anti-trust objections to the merger. Also, Gulf's press release indicated that Gulf reserved the right to cancel the proposed acquisition of Cities Service. Since trading was suspended in Gulf and Cities Service over the period July 28 through July 30, 1982, the market reaction to these events occurred on August 2. The abnormal return for Cities Service for August 2 is about −21 percent with a t-statistic of −8.07. In contrast, no significant abnormal return for Gulf is observed.

The cumulative abnormal return over the period August 6 through August 9, 1982 measures the effect of Gulf's decision to cancel the acquisition of Cities Service. During this period, the cumulative abnormal return for Cities Service is −28.5 percent with a t-statistic of −7.76. The cumulative abnormal return for Gulf is 3.67 percent with a t-statistic of 1.42.

The cumulative abnormal return over August 2 and August 6 through 9 measures the market's response to the FTC's restraining order and Gulf's termination of the merger. For Cities Service, this cumulative abnormal return is −43.35 percent which is virtually identical to the 43.38 percent upward revision in equity value that was associated with the announcement of the merger agreement between Gulf and Cities Service. In contrast, the cumulative abnormal return for Gulf is 4.42 percent which does not offset the negative abnormal return of −14.19 percent that was associated with the merger announcement. One explanation for the lack of significant positive abnormal returns for Gulf at the time of the cancellation is that, while the merger was judged to be a negative net present value investment (as evidenced by the significant negative abnormal return at the announcement of the merger), the cancellation did not eliminate Gulf's liability for the premium offered to Cities Service shareholders. Cities Service asserted that Gulf did not attempt to resolve the FTC's objections and refused a Cities Service offer to renegotiate the merger in light of the anti-trust objections. Cities thus considered the cancellation to be a breach of contract and filed a $3 billion lawsuit against Gulf.

Cities Service responded to the merger termination by actively soliciting other takeover bids and by evaluating the liquidation of Cities Service. This search resulted in a bid by Occidental Petroleum of $50 a share for about 50 percent of Cities Service and an exchange of preferred stock and zero coupon notes for the remaining shares. Estimates of the value of the exchange portion of the offer ranged from $42 to $50 per share of Cities Service. This bid was given to Cities Service after lunch on August 13, but not announced until the close of the New York Stock Exchange. The offer requested a response by the Cities Board of Directors by 5:00 PM on Monday, August 16, 1982. Cities Service rejected Occidental's friendly merger offer, but encouraged Occidental to examine confidential information about Cities and revise its bid. The market reaction to these announcements is measured as the cumulative abnormal return on August 16 and August 17 since Cities did not trade on August 16. The abnormal return is 4.87 percent with a t-statistic of 1.32 for Cities Service and −3.77 percent with a t-statistic of −1.50 for Occidental Petroleum.[3] These abnormal returns are only marginally significant. Nevertheless, they can be interpreted in a standard fashion: Cities Service stock prices rose in response to a takeover bid at a premium and Occidental's negative abnormal suggests that the market viewed the bid as a negative net present value investment.

On August 18, 1982 Occidental announced a hostile tender offer for 49 percent

[3] A somewhat surprising result is the large abnormal return for Mesa Petroleum on August 16 and August 17, 1981. Mesa's abnormal return is −8.02 percent with a t-statistic of −2.33. The significant abnormal returns for Mesa are a mystery since Mesa was not involved in the bidding for Cities and no other announcement regarding Mesa appeared in *The Wall Street Journal* on either day.

of Cities Service at $50 per share. Occidental also announced that it had offered to raise the cash portion of its friendly merger offer to $52 a share for 50 percent of Cities and that this offer was rejected by Cities Service. The abnormal returns to Occidental's tender offer is measured over the two day period, August 18 and 19, 1982 because Cities Service did not trade on the announcement day. The abnormal return over August 18 and 19, 1982 is 12.97 percent for Cities Service (t-statistic of 3.53) and 3.99 percent for Occidental with a t-statistic of 1.59.

On August 23, 1982, Mobil Oil decided not to bid for Cities Service after examining confidential information about Cities Service. Also, Amerada Hess indicated that it was considering purchasing Cities refining, transportation and marketing assets. Both of these announcements suggest that another bidder for Cities Service had not emerged. As indicated in Table 1, Cities Service stockholders realized a significant abnormal return of −10.82 percent on August 23. One explanation for this negative abnormal return is that the announcements reduced the probability of a higher competing bid for Cities Service.

On August 24, 1982, Cities Service's directors called Occidental's tender offer inadequate, but did not encourage Cities' shareholders to reject it. Also, Cities said that it was continuing discussions with Occidental about a friendly merger. This announcement is associated with a significant abnormal return of 6.21 percent for Cities Service. An explanation for the significant abnormal return is that the lack of an outright rejection of Occidental's offer and the announcement of continued negotiations raised the probability of an eventual takeover.

On August 25, 1982 Cities Service accepted a revised bid by Occidental Petroleum. The revised bid included $55 a share for 45 percent of Cities Service and an exchange of zero coupon notes and preferred stock for the remaining shares. Since Cities Service did not trade on August 25, the market response to this announcement is measured as the cumulative abnormal return on August 25 and August 26, 1982. Surprisingly, no significant abnormal returns are observed over this period: the abnormal return for Cities Service is −1.40 percent (t-statistic is −0.38) and the abnormal return for Occidental is 2.70 percent with a t-statistic of 1.08. There are two explanations for this lack of abnormal returns. First, the merger agreement could have been anticipated and thus the announcement contained no new information. Second, the hostile tender offer and the friendly merger could have been equally valued.

Summary of Abnormal Returns

Table 3 summarizes the abnormal returns associated with each firm's involvement in the Cities Service takeover. The cumulative abnormal return for Cities Service, which is presented in Figure 1a, follows a roller coaster pattern: it increases sharply in response to Gulf's $63 a share merger proposal (the cumulative abnormal return for Cities Service is about 79 percent on June 18, 1982); it falls dramatically in response to the cancellation by Gulf (the cumulative abnormal return for Cities Service is 5.6 percent on August 9, 1981); and rises in response to the offers by Occidental. Measured from May 28, 1982, the day Cities announced Mesa petroleum's intention to bid, through June 26, 1982, the day of the merger agreement between Cities and Occidental Petroleum, the cumulative

Table 3
Summary of Abnormal Returns for Firms Involved in the Cities Service Takeover

Firm	Holding Period[a]	Cumulative Abnormal Return[b] (Percent)	Cumulative Abnormal Equity Value Change (Millions)
Cities Service	May 28–August 26	12.45	$352
Mesa Petroleum	May 28–June 21	−5.90	−64
Gulf Oil	June 17–August 26	−17.56	−1,131
Occidental Petroleum	August 13–August 26	−0.25	−4

[a] The holding period is from the firm's first indication of its involvement in the Cities Service takeover through the day of the merger agreement between Cities Service and Occidental Petroleum except for Mesa whose involvement ended on June 21 when Mesa agreed not to bid for Cities.

[b] The cumulative abnormal return is measured as

$$[\pi_{t=\tau_1}^{\tau_2}(1 + PE_{jt})] - 1,$$

where PE_{jt} is the prediction error for firm j on day t, τ_1 is the first day of the holding period and τ_2 is the last day of the holding period.

[c] The cumulative abnormal equity value change is calculated by multiplying the firm's equity value on the day before the holding period starts times the firm's cumulative abnormal return over the holding period.

abnormal return for Cities Service is 12.45 percent. While this translates into a $352 million change in the equity value of Cities Service, the abnormal return is small relative to the abnormal returns realized by many other takeover targets. For example, an abnormal return of about 71 percent was realized by shareholders of Conoco which was acquired by DuPont.[4]

The small cumulative abnormal return for Cities Service reflects the relatively small premium paid by Occidental Petroleum. To measure the premium in Occidental's merger offer, a measure of the value of the offer and an estimate of Cities Service's stock price in the absence of the takeover are required. Occidental's merger offer includes a tender offer of $55 a share for 45 percent of Cities. Each remaining share of Cities Service is to be exchanged for zero coupon notes with a principle amount of 25.32 which matures on the third through seventh anniversaries of the merger and 0.41 of a share of Occidental preferred stock which has a cumulative annual dividend of $15.50 per share. The preferred stock is not callable for three years. Instead of valuing the preferred stock and zero coupon notes directly, the price of Cities Service common stock on August 26 can be used as an estimate of the per share value of the offer. Assuming that the market anticipated that all of Cities Service's stock would be tendered prior to the end of the proration period, the August 26 stock price reflects the value of receiving $55 for 45 percent of each share of Cities and the fixed income securities for the remaining 55 percent. This assumption seems plausible since 97 percent

[4] See Ruback (9) for a detailed examination of the Conoco takeover.

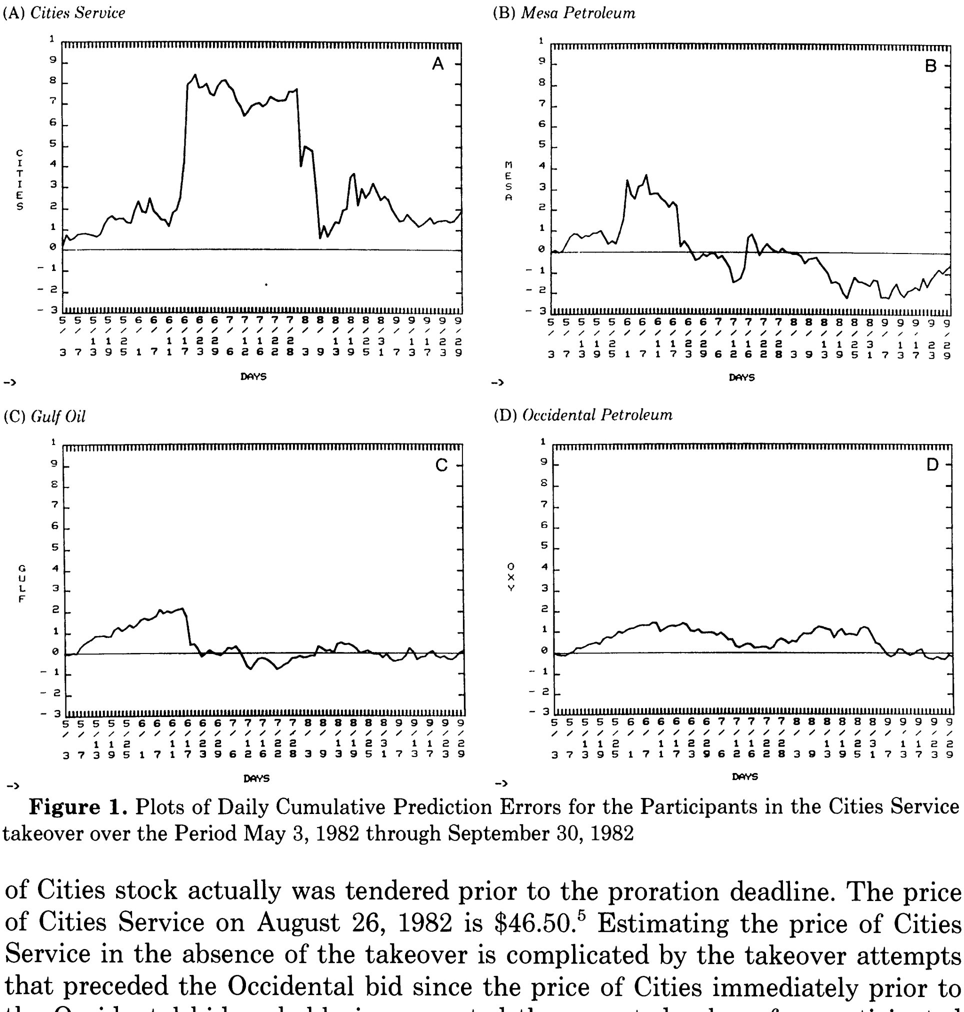

Figure 1. Plots of Daily Cumulative Prediction Errors for the Participants in the Cities Service takeover over the Period May 3, 1982 through September 30, 1982

of Cities stock actually was tendered prior to the proration deadline. The price of Cities Service on August 26, 1982 is \$46.50.[5] Estimating the price of Cities Service in the absence of the takeover is complicated by the takeover attempts that preceded the Occidental bid since the price of Cities immediately prior to the Occidental bid probably incorporated the expected value of an anticipated takeover. A proxy for the price of Cities Service in the absence of the takeover is the price of Cities on May 27, 1982 times the product of one plus the normal returns predicted by the estimated market model, less the \$0.80 dividends paid by Cities over the period. This estimate of the price of Cities in the absence of a takeover is \$40.19. Thus the premium implicit in Occidental's offer is 15.71 percent.

The cumulative abnormal returns for Mesa Petroleum are presented in Figure 1b which shows that Mesa's cumulative abnormal return increases sharply on June 1 and decreases sharply on June 21, 1982. During the period of Mesa's

[5] As a check on this procedure, the implied price of \$39.55 for the fixed income securities on August 26 can be compared to the price of Cities after the proration date since after the proration date the Cities common stock is a claim to the fixed income securities. On September 7, 1982, day after the proration date, Cities Service stock price is \$44.75. One explanation for the difference between the implied price and the post-proration price is the substantial decline in interest rates that occurred between August 26 and September 7.

involvement in the Cities Service takeover, May 28 through June 21, 1982, stockholders of Mesa realized an abnormal return of −5.90 percent. This negative abnormal return is somewhat puzzling since Mesa realized a gain of about $80 million from selling its Cities Service shares at $55 each. Furthermore, the cumulative abnormal return for Mesa over the major events of Table 1 during the period of Mesa's involvement is 6.39 percent.[6] Thus, it seems that the negative abnormal return for Mesa presented in Table 3 is not directly associated with the Cities Service takeover.

Shareholders of Gulf incurred large losses as a result of Gulf's involvement in the Cities Service takeover: the cumulative abnormal returns over the period of its involvement in the Cities Service takeover are −17.56 percent and the implied equity value change is $−1.13 billion. Figure 1c shows that most of these losses occurred in response to Gulf's initial offer for Cities Service and that Gulf's termination of the offer did not substantially reverse the earlier decline in Gulf's equity value. One obvious explanation for these losses is Gulf's liability in Cities' $3 billion breach of contract suit. An estimate of Gulf's liability is the differences between its $63 a share offer and the value of Occidental's bid. Using Cities closing price of $46.50 on August 26, 1982 as a proxy for the value of Occidental's bid, Gulf's liability is approximately $1.26 billion.

Occidental Petroleum, the successful bidder, realized virtually no abnormal returns. This suggests that its bid for Cities Service was a zero net present value investment.

[6] The only significant abnormal returns for Mesa Petroleum over the May 28 through June 21, 1982 period not presented in Table 1, are −5.13 percent with a t-statistic of 2.11 on June 2 and 4.91 percent with a t-statistic of 2.02 on June 4, 1982.

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