

Sell-off as a Consequence of Takeover

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I. INTRODUCTION

A significant portion of empirical research in the area of corporate control has been directed towards studying mergers and takeovers where an entire firm is the target.¹⁾ This study concentrates on sell-offs²⁾ where the target is not an entire firm but a non-trivial part of the firm such as a subsidiary or a division. Further, sell-offs can be divided into two categories: first, where the unit being sold has been a part of the parent company for a long time; second, where the unit was recently acquired and is being sold off in full or part. It is the second category which is of particular interest.

Empirical evidence supports the view that sell-offs generate positive abnormal returns to the shareholders of selling firms.³⁾ Ravenscraft and Scherer(1987),

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1) See Jensen and Ruback(1983) and Jensen(1983) which summarize the findings on the gains from corporate control transactions. Gains to target firms are significantly positive: For the tender offers, refer to Bradley(1980), Jarrell and Bradley(1980), Bradley, Desai, and Kim(1983, 1988); for the mergers, refer to Dodd(1980), Asquith(1983), and Eckbo(1983). Gains to acquiring firms are, however, disagreement in the literature: Dodd and Ruback(1977), Kummer and Hoffmeister(1980), Bradley(1980), Jarrell and Bradley(1980) all document positive abnormal gains to bidders in the successful tender offers; Asquith(1983), Eckbo(1983), and Malatesta(1983) show the bidders in the successful mergers do not lose or gain. Bradley, Desai, and Kim(1988) show that combined gains to the shareholders of merging firms are significantly positive. See Morck, Shleifer & Vishny(1990), Bradley, Desai, and Kim(1988), and Asquith, Bruner and Mullins (1987) for the cross-sectional determinant of the gains.

2) Jain(1985) defines sell-off as the sale of a part of a firm's assets, such as a subsidiary, a division, or a product line, to a third party. The firm continues to exist in the same form as that prior to the sell-off.

3) Previous studies on sell-off conducted by Rosenfeld(1984), Jain(1985), Klein(1986) show significant positive abnormal gains to selling firms, while Alexander, Benson, and Kampmeier(1984) document

Porter(1987), and Bhagat, Shleifer, and Vishny(1990) document one source of sell-off's that being sell-off after takeover, i.e., a substantial fraction of the acquisitions are later sold off.⁴⁾ There is a controversy why targets are sold off after takeovers. Two explanations have been generally advanced for the rationale: the mistake and the positive synergy explanations.

Ravenscraft and Scherer(1987) and Porter(1987) interpret the higher target sell-off rate as evidence that takeovers are mistakes. A management which committed the mistake at the time of a takeover sells the target assets in order to reduce problems resulting from the mistaken takeover. There are two plausible explanations for the mistake; one is the overpayment explanation and the other is the negative synergy explanation. In the overpayment explanation, management sells the acquired assets to avoid a liquidity problem which results from the overpayment. In the negative synergy explanation, management sells the acquired asset to prevent the realization of the negative synergy of the acquired assets.⁵⁾ Proponents of the 'mistake' hypothesis argue that the high rate of target sell-off activities following takeovers is simply clear evidence of the mistake of past acquisitions.

This view of target sell-offs after takeovers as a mistake, however, is not the only explanation. Weston(1989) argues that "target sell-offs reflects evolving corporate strategies that attempt to match perceived competitive advantages and

only insignificant gains to selling firms around the announcement day of sell-offs.

4) According to data given by W.T. Grimm & Co. in the 1978-1987 period, there are an average of 40 divestitures for every 100 recorded acquisition transactions. Ravenscraft and Scherer(1987), however, point out that the Grimm series is an imprecise measure of the frequency of sell-offs following acquisitions for two reasons: i) the units that Grimm divestiture counts are not necessarily closely linked to those subsumed in the acquisition counts; and ii) there is usually an appreciable lag between an acquisition and its sell-off. Ravenscraft and Scherer estimate more systematically that 33% of acquisitions were resold later. Bhagat, Shleifer, and Vishney(1990) also found that 42 out of 62 hostile takeovers over the period 1984 to 1986 were followed by sell-offs. Porter(1987) found a significant number of sell-offs in a vast majority of takeovers and furthermore showed that when the acquisition takes place in fields unrelated to the companies' existing fields, the rate of divestitures rises to 74%, based on 33 conglomerate acquirers over 1950 to 1986.

5) This will be discussed in more detail in the next chapter.

internal capabilities to accelerating changes in the external market environment." This line of reasoning argues that a target sell-off is a vehicle for managers to obtain gains in addition to those realized at the time of takeovers. That is, corporate environmental changes such as relaxed antitrust enforcement and financial innovations make some parts of target firms of greater value to other potential buyers than to acquirers, although the winning bidder had the highest synergy with combined total assets of the target firm at the time of takeovers. Thus, the acquirers sell the acquired unit to other firms in order to obtain gains in addition to those realized at the time of takeovers. This explanation, so called the 'positive synergy' hypothesis, argues that a target sell-off after a takeover is just a decision to redeploy corporate resource to higher-valued users.

The basic difference between the two hypotheses is that the mistake hypothesis argues that acquirers are correcting their mistake by selling the target, while the positive synergy hypothesis argues that acquirers sell the target in order to obtain additional gains occurred according to corporate environmental changes.

The main purpose of this study is to explore the validity of these hypotheses as a rationale for target sell-offs following takeovers. In fact, we evaluate the extent to which target sell-offs following takeovers represent mistaken acquisitions or reallocations in response to corporate environmental changes. To examine this issue, we classify takeovers according to the existence of subsequent target sell-offs: 'takeovers followed by target sell-offs' and 'takeovers NOT followed by target sell-offs'. We then test the stock market reaction to takeover announcement and compare the announcement period abnormal returns for takeovers followed by target sell-offs with those for takeovers not followed by target sell-offs. This comparison of announcement returns to post-takeover outcomes is in the same spirit to Mitchell and Lehn(1990),

Ravenscraft and Pnscoe(1989)and Kaplan and Wersbach(1990). We also investigate the stock price reaction to subsequent target sell-off announcement and compare announcement period abnormal returns for target sell-offs which are related to takeovers with those for non target sell-offs which are related to takeovers. Although there are many studies on the rationale and the wealth effect of sell-offs,⁶⁾ and determinant of sell-off,⁷⁾ these studies do not distinguish sell-offs that arise after a successful takeover from those that arise in a non-acquisition context. Our study investigates whether the rationale for sell-offs differs depending on whether or not they follow takeovers and whether the wealth effect and determinants of sell-offs may be different between them; this study separately examines the sell-offs which follow takeovers and further compares their wealth effect of sell-off on the shareholders of the firms involved in the takeover with those not involved in takeover. The aggregate wealth changes due to the takeovers and subsequent target sell-offs are also estimated.⁸⁾

In brief, the empirical results are consistent with the mistake hypothesis. To do that, we then trace the source of the mistake, we explore two explanations of the mistake hypothesis: overpayment and negative synergy explanation. To do that, we classify sell-offs following takeovers as either target sell-offs or non-target sell-offs (sell-off of the internally developed acquiring firm assets). We then

6) See Rosenfeld (1984), Jain (1985), Klein (1986), Alexander, et al. (1984), and Linn and Rozeff(1984).

7) Vignola(1974) suggests the poor performance prior to sell-offs as the primary motivator of sell-offs. Montgomery & Thomas(1988) show that selling firms have lower level of return on assets(ROA), of interest coverage, and of current ratio than non-divesting firms, Duhaime & Grant(1984, point out i) a business unit's financial strength relative to other units in the firms, ii) the unit's competitive position in its industry, and iii) the financial position of the parent firms vis a vis competitors. Ravenscraft and Scherer(1987) find a downturn in the unit's profitability. Finally, Surgh and Saul(1989) provide evidence that a line of business' mode of growth (acquisitiveness), age as part of the parent firm, and relative market share are important determinants for sell-offs.

8) This estimation procedure which will be discussed in the later chapter is in the same spirit to Kim and Schatzberg(1987) who include the share-price revaluation associated with the prior announcements, such as potential mergers, tender offers, or partial sell offs, to the liquidation announcement to estimate the total gains (losses) from the voluntary liquidating process.

compare the announcement period abnormal returns at the time of sell-offs between them. The results appear to be more consistent with the negative synergy explanation than the overpayment explanation. The rest of the paper is organized as follows. Chapter II discusses hypotheses and their testable implications. Sample design and characteristics are described in the chapter III, followed by empirical results in chapter IV. Finally, chapter V offers concluding remarks.

II. HYPOTHESES AND TESTABLE IMPLICATIONS

1. The Mistake Hypothesis

This hypothesis posits that the high rate of target sell-offs following takeovers is evidence of failure of those takeovers. That is, the acquiring firm sells the acquired assets because the takeovers are revealed as a mistake. Two plausible explanations exist for the mistake at the time of takeovers which may lead sell-offs of the target assets. One is the overpayment explanation and the other is the negative synergy explanation. In the overpayment explanation, the acquiring firm overpays for the target because of manager's hubris. The possibility that a manager in the acquiring firm may overvalue a target has been recognized in the finance literature, Roll(1986) presents a model in which managers believe that they have superior or private information about the potential target. Thus, they estimate the value of the target using the upper-tail rather than the lower-tail observations of target firm stock prices so that it leads managers to overpay for their respective targets. Giammarino and Heinkel(1986) present a simple explanation of mistaken overbidding in the context that managers act in the best interest of

shareholders by using a simple bidding game under asymmetric information. Bradley, Desai, and Kim(1988) conclude that late-bidding firms, so called 'white Knights', earn significantly negative abnormal returns at the time of takeover due to overpayment. They show that overpayment by white knights is one of the reasons why the acquirers in multiple bidder cases, on average, earn lower returns relative to single bidder cases. Giliberto and Varaiya(1989) find that acquirers of failed banks overpay and the winning bidders tend to increase the amount of bid as the number of competitors increase.

Under the overpayment explanation, the acquiring firms face liquidity problems because of the overpayment. To avoid this liquidity problem, the firms sell some assets. Of course, they can recognize financial contracts or liquidate the firms. Therefore, an asset sale occurs only if they believe that it costs less than financial restructuring or liquidation.⁹⁾ In the case of asset sale, the firms can sell either the internally developed acquiring firms' assets, i.e., non-target assets, or the recently acquired asset, i.e., target assets. However, the firm can obviously choose the target assets also to avoid financial restructuring. Notice that the overpayment itself at the time of takeovers is a sunk cost; hence, it should not affect the subsequent decision to sell the asset because the present value of the acquired asset's future cash flow has already been reflected in the firm's current stock price. Therefore, this overpayment explanation requires that the overpayment lead the firm to face some problems like a liquidity problem to justify the subsequent target sell-offs. The negative synergy explanation, on the other hand, argues that the acquiring firm acquired the target which the market believes will reduce the combined operation profits of the acquired asset and acquiring firm.

9) Several papers explain why financial restructuring has large costs beyond the relatively modest legal cost (Warner 1977). The high costs include adverse selection problems with issuing new equity (Myers 1984), renegotiation with many public creditors (Bulow and Shoven 1977, Gertner and Scharfstein 1990), as well as investment distortions if negotiation fails (Fama and Miller 1977, Myers 1977, Berkovitch and Kim 1990).

Although a common argument offered in favor of takeovers is the presence of a positive synergistic gains, i.e., the combined resources of the two firms value more than the sum of the individual part, however, there are also potential risks of the downside risks from the combination. Unfortunately, two companies' difficulties plus the ailment of the other may not conveniently add up to a neat sum total. The takeover can bring with it a new and unique set of previously non-existent difficulties. For example, the acquired assets can prevent other assets from realizing their full potential.¹⁰ Of course, the management of acquiring firms may attempt to identify these potential problems before a commitment is made, but such as the pressure of time and competition may prevent a thorough ex-ante examination of these problems. This is particularly serious for the hostile takeovers because the target managers are not working for but against the acquiring firms so that the acquiring firms' managers have lot difficulties in figuring out what negative synergies may be developed. If the acquiring firms' managers realized that they have made these kinds of mistakes later on, they may find it in the shareholders best interest to sell the assets. Both explanations of the mistake predicts that the market should penalize the firm at the time of takeovers because of the overpayment and the expected loss from lack of liquidity resulted from the takeovers and/or because of the expected loss from the negative synergies. This leads to the first part of the mistake hypothesis:

H_{m1} : *Shareholders of acquiring firms which subsequently sell off acquired assets experience losses around the takeover announcement.*

The market will reward the firm at the sell-offs announcement because of

¹⁰ See Linn and Rozeff(1984) for details.

partial resolution of the liquidity problem and/or because of prevention of further negative synergies. This suggests the second part of the mistake hypothesis:

H_{m2} : *Shareholders of acquiring firms that sell off acquired assets earn gains at the time of sell-off announcement.*¹¹⁾

The first two parts of the mistake hypothesis predict a negative market reaction to a takeover and a positive market reaction to the target sell-off following the takeover. To the extent that the loss from the already realized negative synergy and/or the loss from the liquidity problem are irrecoverable, the aggregate effect of the takeover and the subsequent sell-off will remain negative. The firm must also incur transaction costs in buying and selling the asset. Therefore, this mistake hypothesis expects that:

H_{m3} : *The aggregated wealth changes of takeovers and sell-off are negative.*

2. The Positive Synergy Hypothesis

The positive synergy explanation suggests another scenario. Weston(1989) suggests a number of reasons which are not related directly to the takeover performances. For example, the acquiring firms sell the targets because they have learned more about them and realize that they can obtain additional gains by selling them off; an acquirer may sell a business it has improved or a business that once had synergies with the acquirer's core business but no longer does. Corporate environmental changes such as relaxed antitrust enforcement and

11) Even if the market anticipates the subsequent target sell-offs at the time of takeovers, the effect of target sell-offs will be positive because of the resolution of uncertainties of timing of target sell-offs.

financial innovations make possible some business combinations that were not viable previously. Some acquisitions that led to a relatively efficient allocation of resources in the 1970s may no longer have been efficient in the 1980s when sales to related buyers or leveraged buyouts become feasible. Changes in the external market environment make some parts of target assets have greater value with other potential buyers than with acquirers, although the acquirers had the highest synergy with combined total assets of the target firm at the time of takeovers.¹²⁾ Thus, the acquirers sell off parts of the acquired unit to other firms in order to obtain additional gains to those realized at the time of takeovers. This explanation, so called 'positive synergy' argues that sell-off after takeover is just a decision to redeploy corporate resource to higher-valued users according to environmental changes. Thus, it argues that both the original acquisition and the sale could have increased shareholder wealth.

Thus, the positive synergy hypothesis predicts the opposite of the mistake hypothesis: that the market will reward the firm at the time of takeover since a manager acquired assets which produce synergy. Although the existence of competition leads the target firm to capture most, if not all of the synergistic gains,¹³⁾ acquiring firm shareholders should not lose at the time of takeover. The first part of positive synergy hypothesis may be stated as:

H_{s1} : *Shareholders of acquiring firms which sell acquired assets will not lose at the time of the takeover announcement.*

12) Berkovitch and Khanna(1989) present a model in which target shareholders are better off under a white knight agreement if resale is permitted. The key element of this model is that if a division has higher synergy with a rival, a white knight can sell off the division to the rival after acquiring the target as a whole. As will be shown below, there are, however, few cases consistent with this model. Rather, the available data shows that the winning bidder sells off the acquired firm to a third party who had not participated in the takeover contest for the target.

13) Refer to Bradley, Desai and Kim(1988) and Berkovitch and Narayanan(1991).

The subsequent sell-off decision signals to the shareholders that the manager finds out higher valued users with the acquired assets. A shareholder of wealth maximizing firm will not sell the asset unless the price paid is higher than the current market valuation. This suggests the second part of the positive synergy hypothesis:

H_{s2} : *Shareholders of acquiring firms which subsequently sell acquired assets will experience positive abnormal returns around the sell-off announcement.*

When we combine these two predictions, the aggregated wealth effect of takeovers and subsequent sell-offs is positive:

H_{s3} : *The aggregated wealth effect on shareholders of the acquiring firms due to takeover and sell-off is positive.*

Table 1 Summary of Prediction of the Mistake and Synergy Hypotheses

	The Mistake Hypothesis	The Positive Synergy Hypothesis
Gains to Acquiring Firms at the time of Takeovers	Negative	Positive
Gains to Selling Firms at the time of Target Sell-offs	Positive	Positive
aggregate Wealth Changes from the Takeovers to Targer Sell-offs	Negative	Positive

3. Tabular Representation of Hypothesis

For ease of reference, the mistake and synergy hypotheses are summarized in the table 1. The table also highlights the differences in prediction of the two hypotheses.

III. SAMPLE DESIGN AND DESCRIPTION

1. Tender Offer Data

The primary takeover database consists of 781 successful tender offers covering the period October 1958 to December 1986. This database comes from two sources: 1) For the period October 1958 through December 1984, Bradly, Desai and Kim's Database (BDK database) on successful tender offers is used. 2) For the period 1985 to 1986, the Dow Jones News Text Search Services database is used to identify all the firms which had 'tender offer' mentioned in headlines. Then, the Wall Street Journal Barron's Index is searched to obtain the similar information to BDK database.

In order to select the final sample, we use the same criteria used by Bradly, Desai and Kim(1988)¹⁴⁾ except with following additional restrictions: 1) The acquirer finally acquires all outstanding shares of the target firm. This is required to ensure that the winning bidder can decide to sell off the target after takeover by itself. 2) We consider only those tender offers announced by June 1986. This gives an acquirer 5 years to divest the acquisition. To the extent that some acquirers still own targets that they will subsequently divest, our results

14) Their criteria are 1) acquisitions took place after 1963, and 2) the shares of both target and acquiring firm are traded on the New York Stock Exchange or the American Exchange at the time of acquisitions.

underestimate the extent of the divestiture. Such measurement error, however, may show bias against our finding on the relation between announcement return offers and subsequent sell-offs, if any. Our selection criteria yield 266 tender offers.

2. Sell-off informatron

For each tender offer of 266, we examine the Wall Street Journal Barron's Index and articles from the Dow Jones News Text Search Service to investigate the 5 subsequent year history of the tender offer. We determine whether a voluntary sell-off takes place after the announcement of the tender offer.¹⁵⁾ If the acquirer announces the sell of at least a part of the acquired asset (target) within the period,¹⁶⁾ we classify the tender offer as "*Tender Offer followed by Target Sell-off.*" If the acquirer does not divest any target asset within the peiord, we classify the tender offer as "*Tender Offer NOT followed by Target Sell-off.*"

3. Sample Characteristics

Table 2 presents the number of tender offers and the number of target sell-offs by year. Out of 266 tender offers in our sample, 131 are divested within 5 year after the tender offer.¹⁷⁾ It reveals that a very significant number of tender offers experience target sell-offs within very short time period. Because we restrict our sample for only 5 years, this clearly represents a lower bound on the total number that are eventually divested. With this limitation, the overall target sell-off rate of 49.2% is somewhat higher than the 33% estimated by Ravenscraft and Scherer(1987) and similar to Kaplan and Wersbach(1990).

15) Since we focus on the rationale of target sell-offs, involuntary sell-offs are not considered. Refer to Ellert(1976), Eckbo(1983), Stillman(1983), and Weir(1983) for the effect of involuntary divestiture.

16) Since we investigate why the acquirer wants to sell the acquired assets, we do not distinguish part of target sell-offs from all the target sell-offs.

17) Out of 266 tender offers, 187 experience non-target sell-offs-the acquiring firms assets within 5 years.

Table 2 Number of Tender Offers and Number and Percentage of Subsequent Target sell-off by Year

Year	Number of Tender Offers	Number of Subsequent Target sell-off	Percentage of Subsequent Target sell-off
1963-1964	9	4	44.4
1965-1966	19	7	36.8
1967-1968	24	9	37.5
1969-1970	13	4	30.8
1971-1972	7	2	28.6
1973-1974	21	8	38.1
1975-1976	24	9	37.5
1977-1978	23	10	43.5
1979-1980	18	9	50.0
1981-1982	23	16	69.6
1983-1984	23	14	60.9
1985-1986	62	39	62.9
Total	266	131	49.2

Several insights about the reason of the divestiture can be obtained by analyzing different types of takeover transactions. When we compare the target sell-off ratio in the contested tender offers with that in the uncontested tender offers, the results in table 3.A reveal that a target sell-off ratio is higher for the contested tender offers(56 out of 97) than for the uncontested tender offers(75 out of 169). The difference in the target sell-off ratio between them is significant at the 5% level ($Z=-2.09$).¹⁸⁾

18) To test whether the target sell-off ratio are different between them, we use the mean difference test where the mean is the proportion of target sell-off of each subsample. The Z statistic for the test follows: $Z = \frac{P[p(T|N) - P(T|C)]}{\sqrt{P(T|U+C)(1-P(T|U+C))} \sqrt{\frac{1}{NN} + \frac{1}{NC}}}$, where $P(T|N)$ is the

proportion of target sell-offs in the uncontested tender offers, $P(T|C)$ is the proportion of target sell-offs in the contested tender offers, $P(T|U+C)$ is the proportion of target sell-offs in both, NN is the number of uncontested tender offers, and NC is the number of the contested tender offers.

Table 3 Descriptive Summary of Sample

A. Distribution of Tender Offers by Target sell-off Status and By Competition			
	Total Number of Tender Offers	Tender Offers Followed by Target sell-off	Tender Offers NOT Followed by Target sell-off
Uncontested Tender Offers	169 (63.5%)	75 (44.4%)	94 (55.6%)
Contested Tender Offers	97 (36.4%)	56 (57.7%)	41 (42.3%)
All Tender Offers	266 (100.0%)	131 (49.2%)	135 (50.8%)
B. Distribution of Tender Offers by Target sell-off Status and by Medium of Exchange			
	Total Number of Tender Offers	Tender Offers Followed by Target sell-off	Tender Offers NOT Followed by Target sell-off
Cash Only	235 (88.3%)	119 (50.6%)	116 (49.4%)
Others	31 (11.7%)	12 (38.7%)	19 (61.3%)
All Tender Offers	266 (100.0%)	131 (49.2%)	135 (50.8%)
C. Distribution of Tender Offers by Target sell-off Status and by Relatedness			
	Total Number of Tender Offers	Tender Offers Followed by Target sell-off	Tender Offers NOT Followed by Target sell-off
Related	90 (33.8%)	46 (51.1%)	44 (48.9%)
Unrelated	176 (66.2%)	85 (48.3%)	91 (51.7%)
All Tender Offers	266 (100.0%)	131 (49.2%)	135 (50.8%)
D. Distribution of Tender Offers by Target sell-off Status and by Occurrence Year			
	Total Number of Tender Offers	Tender Offers Followed by Target sell-off	Tender Offers NOT Followed by Target sell-off
Before 1980	158 (59.4%)	62 (39.2%)	96 (60.8%)
After 1980	108 (40.6%)	69 (63.9%)	39 (36.1%)
All Tender Offers	266 (100.0%)	131 (49.2%)	135 (50.8%)

Several modes of payment can be used in making takeovers. Table 3.B shows that pure cash tender offers are predominant form of payment, accounting for 88% of the whole tender offers. It also documents that the target sell-off ratio is higher for the cash than for the non-cash offers but it is insignificant ($Z = 1.25$). Among our subsamples for which comparison will be made in the following chapter, the effect of the form of payment on the target sell-off will be investigated.

Panel C of Table 3 shows that the target sell-off ratio in the related tender offers is in the different from those in the unrelated tender offer ($Z = 0.43$)¹⁹; Out of 90 related tender offers, 46(51.1%) sold later, while 85 out of 176 unrelated tender offers experience subsequently target sell-offs. Therefore, the target sell-offs seems not to depend upon the relatedness. However, there is disagreement on the effect of tender offers on the participating shareholders whether the tender offers are related or not. We will examine potential bias from the relatedness to the remaining tests later.

The results in panel D of table 3 suggest that the target sell-offs seem to depend upon the occurrence year of tender offers. Out of 158 tender offers occurred before 1980 60(39.2%) experience subsequent sell-offs, while 69(63.9%) out of 108 tender offers occurred after 1980 sold the acquirer assets. The difference is significant at the 1% level ($Z = -3.95$). Therefore, the potential bias resulting from the occurrence year of tender offers on the target sell-offs will be considered.

¹⁹ If an acquirer and a target have a 4-digit SIC in common they operate in, we consider the tender offer as the related tender offers. Otherwise, we consider as the unrelated tender offer. We will discuss it in more detail in the next chapter.

IV. EMPIRICAL RESULTS

In this chapter, we examine 1) wealth effect of tender offer announcement, 2) wealth effect of subsequent sell-off announcement for the entire tender offers sample as well as for the two subsamples: tender offers followed by target sell-offs and tender offers NOT followed by target sell-offs, and finally 3) aggregate wealth effect of the tender offer and target sell-off announcement.

1. Wealth Effect of Tender Offer Announcement

In this section, we investigate the wealth effect of the tender offer announcement to see whether we can identify any peculiar characteristic for tender offer followed by target sell-offs. To do that, we estimate abnormal returns to acquiring and target firms and combined abnormal returns at the time of takeovers for the entire sample and for the subsamples. We then compare these returns in the tender offer followed by target sell-offs with corresponding returns in the tender offer not followed by target sell-off. Finally, we try to get the answer on how tender offer performance is related to subsequent sell-off decision. The mistake hypothesis predicts a negative relation between the acquiring firms returns and subsequent sell-offs while the positive synergy hypothesis predicts no or positive relation between them.

1.1. Methodology

To determine the market reaction to the tender offer announcement, we use the market model prediction errors. The market model parameters for each target firm are estimated using a maximum of 240 trading days of daily returns data beginning 300 days before the announcement of the first tender offer bid.

Corresponding parameters for acquiring firm are estimated on 240 trading days of daily returns data beginning 300 days before the first bid made by this firm. Note that the estimation window could be different for the target and the acquiring firm in the case of tender offers if there are multiple bidders and the successful bidder is not the first bidder.

The cumulative abnormal return, CAR, is calculated for each target and acquiring firm in our sample for a window as followed: For the target firm, the abnormal returns are cumulated from five days before the announcement of the first bid through five days after the announcement of the successful bid.²⁰⁾ For the acquiring firm, the abnormal returns are cumulated from five days before the announcement of its first bid through five days after the announcement of its final bid. Combined returns to target and acquiring firm are calculated as the sum of the total dollar cumulative abnormal returns for target and acquiring firm divided by the sum of the pre-tender offer market value of equity of target and acquiring firm. Total dollar cumulative abnormal returns for acquiring firm are calculated by the multiplying the acquiring firm CAR by the pre-tender offer market value of acquiring firm equity, while total dollar cumulative abnormal returns for target firm are computed by multiplying the target firm CAR by the pre-tender offer market value of acquiring firm equity, minus the pre-tender offer market value of target firm equity held by the acquiring firm. The pre-tender offer market value of equity for target and acquiring firm is calculated forty days before the first bid for the target and before its first bid for the target for the acquiring firm, respectively. This procedure is initiated by Bradly, Desai and Kim(1988) and used by Lang, Stulz and Walking(1989) and Berkovitch and Narayanan(1991),

Note that the length of the event period is variable especially in the case of

²⁰⁾ We also estimate the CAR from forty days before the announcement of its first bid through forty days after the announcement of its final bid. We do not find any significant changes in the results presented hereafter between these two different windowed measures.

multiple bidders. This leads to a heteroskedasticity problem in the cumulative abnormal returns significance test. To adjust for the problem, we estimate standardized cumulative abnormal returns, SCAR, in the same manner as Bradly, Desai and Kim(1988). To generate $SCAR_{i(t1,t2)}$, the standardized abnormal returns, SAR_{it} , are cumulated and divided by the number of days in the event period $t1$ through $t2$.

$$SCAR_{i(t1,t2)} = \sum_{t=t1}^{t2} \frac{SAR_{it}}{\sqrt{t2-t1+1}}$$

$$\text{where } SAR_{it} = \frac{AR_{it}}{S_{it}}$$

$$S_{it} = \sqrt{S_i^2 \left\{ 1 + \frac{1}{k} + \frac{(R - R_m)^2}{\sum_{l=1}^k (R_{ml} - R_m)^2} \right\}}$$

S_i^2 is residual variance for security i

K is number of observation period during estimation period

R_{mt} is the market return during t of the event period

R_m is the mean market return during the estimation period

R_{m1} is the market return for day 1 of the estimation period

The SCAR takes account of variations in the period and precision of the observations. Thus it measures abnormal performance no matter how the test periods vary across tender offers and no matter what the variation in the variance of the residuals across tender offers is. However, the SCAR does not give us any

real meaning of value changes due to the tender offers. Therefore, we will use both measures of SCAR and CAR to determine the effect of tender offers.

We conduct our significance test using cross-sectional announcement period returns and variances of SCARs and CAR. The CAR will be used to interpret the wealth change due to tender offers only after conducting the significance test using SCAR. Patell(1977) and Kalay and Lowenstein(1985) suggest that cross-sectional variance estimated around important announcement such as earning, dividend, and takeovers is usually higher than the variances estimated during estimation period which the standard event study method is used. Therefore, our significance test is more conservative than t-test in standard event study methodology.

1.2 Tender Offers followed by Target sell-offs versus Tender Offers Not followed by Target sell-off

Table 4 presents SCARs as well as CARs for the entire sample and for two subsamples, i.e., tender offers followed by target sell-offs and tender offers not followed by target sell-offs. Of the two measures of market reaction to the tender offers greater reliance should be placed on SCAR as we mentioned earlier. The acquirer SCARs for the entire tender offers is positive with a mean of 0.0562 but insignificantly different from zero. Therefore, shareholders of acquiring firms do not earn any significant returns from tender offers, which is consistent with many previous papers.

However, when the SCARs are compared between the subsamples, there exists a striking difference in the SCARs between them. The average SCAR for acquiring firms in the tender offers followed by target sell-offs is significantly negative with a mean of -0.5491 and t of -5.52, while that in the tender offers not

Table 4 Cumulative Abnormal Returns by Target sell-off Status

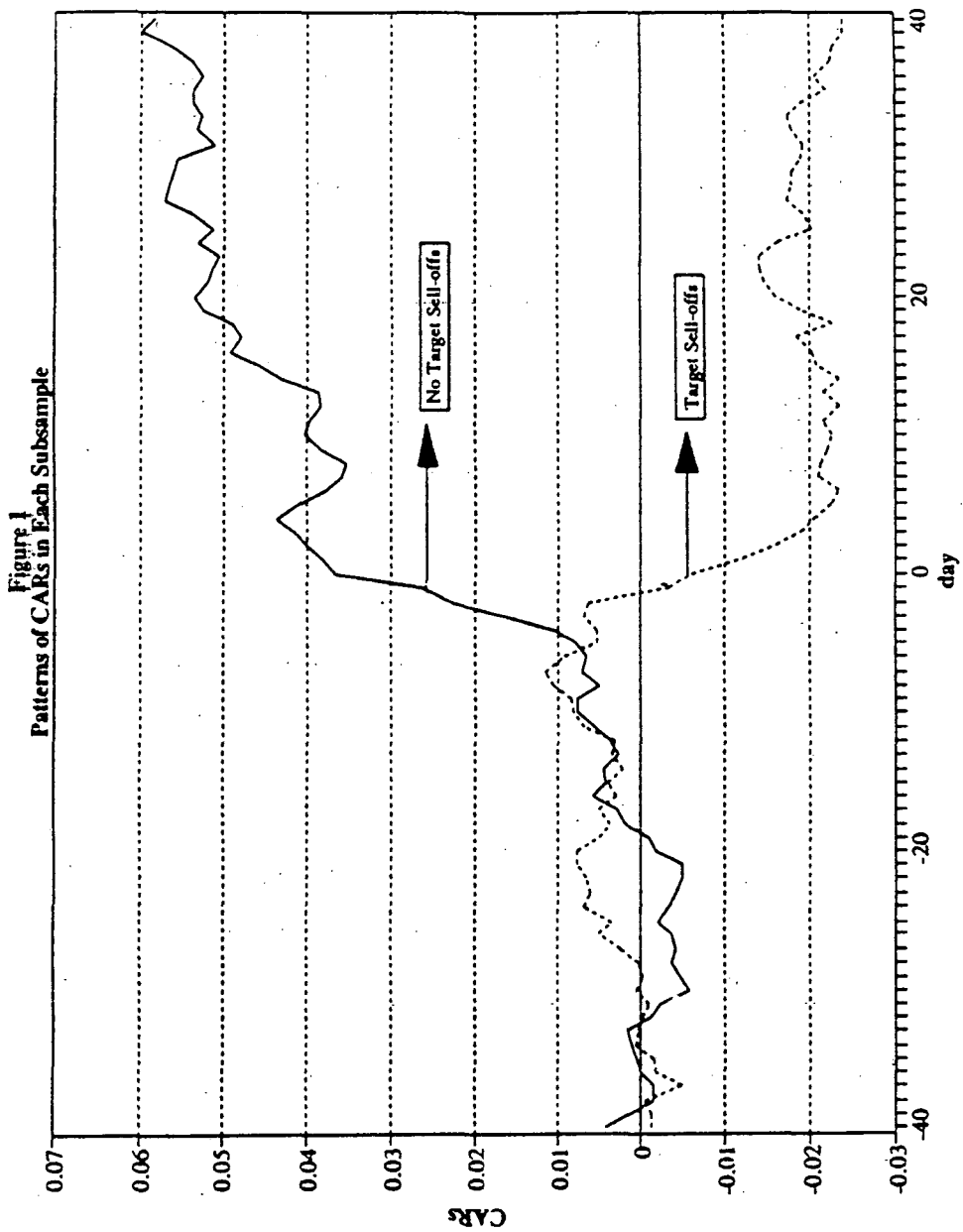
A. Mean Cumulative Abnormal Returns			
	All Tender Offers (N=266)	Tender Offers Followed by Target sell-off (N=131)	Tender Offers NOT Followed by Target sell-off (N=135)
1. Acquiring Firms			
CAR	0.0067 (1.02)	-0.0312 (-3.58) ¹	0.0435 (4.98) ¹
SCAR	0.0562 (0.62)	-0.5491 (-5.52) ¹	0.6435 (4.84) ¹
2. Target Firms			
CAR	0.3020 (20.74) ¹	0.3224 (15.50) ¹	0.2822 (13.89) ¹
SCAR	4.2925 (19.80) ¹	4.7661 (13.97) ¹	3.8329 (14.46) ¹
3. Combined Firms			
CAR	0.0750 (10.20) ¹	0.0490 (5.44) ¹	0.1003 (8.99) ¹
SCAR	1.1122 (9.93) ¹	0.7627 (4.93) ¹	1.4512 (9.25) ¹
B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off			
	t-statistics	p-value	
1. Acquiring Firms			
CAR	-6.05	0.0001	
SCAR	-7.19	0.0001	
2. Target Firms			
CAR	1.38	0.1673	
SCAR	2.16	0.0318	
3. Combined Firms			
CAR	-3.58	0.0004	
SCAR	-3.12	0.0020	

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

followed by target sell-offs is significantly positive with a mean of 0.6435 and t of 4.84. Furthermore, the mean difference between them is significantly different from zero at the 1% level. Therefore these results show that tender offers which produce significant loss to acquiring firm shareholders experience subsequent target sell-off while those with significant gains do not sell the acquired asset.

Figure 1 graphically depicts the difference in the serial pattern of the cumulative abnormal returns for acquiring firms between in the tender offer followed by target sell-offs and in the tender offer not followed by target sell-offs. The SCARs for the tender offer followed by target sell-offs is decreasing after the announcement of the tender offers while the SCARs for the tender offer not followed by target sell-off is increasing as the time after announcement goes by. The drop of the CARs after tender offer is consistent with the mistake hypothesis: At the time of announcement of takeovers, the market may assign some probability that the management did not acquire a target mistakenly. As time goes by, the market will revise its expectation and assign a higher probability to the management having made a mistake. This may produce the drops of the CARs in the tender offer followed by target sell-off. On the other hand, the increase of stock prices for the tender offers NOT followed by target sell-offs may be caused by the market's confidence on the success of the tender offer; the market confirms that the management acquired a target which was good for the acquiring firm.

Since a part of the mistake may have been overpayment for target under the mistake hypothesis, the mistake hypothesis predicts the target firms in the tender offer followed by target sell-off might have greater gain than those in the tender offer NOT followed by target sell-off, *ceteris paribus*. Furthermore, under the mistake hypothesis the mistake may make the management to be willing to pay the target more than its market value even if there is no positive synergy gain in a takeover. The more severe the degree of the mistake, the more the loss to acquirer stockholders and hence the lower the total gain, *ceteris paribus*. Therefore, if the target sell-off after takeover is evidence of the mistake, then the total gains in the tender offer followed by target sell-off should be lower than that in the tender offer not followed by target sell-offs.



Combined and target SCARs are also presented in the table 4. Both of these measures are significantly positive for the entire sample and for the subsamples. When we compare those measures between subsamples, there are significant differences in mean SCARs between them: the target SCARs is significantly higher for the tender offers followed by target sell-offs than for the tender offers not followed by target sell-offs; the combined SCARs is significantly lower for tender offer followed by target sell-offs than for tender offer not followed by target sell-offs.²¹⁾ These results suggest that tender offers which produce higher target gains and lower combined gains tend to experience subsequent sell-offs.

In sum, we found that the announcement returns at the time of takeovers are very different whether a subsequent target sell-off followed. Furthermore, these findings are consistent with the mistake hypothesis.

In next section, we will investigate the robustness of the difference between the subsamples, i.e., we will reexamine whether the difference between subsamples holds in various subgroups which are classified by the existence of competition among acquirers, by mediums of exchange, by relatedness between target and acquirer, and by occurrence year of tender offers.

1.3. Contested versus Uncontested

In this section, we investigate whether the difference in the announcement returns at the time of the tender offers between the tender offers followed by target sell-offs and the tender offers not followed by target sell-offs holds both in the contested and the uncontested tender offers. Note that we found that the frequency of sell-offs was higher in the contested tender offers than in the uncontested tender offers. Bradley, Desai and Kim(1988) show that the

21) The combined wealth change due to tender offer is positive and significantly different from zero for all sample and for subsamples, which is consistent with BDK(1988).

announcement returns to acquiring (target) firms is less (more) for the contested tender offers than for the uncontested tender offers. Accordingly, there is a possibility that the difference in announcement returns between our subsamples are just affected from the competition.

To examine this possibility, we estimate the SCAR for the contested and the uncontested tender offers. Then we investigate how the differences in announcement returns between the tender offers followed by target sell-offs and the tender offers NOT followed by target sell-offs are preserved both in the contested and in the uncontested tender offers. We use the same rule to classify our sample either contested or uncontested (tender offers as that used by Bradley, Desai, and Kim (1988)).

Table 5 present SCARs for contested and uncontested tender offers for the entire sample as well as for subsamples. As Bradley, Desai, and Kim (1988) show, the contested tender offers produce significantly higher target returns and combined returns and significantly lower return to acquiring firms than the uncontested tender offers and regardless of existence of subsequent sell-offs.

For the uncontested tender offers, the average SCAR to acquiring firms for the tender offers followed by target sell-offs is also significantly negative with a mean of -0.5332, while that for the tender offers not followed by target sell-offs is also significantly positive with a mean of 0.6829. The t-statistic for mean difference between the two groups of -5.81 shows that the acquiring firms for the tender offer followed by target sell-offs experience significant lower return than those for the tender offers not followed by target sell-offs. The means of target SCAR and Combined SCAR in the tender offers followed by sell-offs are 4.1662 and 0.5853, respectively, while corresponding means in the tender offers not followed by sell-offs are 3.2952 and 1.2895, respectively. The difference in combined and target SCAR between the subgroups is significant.

**Table 5 Cumulative Abnormal Returns by Target sell-off Status
and by Competition**

I. Uncontested Tender Offers

A. Mean Cumulative Abnormal Returns			
	All Tender Offers (N=169)	Tender Offers Followed by Target sell-off (N=75)	Tender Offers NOT Followed by Target sell-off (N=94)
1. Acquiring Firms			
CAR	0.0103 (1.53)	-0.0307 (-4.71) ¹	0.0430 (4.43) ¹
SCAR	0.1460 (1.23)	-0.5332 (-4.71) ¹	0.6829 (4.02) ¹
2. Target Firms			
CAR	0.2441 (15.80) ¹	0.2548 (12.08) ¹	0.2356 (10.63) ¹
SCAR	3.6818 (16.02) ¹	4.1662 (10.75) ¹	3.2952 (12.23) ¹
3. Combined Firms			
CAR	0.0623 (6.96) ¹	0.0322 (2.99) ¹	0.0863 (6.56) ¹
SCAR	0.9770 (7.15) ¹	0.5853 (2.88) ¹	1.2895 (10.01) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-6.31	0.0001
SCAR	-5.81	0.0001
2. Target Firms		
CAR	0.62	0.5373
SCAR	1.85	0.0672
3. Combined Firms		
CAR	-3.18	0.0018
SCAR	-2.61	0.0100

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics, The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

Table 5 continued

II. Contested Tender Offers

A. Mean Cumulative Abnormal Returns			
	All Tender Offers (N=97)	Tender Offers Followed by Target sell-off (N=56)	Tender Offers NOT Followed by Target sell-off (N=41)
1. Acquiring Firms			
CAR	0.0005 (0.04)	-0.0317 (-1.71)	0.0446 (2.42) ¹
SCAR	-0.1004 (-0.73)	-0.5704 (-3.42) ¹	0.5417 (2.79) ¹
2. Target Firms			
CAR	0.4029 (15.12) ¹	0.4130 (11.32) ¹	0.3891 (5.88) ¹
SCAR	5.3565 (12.77) ¹	5.5695 (9.38) ¹	5.0656 (8.77) ¹
3. Combined Firms			
CAR	0.0971 (7.77) ¹	0.0714 (4.77) ¹	0.1323 (6.50) ¹
SCAR	1.3477 (6.98) ¹	1.0003 (4.22) ¹	1.8221 (6.50) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-2.85	0.0053
SCAR	-4.34	0.0001
2. Target Firms		
CAR	0.44	0.6597
SCAR	0.59	0.5558
3. Combined Firms		
CAR	-2.47	0.0153
SCAR	-2.14	0.0347

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

For the contested tender offers, the results are almost the same. The average SCAR to acquiring firms for the tender offers followed by sell-offs is significantly negative with a mean of -0.5704 , while that for the tender offers not followed by sell-offs is significantly positive with a mean of 0.5417 . The t-statistic for mean difference between the two group of -4.34 shows that the acquiring firms for the tender offer followed by sell-offs experience significant lower return than those for the tender offers not followed by sell-offs. The means of target SCAR and Combined SCAR in the tender offers followed by sell-offs are 5.5695 and 1.003 , respectively, while corresponding means in the tender offers not followed by sell-offs are 5.0656 and 1.8221 , respectively. The difference in combined SCARs between the subgroups is significant while the difference in target SCAR is not significant any longer.

We obtain evidence that the differences in announcement returns depending upon the existence of a subsequently target sell-off exist no matter whether the tender offers are contested or not; the tender offers followed by target sell-offs produce lower return to acquiring firms and combined firms. A noticeable distinction in the difference is that for the contested tender offers, the mean difference in the target returns between the subsamples is not significant any longer

The evidence that announcement returns for the acquiring firms and the combined firms are different depending up the existence of the following target sell-offs does not seem to be due to the competition.

1.4. Related versus Unrelated

Porter(1987) and Ravenscraft and Scherer(1987) find evidence that sell-off ratios are higher for unrelated acquisitions and argue that this evidence implies that unrelated acquisitions are worse investment than related acquisitions. Furthermore,

Mock, Shleifer, and Vishny(1990) find that acquiring firms in unrelated acquisitions earn lower returns than related acquisitions, while Singh and Montgomery(1987) find that unrelated acquisitions produce significant lower returns for target and combined firms but insignificant lower returns for acquiring firms than related acquisitions.²²⁾ Therefore, there is also a possibility that the differences in the announcement returns at the time of takeovers between the subsamples are only true for the case of unrelated takeovers.

To examine the possibility, we classify our tender offer sample as either related or unrelated. To measure the relatedness of a tender offer, we use a rule based on the Standard Industry Classification(SIC) codes listed in Standard & Poor's Corporations which provide all 4-digit SIC codes in which the firm operates. All the data of SICs are collected from one year before the tender offer. If an acquirer and a target have a 4-digit industry in common they operate in, we call the tender offer related. Otherwise, we call the tender offer unrelated. This definition is similar to Mock, Shleifer, and Vishny(1990) and Kaplan and Weisbach(1990).²³⁾ We obtain similar results when we conduct the analysis by using 2-digit and 3 digit SIC codes to measure relatedness.

Table 6 presents SCARs for unrelated tender offers and for related tender offers for the entire sample as well as subsamples. The acquiring firms in unrelated tender offer earn less than in related tender offers although the mean SCARs are not significantly different between them

22) Elgers and Clark(1980) find shareholders of merging firm gain more from conglomerate than non-conglomerate mergers, while Asquith and Kim(1982), and Wansley, Lane and Yang(1983) find no difference in returns between them.

23) Both papers use The Million Dollar Directory(MDD) to classify acquisition related or diversifying. The MDD only lists the six most important SIC codes and available back to 1979. Since our sample needs to cover back to 1963, we use Standard & Poor's Corporations.

**Table 6 Cumulative Abnormal Returns by Target sell-off Status
and by Relatedness**

I. Unrelated Tender Offers

A. Mean Cumulative Abnormal Returns

	All Tender Offers (N=176)	Tender Offers Followed by Target sell-off (N=85)	Tender Offers NOT Followed by Target sell-off (N=91)
1. Acquiring Firms			
CAR	0.0023 (0.29)	-0.0462 (-4.88) ¹	0.0476 (4.58) ¹
SCAR	0.0433 (0.38)	-0.7029 (-6.44) ¹	0.7404 (4.51) ¹
2. Target Firms			
CAR	0.2901 (15.30) ¹	0.3022 (11.01) ¹	0.2788 (10.60) ¹
SCAR	4.1530 (15.25) ¹	4.4042 (10.39) ¹	3.9184 (11.27) ¹
3. Combined Firms			
CAR	0.0715 (7.36) ¹	0.0298 (2.80) ¹	0.1103 (7.42) ¹
SCAR	1.1185 (7.39) ¹	0.5799 (2.78) ¹	1.6215 (7.87) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-6.64	0.0001
SCAR	-7.32	0.0001
2. Target Firms		
CAR	0.62	0.5386
SCAR	0.89	0.3742
3. Combined Firms		
CAR	-4.40	0.0001
SCAR	-3.55	0.0005

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level

Table 6 continued

II. Related Tender Offers

A. Mean Cumulative Abnormal Returns

	All Tender Offers (N=90)	Tender Offers Followed by Target sell-off (N=46)	Tender Offers NOT Followed by Target sell-off (N=44)
1. Acquiring Firms			
CAR	0.0154 (1.30)	-0.0032 (-0.20)	0.0351 (2.18) ²
SCAR	0.0813 (0.54)	-0.2649 (-1.37)	0.4432 (1.97) ³
2. Target Firms			
CAR	0.3253 (14.93) ¹	0.3599 (11.90) ¹	0.2892 (9.38) ¹
SCAR	4.5652 (12.81) ¹	5.4349 (9.57) ¹	3.6561 (9.53) ¹
3. Combined Firms			
CAR	0.0819 (7.75) ¹	0.0843 (5.52) ¹	0.0794 (5.38) ¹
SCAR	1.0998 (7.36) ¹	1.1007 (5.30) ¹	1.0990 (5.05) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-1.65	0.0988
SCAR	-2.39	0.0188
2. Target Firms		
CAR	1.64	0.1055
SCAR	2.59	0.0113
3. Combined Firms		
CAR	0.23	0.8176
SCAR	0.01	0.9953

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

Again, the difference in the announcement returns between subsamples are also generally obtained for unrelated tender offers as well as related tender offers. Therefore, the differences between subsamples do not seem to be the result of the relatedness. Some variations are: 1) the target SCAR for the unrelated tender offers followed by target sell-offs is not statistically different from those for the tender offers not followed by target sell-offs; 2) the combined SCAR for the related tender offers followed by sell-offs is not statistically different from those for the related tender offers not followed by sell-offs.

We also investigate whether the differences in announcement returns to participating firms and combined firms at the time of tender offers between our subsamples are due to the occurrence year of takeovers or the medium of exchange. The results in Table 7 and 8 provide generally the same differences between the subsequent sell-offs and the announcement returns at the time of takeovers.

Therefore, the differences in the announcement returns between the tender offers followed by target sell-offs and the tender offers not followed by target sell-offs are robust, especially for the acquiring firm returns and combined returns, regardless of any classification

1.5. The Urorst versus The Best

Our findings suggest that acquiring firms that perform worse at the time of takeovers tend to sell the acquired assets. To examine this in more detail, we compare target sell-off ratios in the firm with the best performance with those with the worst performance at the time of takeovers. We classify firms as the best or the worst as following: If the SCARs of an acquiring firm is above the upper 95% confidence limit for the mean of SCARs, we call the firm the best. If the SCAETs of an acquiring firm is below the lower 95% confidence limit for the mean of SCARs, we call the firm the worst.

**Table 7 Cumulative Abnormal Returns by Target sell-off Status
and by Occurrence Year**

I. Tender Offers Occurred Before 1980.

A. Mean Cumulative Abnormal Returns

	All Tender Offers (N=158)	Tender Offers Followed by Target sell-off (N=62)	Tender Offers NOT Followed by Target sell-off (N=96)
1. Acquiring Firms			
CAR	0.0174 (2.37) ²	-0.0320 (-4.06) ¹	0.04935 (5.08) ¹
SCAR	0.2997 (2.46) ²	-0.4342 (-3.50) ¹	0.7687 (4.66) ¹
2. Target Firms			
CAR	0.2973 (15.15) ¹	0.3109 (9.89) ¹	0.2886 (11.44) ¹
SCAR	4.1483 (15.49) ¹	4.7066 (9.54) ¹	3.7877 (12.58) ¹
3. Combined Firms			
CAR	0.0782 (7.94) ¹	0.0364 (2.99) ¹	0.1051 (7.78) ¹
SCAR	1.1623 (8.06) ¹	0.6608 (2.87) ¹	1.4866 (8.35) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-6.50	0.0001
SCAR	-5.83	0.0001
2. Target Firms		
CAR	0.55	0.5813
SCAR	1.59	0.1148
3. Combined Firms		
CAR	-3.77	0.0002
SCAR	-2.86	0.0048

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

Table 7 continued

II. Tender Offers Occurred After 1980

A. Mean Cumulative Abnormal Returns

	All Tender Offers (N=108)	Tender Offers Followed by Target sell-off (N=69)	Tender Offers NOT Followed by Target sell-off (N=39)
1. Acquiring Firms			
CAR	-0.0089 (-0.75)	-0.0305 (-2.03) ²	0.0291 (1.57)
SCAR	-0.2956 (-2.25) ²	-0.6524 (-4.29) ¹	0.3355 (1.59)
2. Target Firms			
CAR	0.3089 (14.31) ¹	0.3329 (11.97) ¹	0.2664 (7.99) ¹
SCAR	4.5034 (12.40) ¹	4.8196 (10.13) ¹	3.9441 (7.21) ¹
3. Combined Firms			
CAR	0.0704 (6.39) ¹	0.0602 (4.61) ¹	0.0884 (4.47) ¹
SCAR	1.0384 (5.82) ¹	0.8544 (4.07) ¹	1.3641 (4.21) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-2.45	0.0160
SCAR	-3.84	0.002
2. Target Firms		
CAR	1.49	0.1401
SCAR	1.16	0.2489
3. Combined Firms		
CAR	-1.23	0.2209
SCAR	-1.38	0.1713

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

Table 8 Cumulative Abnormal Returns by Target sell-off Status and by Medium of Exchange

II. Tender Offers Financed with Cash Only

A. Mean Cumulative Abnormal Returns

	All Tender Offers (N=235)	Tender Offers Followed by Target sell-off (N=119)	Tender Offers NOT Followed by Target sell-off (N=116)
1. Acquiring Firms			
CAR	0.0075 (1.08)	-0.0268 (-2.88) ¹	0.0428 (4.53) ¹
SCAR	0.0682 (0.71)	-0.4817 (-4.71) ¹	0.6324 (4.29) ¹
2. Target Firms			
CAR	0.3136 (20.53) ¹	0.3266 (15.38) ¹	0.3003 (13.65) ¹
SCAR	4.4888 (19.45) ¹	4.8920 (13.58) ¹	4.0752 (14.40) ¹
3. Combined Firms			
CAR	0.0790 (9.87) ¹	0.0520 (5.42) ¹	0.1066 (8.60) ¹
SCAR	1.1839 (9.63) ¹	0.8328 (5.02) ¹	1.5441 (8.77) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-5.25	0.0001
SCAR	-6.21	0.0001
2. Target Firms		
CAR	0.86	0.3901
SCAR	1.78	0.0759
3. Combined Firms		
CAR	-3.48	0.0006
SCAR	-2.94	0.0036

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

Table 8 continued.

II. Tender Offers Financed with Others

A. Mean Cumulative Abnormal Returns

	All Tender Offers (N=31)	Tender Offers Followed by Target sell-off (N=12)	Tender Offers NOT Followed by Target sell-off (N=19)
1. Acquiring Firms			
CAR	0.0005 (0.03)	-0.0747 (-3.65) ¹	0.0481 (2.05) ³
SCAR	-0.0351 (-0.13)	-1.2177 (-3.55) ¹	0.7718 (2.42) ²
2. Target Firms			
CAR	0.2142 (4.81) ¹	0.2814 (3.20) ¹	0.1718 (3.70) ¹
SCAR	2.8042 (4.88) ¹	3.5177 (3.40) ¹	2.3535 (3.50) ¹
3. Combined Firms			
CAR	0.0449 (2.70) ²	0.0186 (0.77)	0.0615 (2.78) ²
SCAR	0.5685 (2.62) ²	0.0684 (0.20)	0.8844 (3.32) ¹

B. Significance Test for Difference in Mean CARs between Tender Offers followed by Target sell-off and Tender Offers Not Followed by Target sell-off

	t-statistics	p-value
1. Acquiring Firms		
CAR	-3.63	0.0011
SCAR	-4.20	0.0002
2. Target Firms		
CAR	1.21	0.2370
SCAR	0.99	0.3317
3. Combined Firms		
CAR	-1.27	0.2138
SCAR	-1.91	0.0665

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. Numbers in the parenthesis in panel A are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10% level.

Table 9 Frequencies of Target sell-offs in the Best and in the Worst Tender Offers

Base of Classification		The Worst			The Best		
		# target sell- offs	# tender offers	% target sell- offs	# target sell- offs	# tendero ffers	% target sell- offs
Acquiring firm	SCAR	92	108	85.2	25	97	25.8
	CAR	95	130	73.1	19	91	20.9
Target Firm	SCAR	73	155	47.7	40	82	48.2
	CAR	61	140	43.6	58	100	58.0
Combined Firms	SCAR	82	141	58.2	42	98	42.9
	CAR	80	143	55.9	41	98	41.8

CAR is a cumulative abnormal return and SCAR is a standardized cumulative abnormal returns. The Best is tender offers which abnormal returns are above the upper 95% confidence limit for the mean of the base, while the Worst is tender offers below the lower 95% confidence limit.

The results in Table 9 show that the worst firms tend to sell the acquired assets more frequently than the best firms: Out of 108 worst firms, 92(85.2%) firms experience sell-offs, while only 25(25.7%) firms experience sell-offs out of 97 the best firms. We obtain generally the same results when we use CARs for acquiring firms to classify the best or the worst. Therefore, this result confirms our evidence that the lower the firm earns at the time of takeovers the higher probability the firm sell the target.

We also classify the tender offers the best or the worst based on the SCAR of target and combined firms with the same rule as for the acquiring firms. Because our previous results show that the combined returns is lower for the tender offers followed by target sell-offs, target sell-offs seem to be more likely occurred in

the worst than in the best if we use the combined SCARs in order to classify the tender offers the worst and the best. On the other hand, target sell-offs seem to be indifferent between the worst and the best if we use the target SCARs in order to classify.

The results presented in the Table 9 for the classifications both target and combined returns are consistent with our expectation; for the classification based on the combined SCARs, target sell-offs are more often occurred in the worst (58.2%) than in the best(42.9%); for the classification based on the target SCARs, target sell-offs are slightly less in the worst(47.2%) than in the best(48.2%). Therefore, these results confirm our evidence that the tender offers followed by target sell-offs produce lower combined returns and slightly higher target returns than the tender offers not followed by target sell offs.

2. Wealth Effect of Subsequent Sell-Off Announcement

The results presented so far support the mistake hypothesis. In this section, we investigate the wealth effect of target sell-off following tender offers. Both hypotheses predict non-negative returns at the time of target sell-offs following the tender offers. We also examine which explanation of the mistake is more plausible, the overpayment explanation or the negative synergy explanation. There were two plausible explanations for the negative abnormal returns to the acquiring firms at the time of takeovers; one of them was the overpayment explanation which argues that the acquiring firms which overpaid over the target face the liquidity problems and therefore engage in sell-offs to overcome these problems. The other explanation is the negative synergy, i.e. the acquiring firms acquired the target which the market believes reduce the combined operating profits or/and prevent other assets from realizing their full potential. Both explanations of the mistake are consistent with the decline in the stock price of acquiring firms

Although it is difficult to distinguish these two, the relative importance can be examined by comparing the effect of *'the target sell-offs following the mistaken tender offers'* with that the effect of non-target sell-offs (*internally developed or five-year-before-acquired acquiring firm assets*) *following the mistaken tender offers*. The mistaken tender offer is defined to be the tender offer which is followed by the target sell-off. If the negative synergy explanation is important, the effect of sell-offs should be higher for the target sell-offs following the mistaken tender offers than for the non-target sell-offs following the mistaken tender offers because only the target sell-offs cure for the problem. If the overpayment explanation is important, the effect of sell-offs should not be very different between the target sell-offs and the non-target sell-offs because the liquidity problems can be overcome by either sell-offs.

We also investigate whether there is any difference in the market reaction between the target sell-offs following the mistaken tender offers and the non-target sell-offs following the no-mistaken tender offers. The no-mistaken tender offer is defined to be the tender offer which is not followed by target sell-offs. With this comparison, we can see the peculiar feature of the target sell-offs, if any.

2.1 Sample Selection

Our first task is to seek which explanation between the overpayment and the negative synergy is more appropriate for the mistake in the previous takeover. To do that, we have to concentrate just on the mistaken tender offers. Consistent with our earlier findings, we regard the tender offers as the mistaken tender offers if the target is sold. Otherwise, we regard the tender offers as the no-mistaken tender offers: 131 out of 266 tender offers are regarded as the mistaken tender offers, and the remaining 135 tender offers are regarded as the

no-mistaken tender offers. With this classification of tender offers, we classify the subsequent sell-offs as follows. If the firm in the mistaken tender offer sell the target, we call the sell-off as *the target sell-offs following the mistaken tender offers*. If the firms in the mistaken tender offers sell the non-target assets (internally developed or acquired assets more than 5 years before), we call the sell-off as *the non-target sell-offs following the mistaken tender offers*. Finally, we call the sell-off as *the non-target sell-off following the no-mistaken tender offers* if the firm in the no-mistaken tender offers sell non-target assets. By definition, the target sell-offs following the no-mistaken tender offers do not exist.

To obtain data for the non-target sell-offs following the mistaken and the no-mistaken tender offers, we examine the Wall Street Journal Index and articles from the Dow Jones News Text Search Services for 5 years after tender offers. We impose the following criteria for the sample; 1) the sale are voluntary, i.e., not ordered by government, 2) we exclude events which occur within 12 days of another event. This is to avoid the time series dependence problem when two or more events are adjacent to each others.²⁴⁾ Notice, however, a single firm in the sample may have more than one sell-offs. Finally, 3) if one firm made more than one tender offers within 5 years, then the later tender offers are excluded. This criteria is required to avoid confounding effects in the target sell-offs and the non-target sell-off following the mistaken tender offers. For example, suppose bidder A acquired target B on February 24, 1990 and also acquired target C on October 18, 1990. Suppose A sold B on September 15, 1991. Then the sale of B should be classified as the target sell-offs following the mistaken tender offers and also as the non-target sell-offs following both the mistaken and the no-mistaken tender offers. To avoid this confounding effect, we exclude B in the tender offers database. Finally, 4) events with missing returns on the CRSP tape

24) Refer to Brown and Warner(1980, 1985) for details.

around sell-offs are excluded. The final sample size for the each category is reported in the table 10.

Table 10 Frequencies of Sell-offs in Each Category

	All Tender Offers	Mistaken Tender Offers	No-Mistaken Tender Offers
Target Sell-offs	101	101	-
Non-Target Sell-offs	286	180	106
All Sell-offs	387	281	106

2.2 Methodology

To determine the market reaction to the sell-off announcement, we also use the market adjusted model which does not need to estimate parameters. We call the cumulative abnormal returns estimated by the market adjusted model as MCAR while the cumulative abnormal returns by the market model is called as CAR. Notice that the estimation period for sell-offs for the market model parameters sometimes coincides with the announcement period of takeovers since the sell off follows the takeovers. This may bias parameters of the market model for sell-offs following the tender offers because several papers have documented changes in variance around important events; for examples, Eades, Hess and Kim(1985) and Kalay and Lowenstein(1985) around dividend, and Patell and Wolfson(1979) around earning announcement.

Furthermore, since the market adjusted model does not need the estimation period, this model is very useful to detect of the wealth effect of subsequent

multiple events in a short time period like our multiple sell-offs. Refer to Brown and Warner for detail.

Unlike analysis of tender offers, we will use a shorter window, from one day before the announcement through one day after. Although the longer event windows provide greater chance of true event date being within the event window, they also provide greater chance of other events affecting the returns to firms.²⁵⁾ The shorter window measures more precisely the effects of multiple sell-off events within a short time period with less chance of confounding among multiple sell-offs.

2.3. Results

Table 11 present cumulative abnormal returns (MCAR and CAR) for the all sell-off sample and for the three subsamples: the target sell-offs following the mistaken tender offers, non-target sell-offs following both the mistaken tender offers and the no-mistaken tender offers. The MCAR for the target sell-offs following the mistaken tender offers is significantly positive with a mean of 1.21% and t-statistic of 2.24. This means that the acquiring (selling) firms on average gain when they sell the acquired asset (target), which is consistent with both the mistake hypothesis and the synergy hypothesis.

²⁵⁾ Refer to Ball and Torous(1988) and Nimalendran(1989) for a measuring price changes in the presence of event date uncertainty.

Table 11 Cumulative Abnormal Returns to Selling Firms at the Time of Sell-offs

I. Average Cumulative Abnormal Returns

	ALL Tender Offers (N=387)	Mistaken Tender Offers			No-Mistaken Tender Offers (N=106)
		All (N=281)	Target Sell-offs (N=101)	Non-target Sell-offs (N=180)	
MCAR	0.0044 (1.95) ³	0.0056 (1.98) ²	0.0121 (2.24) ²	0.0020 (0.61)	0.0011 (0.34)
CAR	0.0051 (2.27) ²	0.0064 (2.27) ²	0.0132 (2.48) ²	0.0026 (0.81)	0.0017 (0.50)

II. Mean Difference Test

	t-statistics	p-value
A. Target Sell-offs vs Non-Target Sell-offs following the Mistaken Tender Offers		
MCAR	1.72	0.0857
CAR	1.81	0.0715
B. Non-target Sell-offs following the Mistaken Tender offers vs Non-target Sell-offs following the No-mistaken Tender Offers		
MCAR	0.17	0.8620
CAR	0.19	0.8467
C. All Sell-offs following the Mistaken Tender offers vs Non-target Sell-offs following the No-mistaken Tender Offers		
MCAR	2.05	0.0409
CAR	2.15	0.0319

CAR is the cumulative abnormal returns estimated by the market model and MCAR is the cumulative abnormal return estimated by the market adjusted model. Numbers in the parentheses in panel I are t-statistics. The 1 is for a 1% level of significance, 2 for a 5%, and 3 for a 10%.

When the MCARs in the mistaken tender offers are compared whether the asset sold is target or non-target, there is a significant difference in the magnitude of the MCARs between the target sell-offs and the non-target sell-offs. The average MCARs is significantly higher for the target sell-offs than for the non-target sell-offs. This means that the market react more favorably to the target sell-offs following the mistaken tender offers than the non-target sell-offs following the mistaken tender offers. This result indicates that the negative synergy explanation is more appropriate for the mistake at the time of tender offers than the overpayment explanation

The table also show that the effect of the non-target sell-offs does not depend on whether the prior tender offers is the mistaken tender offers or the no-mistaken tender offers. The MCAR for the non-target sell-offs following the mistaken tender offers is not statistically different from that for the non-target sell-offs following the no-mistaken tender offers. On the other hand, the MCAR for the target sell-offs following the mistaken tender offers is significantly higher than that for the non-target sell-offs following the no-mistaken tender offers. Therefore, the market reacts differently and more favorably to the target sell-offs than to the non-target sell-offs. These results could be another evidence for the negative synergy explanation for the mistake

3. Aggregate Wealth Effect of Tender Offer and Subsequent Sell-Off

In this section, we estimate the aggregated wealth changes from tender offers through subsequent target sell-offs. The mistake hypothesis and the positive synergy hypothesis have opposite predictions on the aggregated wealth changes: The mistake hypothesis predicts negative abnormal returns, while the positive synergy hypothesis predicts non-negative abnormal return to shareholders of

acquiring firms engaging in process of takeover and subsequent target sell-offs.

3.1 Methodology

To estimate the aggregate wealth changes of the process of takeovers and subsequent target sell-off, we estimate the cumulative abnormal returns from the announcement of takeovers through the announcement of subsequent target sell-offs. This method is the same as that used for the wealth effect of tender offer except the event window. The event window is five day before the first bid of the acquiring firms for the target firm through five day after the first target sell-off following the tender offers. We use just the first target sell-off when the acquiring firms sell the target assets more than one time to avoid the double counting of the effect. The longer the event window the lower is the power of the test and the greater the chance of other unrelated events affecting the returns to firm. On the other hand, the longer the event window the greater the chances of the true events days being within the event window and the greater the chance of capturing whole effect of the process. Since the cumulation period is so long, there is great chance that other unrelated events affect the returns to firm although it help capture maximum effect of the process. This measure, however, may not be correct but also path dependent. For example, suppose that on day zero, the stock close at \$1, followed by \$2 on day two and \$1 on day two. The two one-day raw returns are 100% and -50% and they sum to 50%. But it is clear that two-day return is zero. To avoid this path dependent problem, we use an alternative event study methodology to compute the aggregate abnormal returns as following

$$AHCAR_{i(t1,t2)} = \left\{ \prod_{t=1}^{t2} (1+R_{i,t}) - 1 \right\} - \left\{ \hat{\alpha}_i + \hat{\beta}_i \left[\prod_{t=1}^{t2} (1+R_{m,t}) - 1 \right] \right\}$$

This measure computes the holding period returns for security and the market portfolio and then calculate a single abnormal return for the entire event period. Therefore, this method is path independent unlike the standard event methodology. While the standard event study methodology accentuate the upward bias due to the measurement error in daily return from bid-ask spread since it accumulated daily abnormal return, this alternative methodology also adjusts the upward bias.²⁶⁾

This alternative methodology has two drawbacks, however. First since the returns are being compounded, we do not know the exact statistical properties so that we can not test it. Second, heteroskedasticity due to different event period is still existed. Since each methodology has advantages but drawbacks, we are going to estimate aggregate wealth changes by both methodology and conduct the tests.

To estimate the aggregate wealth effect of the tender offers through subsequent sell-offs, we use 131 tender offers which sold the target assets within 5 years from the tender offers.

3.2. Results

Table 13 presents aggregated cumulative abnormal returns estimated by both methodologies. The AHCAR is about -17.2% and significantly different from zero. This means that shareholders whose firms took a target and then sell it experience loss from the process, which is consistent with the mistake hypothesis.

²⁶⁾ Refer to Vijay(1991) for detail.

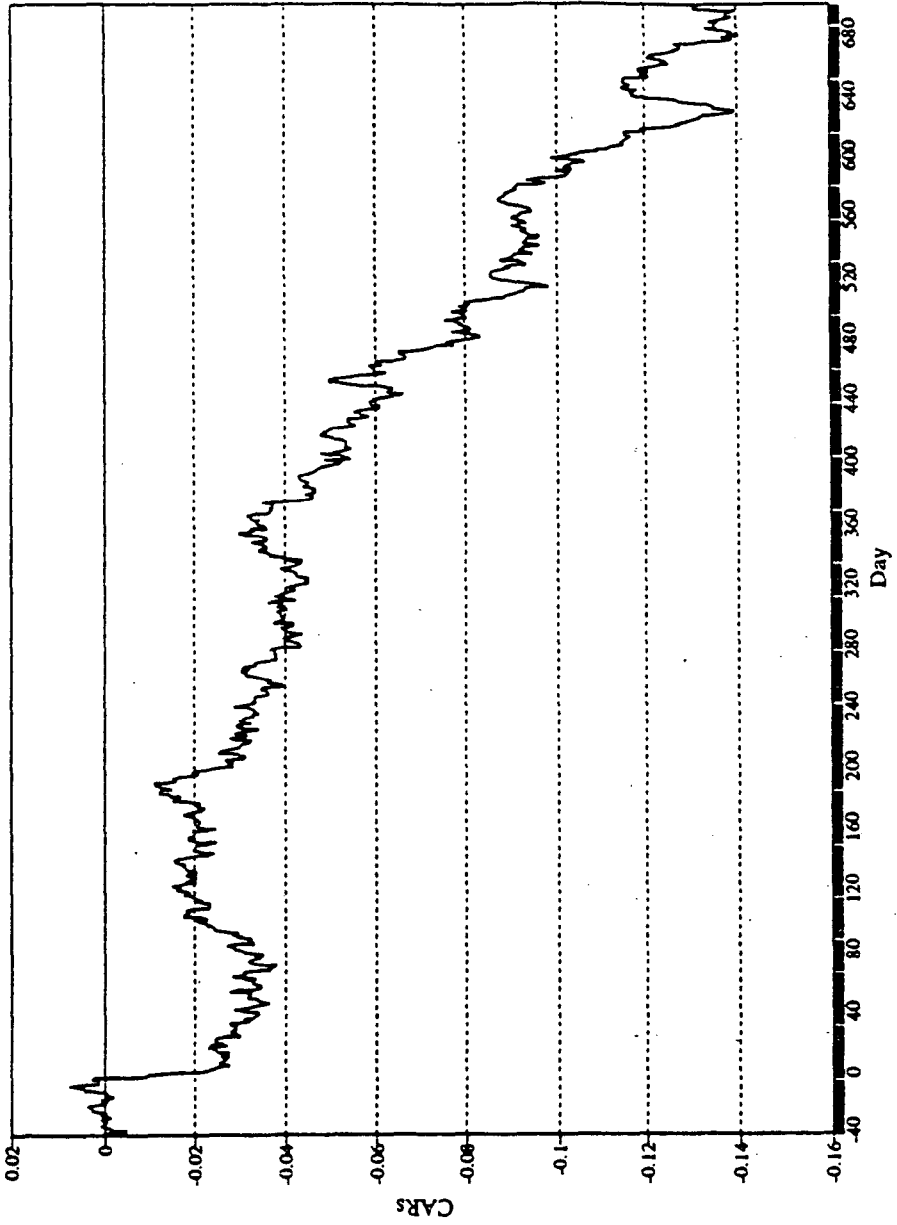
Table 13 Aggregate Wealth Changes from the Tender offers through the subsequent Target Sell-Offs

	CAR	t-statistics
ACAR	-0.0701	-1.67 ³
AHCAR	-0.1720	-1.98 ²

ACAR is the cumulative abnormal returns estimated by the market model and AHCAR is the holding period abnormal return. The 1 is for 1% level of significance, 2 for a 5%, and 3 for a 10%.

To see the market reaction from tender offers to sell-offs, the cumulative abnormal returns are plotted in Figure 2. Since the period from the tender offers to the target sell-offs varies across firms, the cumulative abnormal returns are plotted up to 700 trading days after the tender offers. Notice that the number of firms in the figure decline as time increase because the aggregated cumulative abnormal returns are reported only up to five days after the sell-offs, and that the data is missing after 1989 since the CRSP provides returns up to 1989. Under these limitations, we can see the drop of aggregated cumulative abnormal returns from the tender offers. This drop may be because the negative synergies are realized and/or because the liquidity problems as a result of overpayment. It is clear that the drop of stock prices is consistent with the mistake hypothesis.

Figure 3
Aggregate Cumulative Abnormal Returns



V. CONCLUSION

This paper empirically examined the rationale for target sell-offs which follow takeovers. The mistake hypothesis and the positive synergy hypothesis were suggested for the rationale. The hypotheses had different testable implications on i) abnormal returns to bidding firm, target firm, and combined firm for takeover announcement, and ii) aggregate wealth changes due to takeovers and target sell-offs. The hypotheses also predicted different relation between the market reaction to a takeover and subsequent target sell-off decision.

Based on those hypotheses, tests were conducted to differentiate the mistake hypothesis from the positive synergy hypothesis by using the tender offer data from 1958 to 1986. The evidence reported in the thesis are generally consistent with the mistake hypothesis, which states that units acquired by mistakes in the past are sold off. Shareholders of acquiring firms which subsequently sell acquired assets experienced significantly negative abnormal returns and further lower abnormal returns at the time of takeovers than those which do not sell. The takeovers which were followed by target sell offs generate higher abnormal returns for target shareholders than the takeovers which were not followed by target sell-offs, while the combined returns are lower for the takeovers which were followed by target sell-offs. These results did not change even when we analyzed after controlling effects of the mode of payment, competition among acquirers occurrence year of the takeovers, and relatedness between targets business and acquirers business.

We also compared the target sell-off ratios in the firms with the best performance with those with the worst performance at the time of takeovers to examine that acquiring firms performed poorly at the time of takeovers are more likely to sell the acquired assets. The results are consistent with the hypothesis

which the worst performed takeovers tend to sell the acquired assets.

The relation between the subsequent target sell-offs and the announcement returns are estimated after controlling the effect of mode of payment, competition, occurrence years, relative size of target to acquirer, and relatedness. There were strong negative relation between target sell-offs and acquiring firm returns as well as combined returns, and positive relation between target sell-offs and target firm returns, which are consistent with the mistake hypothesis.

We also investigated the wealth effect of target sell-offs following takeovers. On average, the selling firms earn significant returns around the sell-offs, which is consistent with both the mistake and the positive synergy hypothesis.

To examine whether the stock price drop at the time of takeovers are due to anticipation of overpayments or negative synergies, we compare the announcement returns to the target sell-offs with those to the non-target sell-offs following the mistaken takeovers. We define takeovers as the mistaken takeovers if the acquired assets are sold later. We find that the market reacts more favorably to the target sell-offs than the non-target sell-offs. This is more consistent with the negative synergy explanation for the mistake because: If target sell-offs are due to the overpayment, the market reaction should not be different between them because the liquidity problem from the overpayments can be solved by either sell-offs. On the other hand, if the target sell-offs are due to the negative synergies, the market reaction should be different because only the target sell-off can be cured the problem.

Finally, we estimate the aggregate wealth changes due to the entire process of takeovers through target sell-offs. The results show that the aggregate wealth effect is significantly negative. This implies that the loss from the mistaken takeovers cannot be fully recovered by the sale of the acquired assets. Furthermore, the stock price drop from the takeovers to the target sell-offs. This

drop was in the context of the mistake hypothesis; the market continue to react negatively until target gell-offs because of the realization of negative synergies and/or because of the loss from liquidity problems.

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