
The returns to bidding firms in corporate takeovers: splitting up the pie

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Abstract: In this paper, we examined the impact of ownership concentration in target firms on the returns to shareholders of bidding firms. In this research, we found that shareholders of bidding earn statistically significant positive abnormal returns surrounding takeover announcements. In addition, we found bidder returns of 4% over the event-window [-20, +20]. We showed that the degree of ownership concentration in target firms – measured by the Herfindahl-concentration index – significantly and positively affects the returns to bidding firms. These findings are consistent with the predictions of Grossman and Hart (1980), Bagnoli and Lipman (1988) and Holmström and Nalebuff (1992) takeover models.

Keywords: takeovers; free-rider problem; corporate control; ownership structure; large shareholders; event study.

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1 Introduction

In the literature, theoretical takeover models have demonstrated that the wealth to shareholders of bidding firms is at its minimum when ownership is atomistic (widely held). Grossman and Hart (1980) proved that, being successful in a takeover, bidding firms have to pay out all their post-takeover value-enhancing improvements to the shareholders of target firms with widely held shareholdings. Shareholders of target firms believe that they have no influence on the share price and will behave as free-riders. They are keen to free-ride in order to capture the post-takeover value-enhancements realised by bidding firms. Grossman and Hart (1980) argued that target shareholders believe that the decision of any individual target shareholder does not affect the success of a tender offer outcome. No target shareholder will accept any conditional bid below the post-takeover value of the target company. As a result, bidding firms will be successful when they pay out all the post-takeover benefits. In such a case, the returns to bidding firms at a minimum.

Bagnoli and Lipman (1988), as well as Holmström and Nalebuff (1992), analysed takeover models with a finite number of shareholders in which bidders can overcome the free-rider problem by making some shareholders crucial (pivotal). In that case, the pivotal shareholder can affect the outcome of the takeover. This concept makes it possible for bidders to lower their bid premium and gain from takeovers. Shleifer and Vishny (1986), and Hirshleifer and Titman (1990) solved the free-rider problem by introducing a large shareholder (bidder with toehold) who is willing to take over a target firm even if he/she can realise small post-takeover value-enhancing improvements. As a result, the higher the toeholds of the bidder, the lower the minimum level of value-increasing improvements and the lower the takeover bid premium.

In the case of a single shareholder model, the bidding firm has to bargain with the controlling shareholder of the target firm. Corporate sell-offs are good examples of the single shareholder model in which the parent firm is the controlling shareholder of the subsidiary (target firm).

This paper provides new findings to the takeover literature related to the impact of ownership structure of target firms on takeover premiums paid by bidding firms. Our results provide empirical evidence that the higher ownership composition is concentrated in target firms, the higher the cumulative abnormal returns to shareholders of bidding firms. This is consistent with Grossman and Hart (1980), Shleifer and Vishny (1986), Hirshleifer and Titman (1990), Bagnoli and Lipman (1988), as well as Holmström and Nalebuff (1992) who support a negative relationship between bid premium and ownership concentration of target firms.

The paper is organised as follows: in Section 2, we provide background information and develop our main hypothesis; in Section 3, we describe our sample and research methodology; in Section 4, we present our results; Section 5 discusses the implications of our results and finally we present our conclusions.

2 Ownership concentration

In this study, we distinguish between three categories of ownership structure: atomistic, pivotal and large shareholders. Atomistic target shareholders are price-takers, whereas

pivotal and large shareholders can act strategically. The main issue is the influence of ownership concentration on the takeover bid premium.

In the atomistic shareholder case, Grossman and Hart (1980) demonstrate that, without dilution, the free-rider problem completely excludes bidders from capturing any of the post-takeover value increases. They argue that atomistic shareholders have the ability to free ride on a bidder's attempt to improve the value of the target. The decision of any individual target shareholder does not affect the success of a tender offer outcome. No shareholder will accept any conditional bid below the post-takeover value of the target company. The target shareholders will refuse to tender until the bidder is prepared to pay out all post-takeover gains. Not tendering is a dominant strategy when the bid is conditional. As a result, raiders will be successful when they pay out all the post-takeover benefits. In this case, the takeover premium will be at a maximum level. In that case, takeovers are not profitable. In order to solve this problem, Grossman and Hart (1980) suggest that bidders should prevent target shareholders from capturing post-takeover value-increasing opportunities. In case of widely held shareholdings, we predict the lowest returns to the shareholders of bidding firms.

As for pivotal shareholders, Holmström and Nalebuff (1992) argue that the free-rider problem depends on the assumption of equal and indivisible shareholdings. There is no possibility to split up the surplus, because each shareholder has only one share (one-share-per-shareholder model). As a consequence, tendering is an all-or-nothing decision. Target shareholders are atomistic and behave as price-takers. Bagnoli and Lipman (1988) show that when there is a finite number of shareholders, some of them must be pivotal (in the sense that they do recognise that they may influence on the takeover outcome). Once a shareholder is pivotal, he will tender his shares at a small takeover bid premium (otherwise, the takeover may fail). The main consequences of increased ownership concentration are that if shareholders become pivotal and recognise that they can influence the takeover outcome, they will accept a low takeover bid premium. Holmström and Nalebuff (1992) demonstrate that once shareholdings are large and potentially unequal, a bidder may capture a part of the post-takeover value improvements.

In the large shareholder case (Shleifer-Vishny model), a large shareholder is willing to take over a target firm even if he can realise small post-takeover value-enhancing improvements. As a consequence, the higher the toeholds of the bidder, the lower the minimum level of value-increasing improvements and the lower the takeover bid premium. Shleifer and Vishny (1986) argue that large shareholders are valuable for firms because they will monitor the management of the firm. They demonstrate that the value of the firm increases when there is a large shareholder who forces incumbent management to implement value-increasing changes in corporate strategies. As a consequence of these improvements, potential bidders are not willing to offer a high premium above the prevailing stock price, because the likelihood of post-takeover value-enhancing improvements shrinks. They point out that the takeover bid premium above the prevailing stock price is lower if there is a large shareholder. If the large shareholder owns more shares, then he is willing to take over the firm for a smaller increase in the post-takeover profits of the target firm. In addition, Hirshleifer and Titman (1990) show that the average bid premium declines if initial shareholdings of the bidder increase. A higher toehold of the bidder makes it more profitable for lower-type bidders to make an offer; hence, the average bid declines. Large shareholders can intensively monitor target management. As a result of effective monitoring, firms are valued higher,

and potential bidders will offer a lower takeover premium (because of the limited value-increasing post-takeover opportunities). Large outside shareholders use intensive monitoring to discourage incumbent management from shirking. In very diffusely owned firms, the monitoring costs that each individual shareholder would have to bear to prevent management from consuming externalities, such as perquisites through management, is relatively high. The divergence between benefits and costs of monitoring is more favourable for large shareholders than for small shareholders (Demsetz and Lehn, 1985). In another research, Stulz (1988) and Stulz et al. (1990) demonstrate that large shareholdings of bidders imply that bidders need a small fraction of the remaining group of atomistic shareholders. The bidder pays a small takeover premium only if he is in the elastic part of the supply curve. The elastic part of the supply curve is the horizontal part of the curve. A small bid premium over the prevailing market price will be enough to acquire a large number of target shares. The result is consistent with the hypothesis of Shleifer and Vishny (1986) and Hirshleifer and Titman (1990). On the other hand, Stulz (1988) shows that if management opposes takeover bids and their holdings are large, then the bidder has to convince a larger fraction of the remaining group of atomistic shareholders. With an upward sloping supply curve, the bidder has to pay out a higher premium, one above the prevailing stock price. Burkhart (1995), Liebler (1997) and Singh (1998) have come up with alternative approaches. They suggest a positive relation between ownership concentration and the takeover bid premium. Liebler argues that the larger the toehold of the bidder, the higher the probability of takeover success. The opportunity for target shareholders to free ride increases. Therefore, the bidder will pay a larger takeover bid premium. Burkhart (1995) and Singh (1998) argue that the bidder will overbid in order to extract a counter offer from another bidder. When the large shareholder loses the takeover contest, he will gain on his initial shareholdings because he can sell these shares at a high price to the winning bidder. Chowdhry and Jegadeesh (1994) argue that the opportunity cost of an unsuccessful offer is larger for a high valuation bidder. As a consequence, a high valuation bidder has no incentive to mimic a low valuation bidder with a small toehold. The size of the toehold is used to signal the post-takeover value of the target. The French study of Eckbo and Langohr (1989) and the UK study of Franks and Harris (1989) found a negative relation between toeholds and the returns to bidding firms. Stulz et al. (1990) argue that large toeholds entail that fewer shares need to be tendered for a successful tender offer. Therefore, the larger the toehold of the bidder, the lower the bid premium offered to target shareholders. The US studies of Walking and Edmister (1985), Robinson and Shane (1990), Stulz et al. (1990) and Billet and Ryngaert (1997), as well as the Australian study of Bugeja and Walter (1995) and the UK study of Sudarsanam et al. (1996) found a positive relation between toeholds and the returns to bidding firms.

Hypothesis The cumulative abnormal returns to shareholders of bidding firms increase with the degree of concentration in the ownership structure of the target company.

Slusky and Caves (1991), Sudarsanam et al. (1996) and Högfeldt and Högholm (2000) found empirical evidence that is consistent with hypothesis. Slusky and Caves (1991) suggest that large shareholders increase the value of the firm through extensive monitoring of incumbent management. As a consequence, the takeover bid premium decreases with the fraction of outside shareholdings. They found statistically significant

evidence for a negative relation between the takeover bid premium and the concentration of external shareholdings. Sudarsanam et al. (1996) found that the bid premium is small for target firms with large shareholders. Högfeldt and Högholm (2000) argue that large shareholders of target firms hold the bargaining power in takeover negotiations. If this bargaining power is severe, they can enforce a higher takeover bid premium. However, they did not find support for their hypothesis. More than that, they found a negative relation between large shareholdings and the returns to target shareholders, which implies that a large shareholder, who is pivotal, cannot capture all the post-takeover value-enhancing improvements.

3 Sample and research methodology

The study is based on a total sample 6,417 M&A transactions in the Netherlands over the period 1987–1996. We excluded 3,751 acquisitions from the total sample because other extraordinary events occurred within the event window, such as: earnings announcements, profit warnings, change of management, other corporate restructurings, insolvencies, etc. Furthermore, we excluded private deals (not listed on the Amsterdam Stock Exchange (AEX)) and deals without sufficient data. The final sample consists 159 of mergers and acquisitions with their corresponding target firm that occurred over the period 1987–1996 on the AEX. For each bidding firm, we collected financial data from *Datastream*, *Het Financieele Dagblad* (*Dutch Financial Times*). For each selected takeover, we collected ownership data of the target firm that was involved from the Authorities' Financial Markets (AFM) filings.

To be included in the final sample, the following criteria need to be satisfied:

- 1 acquisitions must be announced in *Het Financieele Dagblad* (*Dutch Financial Times*)
- 2 bidding firms must be listed on the AEX and sufficiently daily share price data must be available
- 3 ownership structure of the target firm has to be available
- 4 if a sell-off is acquired, the minimum size of the divestiture must be at least 5% of the sales of the bidding firm or parent company of the subsidiary
- 5 no other extraordinary events may appear within the event window
- 6 bidding firm purchases at least 5% of the target shares
- 7 acquisitions between financial and non-financial firms are excluded
- 8 acquisitions must be qualified as successful in the newspaper during the event window.

Table 1 Summary statistics of bidding firms classified by takeover type

<i>Variables</i>	<i>Tender offer</i>	<i>Merger</i>	<i>Open-market purchase</i>	<i>Block trading</i>	<i>Privately held targets</i>	<i>Sell-off</i>	<i>Totals</i>
Control bidding firm							
Takehold in target firm (%)	3.32 ^a	6.90 ^a	27.75 ^b	20.93 ^b	4.39 ^c	3.31	6.36
Shares acquired in target firm (%)	86.76	80.49	15.21	37.62	82.09	90.14	79.42
Financial ratios bidding firm							
Market-to-book value	2.80	1.74	1.64	2.29 ^c	2.25	2.20	2.22
Return on assets	9.35	9.14	7.43	7.18	10.48	9.19	9.31
Return on equity	32.44	25.34	23.07	36.55 ^c	27.31	29.54	29.03
Leverage	64.84	61.50	64.96	55.81	58.34	63.18	61.68
Market value (millions)	5,378	1,387	1,527 ^b	932	1,467 ^b	1,097	1,879
Relative size	0.56	0.60	0.66 ^b	0.48	0.24	0.29	0.39
Market for corporate control							
Foreign target	29.2	15	12.5	40	36.8	49.2	36.5
Competition between bidders	33.3	5	–	10	7.9	5.1	10.1
Ownership structure target firm							
Largest shareholder (H ₁) (%)	32.55	55.52	24.79	37.47	89.16	95.68	72.31
Largest three shareholders (H ₃) (%)	41.35	75.76	30.99	49.89	94.04	96.53	78.76
Largest five shareholders (H ₅) (%)	41.93	76.51	30.99	52.45	94.04	96.53	79.10
Institutional shareholdings (%)	15.93	14.68	10.62	20.29	7.18 ^c	0	7.78
Management shareholdings (%)	32.55 ^b	5.0 ^a	0 ^a	6.37 ^a	57.16	1.69 ^a	16.59
Ownership concentration	2.65	3.49	3.04	3.44	3.95	3.99	3.63
Number of observations	24	20	8	10	38	59	159

Notes: *Means are significant at the 1% level (two-tailed test), with the exception of the means marked with a (= not significant), b (= significant at the 5% level); c (= significant at the 10% level); two-tailed tested.

Table 1 contains 159 mergers and acquisitions (= total sample) of Dutch listed bidding firms. The variables in this table are all means. H_1 , H_3 and H_5 represent the total percentages owned by the largest (H_1), the largest three (H_3), and the largest five (H_5) inside and outside block holders. Institutional shareholdings are the total stake owned by banks, insurance companies, pension funds, venture capitalists and investment companies. Managerial shareholdings are the total stake owned by the managerial board and the supervisory board of the target firm. Ownership concentration is represented by the logarithmic HH index of ownership, which is calculated by summing the squared percentage of shares possessed by the inside and outside block holders. Toehold of the bidder is the percentage owned by the bidder prior to the acquisition. The percentage of shares acquired is the percentage purchased by the bidder, excluding initial shareholdings. Market-to-book (MTB) value is the market value over the common equity of the bidder, where market value is obtained by multiplying the number of outstanding shares of bidder by its closing market price on the 21st day before the first announcement. Return on assets (ROAs) is equal to earnings before interest and taxes divided by the book value of total assets of the bidder. Return over equity is defined as earnings before interest and taxes divided by the common equity of the bidder. Leverage is the book value of total debt over the book value of total assets of the bidder. The market value is expressed in millions of guilders. Relative size is defined as total sales of the target company over the total sales of the bidder. Foreign target is defined as the percentage of the total number of acquisitions with a foreign target firm. Competition is the percentage of the total number of acquisitions with multiple bidders. All accounting data are obtained from the last annual report prior to the announcement of the acquisition.

The results in Table 1 show the descriptive statistics of our sample of bidding firms. We observed a relatively high degree of ownership concentration for target firms, which stems from the large proportion of foreign acquisitions of privately held targets and sell-offs. Bidding firms have a large toehold in open-market stock purchases (27.75%) and in block trades (20.93%), and they purchase a relatively small percentage of shares in open-market stock purchases (15.21%) and block trades (37.62%). In the US, Betton et al. (2008) found actual toeholds of 20% in hostile takeovers. The MTB ratio (2.80) and the ROAs (9.35%) are relatively large for bidding firms in tender offers. Finally, the market value (MV) of Dutch bidding firms in tender offers is on average 5.378 million. This result for tender offers is consistent with that of De Jong (1999). He finds an average market value of 4.558 million for all listed firms during 1992–1996.

Table 2 presents the Spearman correlation coefficients of the independent variables from the sample of 159 bidding firms (= total sample) involved in successful corporate acquisitions. The Spearman correlation coefficient is used as a nonparametric measure of correlation between the independent variables. For all of the cases, the values of each of the variables are ranked from the smallest to the largest and the Spearman correlation coefficient is computed on the ranks. TOE = percentage of target shares held by the bidding firm prior to the acquisition; ACQ = percentage of target shares acquired; COM = dummy variable that equals one if there are multiple bidders; FOR = dummy variable that equals one if the target is a foreign company; MV = log of market value of the bidding company; LEV = debt to the total assets of the bidding firm; MTB = market value to book value of the bidding firm; ROA = earnings before interest and taxes, divided by total assets of bidding firms; ROE = earnings before interest and taxes, divided by book value of equity; SIZE = log of the relative size (target to bidding firm), where size is defined as total sales (for financial institutions size is defined as total

assets). In Table 2, we present the correlation coefficients of the sample. The correlation coefficients are relatively low, except for the correlation coefficients of return on equity (ROE), ROA and the MTB ratio. As we expected, ROE and ROA have a highly positive correlation. This also applies for ROE and MTB. The percentage of shares acquired (ACQ) and the toehold (TOE) are negatively correlated. If the initial shareholdings (TOE) of bidding firms increase, then fewer target shares are needed, as expected.

Table 2 Spearman correlation coefficients of independent variables of bidding firms

Variable	1	2	3	4	5	6	7	8	9	10
1 TOE	X									
2 ACQ	-0.59**	X								
3 COM	-0.10	-0.05	X							
4 FOR	-0.17*	0.14	0.14	X						
5 MAV	0.16*	-0.26**	0.24**	0.26**	X					
6 LEV	-0.04	0.06	-0.02	0.00	0.15	X				
7 MTB	-0.06	0.03	0.09	0.32**	0.19*	0.23**	X			
8 ROA	-0.11	0.05	0.13	0.17*	0.04	-0.25**	0.58**	X		
9 ROE	-0.12	0.04	0.15	0.16*	0.08	0.25**	0.70**	0.77**	X	
10 SIZE	0.11	-0.07	0.04	-0.06	-0.14	-0.05	-0.13	-0.11	-0.14	X

Notes: **, * indicates that the correlation is significant at the 1% and 5% levels, respectively (two-tailed test).

4 Empirical results

Table 3 presents abnormal returns based on the market model for bidding firms under different event windows. The cumulative average abnormal return over the total event window $[-20, 20]$ is positive and statistically significant. Note that in all three sub-samples the percentage of positive abnormal returns exceeds 60%.

Table 3 Abnormal returns bidding firms under different event horizons

<i>Event horizons: CAAR</i>	$[-20, 20]$	$[-20, -1]$	$[1, 20]$	$[-1, 0, 1]$	$[-5, 5]$
CAAR	3.13	1.42	1.08	0.75	1.75
<i>t</i> -test	(3.82)***	(2.63)***	(1.85)**	(2.06)**	(3.69)***
Positive (%)	61.0	62.3	59.7	55.3	67.3

Table 3 reports the cumulative average abnormal returns (CAAR) for bidding firms during different event windows based on market model returns.

Table 4 Abnormal returns to bidding firms and target firms for different event horizons and types of acquisitions

<i>CAAR bidding firms</i>	$[-20, 20]$	$[-5, 5]$	$[-1, 0, 1]$	$[-20, -1]$	$[1, 20]$
Tender offers ($N = 24$)	1.22 (0.48)	-0.26 (-0.17)	-2.04 (-1.56)*	0.75 (0.56)	2.15 (1.44)*
Mergers ($N = 20$)	2.39 (1.39)*	1.61 (1.11)	1.43 (1.45)*	1.43 (1.33)*	0.35 (0.29)
Block trading ($N = 10$)	9.29 (2.53)**	5.79 (3.61)**	2.13 (1.59)*	3.90 (2.02)**	5.08 (2.19)**
Open-market transactions ($N = 8$)	0.75 (0.25)	0.71 (0.62)	0.78 (1.10)	2.20 (1.70)*	-2.27 (-0.91)
Sell-offs ($N = 59$)	4.09 (3.05)***	1.12 (1.51)*	0.95 (1.54)*	1.28 (1.22)	1.90 (1.67)**
Privately held targets ($N = 38$)	2.11 (1.32)*	3.22 (3.82)**	1.47 (3.30)**	1.26 (1.14)	-0.83 (-0.97)
Total sample ($N = 159$)	3.13 (3.82)***	1.75 (3.69)***	0.75 (2.06)**	1.42 (2.63)***	1.08 (1.85)*

Notes: *t*-statistics are in parentheses.

Table 4 contains the average abnormal returns AAR for different time horizons and types of acquisitions. The average abnormal returns are based on the market model.

- *Tender offers* are defined as offers made directly to the shareholders of a target firm.
- In a *merger*, the target firm is absorbed by the bidding firm and often ceases to exist. Both management teams (from the bidding and target firms) negotiate the buyout proposals and the provisions and/or positions that management will receive. The merger proposals are submitted for approval to the shareholders of both firms. In contrast with tender offers, there is normally no takeover premium in a merger.

- *Block tradings* are transactions between a bidding firm and the holder of a significant percentage of target shares.
- *Open-market transactions* involve purchases of shares on the stock exchange. Instead of making a public offering to all target shareholders, bidding firms buy target stocks on the open market at the going price, just as any other investor might buy shares.
- *Sell-offs* involve the sale of a segment of a divesting firm to a third party. Assets, divisions, product lines and subsidiaries owned by the (parent) company are sold to a bidder in exchange for cash or securities.
- *Privately held targets* are firms without publicly traded shares. Privately held firms are typically owned by a family or controlled by managers or owned by venture capitalists.

The results in Table 4 show that the returns to shareholders of bidding firms in tender offers are slightly positive (i.e., not significant). Meanwhile, this is consistent with previous empirical research.

We tested our hypotheses by using a regression model on the cumulative abnormal returns to shareholders of bidding firms. The cumulative abnormal returns are measured by the market model over an event period of –20 to 20 days surrounding a successful acquisition announcement. In this analysis, the returns to bidding firms are regressed against various measures of ownership and other control variables; the returns to shareholders of bidding firms are also regressed against financial and market variables.

Table 5 Regression estimates of the cumulative abnormal returns to bidders

<i>Independent variables</i>	<i>OLS 1</i>	<i>OLS 2</i>	<i>OLS 3</i>	<i>OLS 4</i>
Intercept	–11.125 (–1.93)**	–10.695 (–2.35)***	–8.514 (–1.51)*	3.578 (1.22)
Control variables bidding firms				
Toehold (TOE)	–	–	–0.013 (–0.23)	–
Shares acquired (ACQ)	–	0.043 (1.63)*	0.038 (1.19)	–
Total shares acquired (TOE + ACQ)	0.038 (1.21)	–	–	0.048 (1.55)*

Notes: ***, **, * indicates significance at the 1%, 5% and 10% levels, respectively (one-tailed test)

^a indicates a dummy variable for dispersed ownership; variable is equal to one if dispersed ownership occurs in the target firm, which means that there are no shareholders who have more than 10% ownership. A shareholder with 5% or less ownership is not considered to be a large shareholder.

Table 5 Regression estimates of the cumulative abnormal returns to bidders (continued)

<i>Independent variables</i>	<i>OLS 1</i>	<i>OLS 2</i>	<i>OLS 3</i>	<i>OLS 4</i>
Financial variables bidding firms				
MTB value	-6.033 (-2.12)**	-5.612 (2.03)**	-5.870 (-2.05)**	-5.829 (-2.11)**
Leverage (LEV)	0.003 (0.06)	-	0.006 (0.11)	-
Size (SIZE)	3.060 (2.18)**	3.127 (2.25)**	3.186 (2.25)**	2.992 (2.15)**
Market for corporate control				
Foreign acquisition (FOR)	-3.350 (-1.85)**	-3.671 (-2.03)**	-3.275 (-1.77)**	-2.733 (-1.532)*
Competition (COM)	5.303 (1.93)**	5.019 (1.85)**	4.199 (1.52)*	3.671 (1.37)*
Ownership variables target firms				
Concentration ownership (OWN)	4.103 (3.43)***	4.032 (3.40)***	3.479 (2.96)***	-11.048 ^a (-3.16)***
Management shareholdings (MAN)	-0.030 (-1.24)	-0.032 (-1.34)*	-	-
Institutional shareholdings (INS)	0.075 (1.77)**	0.074 (1.76)**	-	-
Outside block holdings (OUT)	-0.007 (-0.21)	-0.004 (-0.12)	-	-
Number of observations	156	156	156	156
R ²	16.24%	16.9%	13.88%	13.7%
F-statistics	2.81***	3.30***	2.96***	3.94***
White-test (F-statistics)	0.35	0.38	0.47	0.22

Notes: ***, **, * indicates significance at the 1%, 5% and 10% levels, respectively (one-tailed test)

^a indicates a dummy variable for dispersed ownership; variable is equal to one if dispersed ownership occurs in the target firm, which means that there are no shareholders who have more than 10% ownership. A shareholder with 5% or less ownership is not considered to be a large shareholder.

OLS-regression:

$$\begin{aligned}
 \text{CARA}_{j,[t-n,t+n]} = & \alpha_0 + \alpha_1 \text{OWN}_j + \alpha_2 \text{MAN}_j + \alpha_3 \text{INS}_j + \alpha_4 \text{OUT}_j \\
 & + \alpha_5 \text{TOE}_j + \alpha_6 \text{ACQ}_j + \alpha_7 \text{MTB}_j + \alpha_8 \text{LEV}_j + \alpha_9 \text{SIZE}_j \\
 & + \alpha_{10} \text{FOR}_j + \alpha_{11} \text{COM}_j + u_j,
 \end{aligned}$$

where

$CARA_{j,[t-n,t+n]}$	cumulative abnormal returns to bidding firms over the $t - n$ to $t + n$ event window for firm j
OWN_j	ownership concentration of the target firm is measured by a HH-index (Herfindahl-Hirsch index of shareholdings)
MAN_j	total percentage of target shares held by management
INS_j	total percentage of target shares held by banks, insurance companies, pension funds, investment companies and venture capitalists
OUT_j	total percentage of block holdings owned by large outside target shareholders (other than management and institutional shareholders) who own more than 5% of all outstanding shares
TOE_j	percentage of shares held by the bidding firm prior to the announcement of the takeover
ACQ_j	shares purchased by the bidding firm, exclusive of its initial shareholdings
MTB_j	market value (the number of shares times the stock market price 21 days before the announcement day) divided by the book value of equity reported at the end of the year prior to the takeover
LEV_j	total debt divided by the book value of total assets reported at the end of the year prior to the takeover
$SIZE_j$	total sales of the target firm divided by the total sales of the bidding firm reported at the end of the year prior to the takeover
FOR_j	dummy variable for cross-border acquisitions that equals one if the target or bidding firm is a foreign firm
COM_j	dummy variable that equals one if more than one bidder takes part in the takeover process

OWN is measured by a concentration index. Demsetz and Lehn (1985) employ two measures of ownership concentration: the percentage of a firm's outstanding shares owned by the largest shareholders¹ and an 'index'² of ownership concentration.

The 'HH index' is calculated by summing the squared percentage³ of shares controlled by each shareholder:

$$HH = \sum_{i=1}^N hi^2$$

where

h_i percentage of shares held by shareholder i .

We construct an alternative 'HH index' that is concerned with the initial holdings of the bidding firm.⁴

$$HHa = \sum_{i=1}^N \left(\frac{h_i}{(100 - t_a)} \right)^2 = \left(\frac{1}{(100 - t_a)} \right)^2 \sum_{i=1}^N h_i^2$$

where

h_i percentage of shares held by shareholder i

t_a fraction of initial shareholdings held by the bidder.

A property of the 'HH index' with squared h_i is that large shareholdings carry a greater weight than small shareholdings. Small shareholdings have very little effect on the magnitude.

In Table 5, we estimate different regression models. Table 5 contains OLS estimates of the effects of ownership characteristics of target firms, control variables of bidding firms, financial variables and market variables on the cumulative abnormal returns (CAR) to the shareholders of bidding firms. The CARs are estimated over -20 to 20 days surrounding successful acquisition announcements (t -statistics in parentheses). The primary hypothesis investigated here is whether concentration of the ownership structure influences the returns to bidding firms. In target firms with high ownership concentration, bidders can make some shareholders pivotal. Ownership concentration is measured by the logarithm of the HH index, adjusted for the initial shareholdings of the bidding firm. The results in Table 5 support our hypothesis on ownership structure. The positive relation is highly significant (at 1% the level) and consistent with the predictions of Grossman and Hart (1980), Shleifer and Vishny (1986), Bagnoli and Lipman (1988) and Holmström and Nalebuff (1992). In the OLS regression model (OLS 4), we use a dummy variable for dispersed ownership. The coefficient of dispersed ownership is negative (coefficient OLS 4 = -11.048) and significant ($t = -3.16$). This provides evidence that the returns to bidding firms increase when shareholders of target firms are widely dispersed. This is consistent with the atomistic shareholders case of Grossman and Hart (1980). Our findings are consistent with the empirical study of Slusky and Caves (1991), who found a significantly negative relation between the bid premium and large shareholders.

In regression models (OLS 1) and (OLS 2), the independent variable management shareholdings measures the percentage of shares owned by managers. The relation between the percentage of shares owned by managers and the returns to bidding shareholders is negative ($t = -1.24$ and $t = -1.34$, respectively). Stulz (1988) and Stulz et al. (1990) argues that bidders need a larger fraction of shares from atomistic shareholders when managers refuse to offer their shares. Our estimates are weakly significant (coefficient OLS 2 = -0.032 ; $t = -1.34$) and support the entrenchment hypothesis. Morck and Yeung (1992) found a significantly negative relation between the returns to bidding shareholders and large managerial shareholdings. For small inside shareholdings, they found a significantly positive relation. Slusky and Caves (1991) found a significantly negative relation between bid premium and management shareholdings.

In order to test the role of institutional shareholders, we regress in models (OLS 1) and (OLS 2) the percentage of shares held by institutional shareholders on the returns to bidding firms. We found a positive relation between institutional shareholdings and the returns to bidding firms. The estimated coefficients are significant at the 5% level. Target firms with large institutional shareholders are well monitored and properly valued. As a consequence, bidding firms will pay a small bid premium above the going market share price of the target firm.

We found no significant relation between the percentage of ‘outside blockholdings’, ‘initial shareholdings’ and ‘leverage’ on the returns to bidding firms. The estimates in Table 5 indicate a positive relation between the percentage of shares acquired by bidders and the returns to bidding firms. The results are statistically significant for regressions (OLS 2) and (OLS 4). The findings of previous empirical research are ambiguous, Billett and Ryngaert (1997) and Bradley et al. (1988) found a positive relation,⁵ while De et al. (1996) and Eckbo and Langohr (1989) found a negative relation. The estimates in Table 5 indicate a significant negative relation between MTB value of the bidding firm and the returns to bidding firms. Takeover announcements of acquirers that are performing well result in low abnormal returns to shareholders of bidding firms. The results suggest that shareholders of such bidders expect a lower contribution of the target firm to the future performance of the bidder. We would expect that bidders with high MTB values have large growth opportunities (positive net present value projects) and we would expect that shareholders of such bidders will earn positive abnormal returns. Our results are in contrast with the findings of Servaes (1991). We propose that ‘relative size’ has a positive effect on the returns to bidding firms. We found a positive and significant relation at the 5% level in all regression models. This result supports the hypothesis that bidding firms gain more from large takeovers. These findings are identical with the empirical studies of Asquith et al., (1983), James and Wier (1987), Bruner (1988), Loderer and Martin (1990) and Datta and Iskandar-Datta (1995). Billet and Ryngaert (1997), Cakici et al. (1996) and Franks and Harris (1989) also found a positive relation, but their results are not significant. The regression models in Table 5 indicate that ‘cross-border acquisitions’ are wealth-reducing actions for bidding firms. In all regression models we estimate a negative coefficient for the dummy variable ‘foreign acquisition’. Finally, we found that bidders earn positive abnormal returns in multiple bidder contests. These findings suggest that bidders are attracted by targets with large post-takeover opportunities. Most empirical studies find no significant relationship between competition and the returns to bidding firms.

We perform analyses (robustness tests) similar to the regression models in Table 5, where we include methods of payments as an independent variable. The empirical results from the regression models in Table 5 were not influenced by this variable. The variable (methods of payment) is statistically insignificant in all regressions and does not affect the significance level of other variables. Most acquisitions (n = 139) are cash offers, only a small percentage of the acquisitions in the Netherlands are stock payments. We also used alternative size measures, such as total assets and market capitalisation. In summary, our robustness tests indicate that our main findings are robust to alternative proxies for size.

Figure 1 The relation of ownership concentration and the percentage of shares acquired on the cumulative abnormal returns to bidding firms (CARA) (see online version for colours)

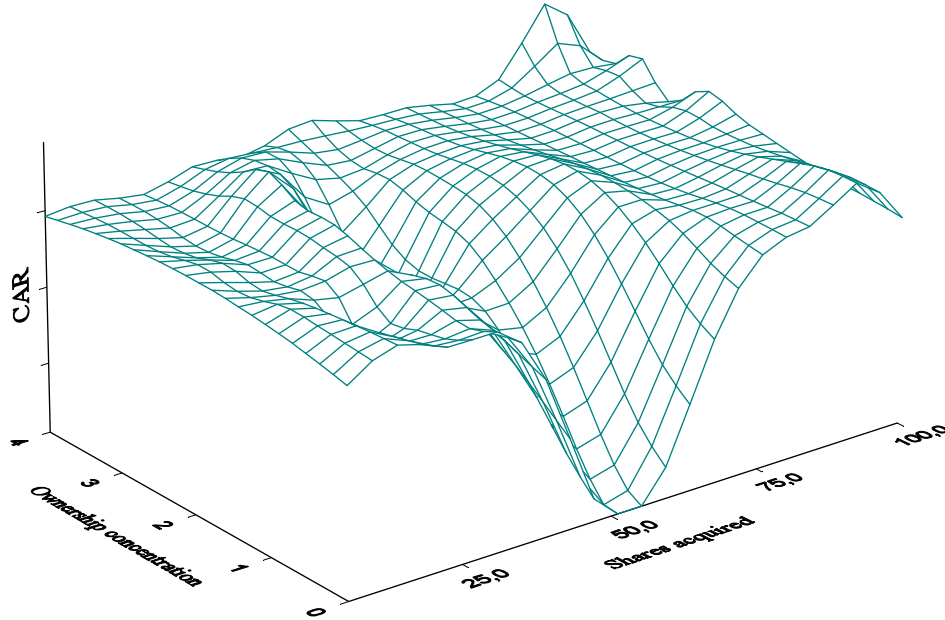


Figure 1 shows a 3-D graph of the relation between the percentage of shares acquired by the bidder and the ownership concentration of target firms in relation to the returns to bidding firms. It is worth mentioning that at the 50% level (shares acquired), the cumulative abnormal returns at minimum, where at the 100% level (shares acquired) it is at its maximum.

The OLS regression (Table 6) shows that there is a significantly positive relation between the returns to shareholders of bidding firms and the concentration of ownership structure.

Table 6 Cumulative abnormal returns to bidders

<i>OLS regression</i>	<i>Intercept</i>	<i>ACQ</i>	<i>OWN</i>
CARA	-7.64 (-1.75)**	0.03 (1.24)	2.25 (1.97)**
R ²	4%		
F-statistics	3.23**		
Number of observations	159		

Notes: *t*-statistics in parentheses.

OLS-regression:

$$CARA_{j,[t-n,t+n]} = \alpha_0 + \alpha_1 ACQ_j + \alpha_2 OWN_j$$

where:

$CARA_{j, [t-n, t+n]}$	cumulative abnormal returns to bidding firms over the $t - n$ to $t + n$ event window for firm j
OWN_j	ownership concentration of the target firm is measured by a HH-index (H-H index of shareholdings)
ACQ_j	shares purchased by the bidding firm, exclusive of its initial shareholdings.

5 Summary and conclusions

In this paper, we present the impact of ownership concentration on the cumulative abnormal returns to the shareholders of bidding firms. We found that shareholders of bidding firms have statistically significant positive abnormal returns surrounding takeover announcements. We found bidder returns of 4% over the event-window $[-20, +20]$.

We showed that the degree of ownership concentration in target firms – measured by the Herfindahl-concentration index – significantly and positively affects the returns to bidding firms. These findings are consistent with the predictions of the takeover models of Grossman and Hart (1980), Bagnoli and Lipman (1988) and Holmström and Nalebuff (1992). Our findings are consistent with the study of Slusky and Caves (1991). Managerial shareholdings are negative (i.e., insignificant), which support the ‘entrenchment’ hypothesis (Stulz, 1988; Stulz et al., 1990). We also found a positive relation between institutional shareholdings and the returns to bidding firms. This result indicates that bidding firms are willing to pay a small bid premium over the prevailing market price because target firms are properly valued as a result of active monitoring by institutional shareholders. Our regression analysis shows that bidders who perform well (= high MTB value) experience lower abnormal returns. These results suggest that shareholders of such excellent bidders expect lower post-takeover value-enhancing improvements once a target firm has been acquired. Furthermore, we hypothesised that bidding firms realise synergistic gains if they acquire a relatively large target. These results confirm this hypothesis. We found a significantly positive effect of relative size on the returns to bidding firms. Our results are consistent with the studies of Asquith et al. (1983), James and Wier (1987), Bruner (1988), Loderer and Martin (1990) and Datta and Iskandar-Datta (1995). It is also shown in the regression models that cross-border acquisitions are wealth-reducing investments for bidding firms. We found a significantly negative relationship between cross-border acquisitions and the abnormal returns to bidding firms in all regression models. Finally, we found that competition between bidding firms has a positive effect on the returns to the shareholders of bidding firms. This result indicates that competition attracts bidders to realise large post-takeover value improvements that are not firm-specific.

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Notes

- 1 We distinguish between the percentage of shares held by the largest shareholder (H_1), the three largest shareholders (H_3) and the five largest shareholders (H_5).
- 2 The HH index (called Herfindahl-Hirsch index) is a measure of dispersion and has a background in oligopoly theory in that it measures concentration in market shares.
- 3 The fraction of shares, instead of the percentage of shares, can also be used in order to measure dispersion. If the fraction of shares is used, then the HH index can vary between zero and one.
- 4 The idea behind the alternative HH index is that, otherwise, the toeholds of the bidder tend to increase the ownership concentration, although there may be no other large shareholders than the bidder himself.
- 5 Billett and Ryngaert (1997) found a positive relation between the shares sought and the returns to bidding firms. Bradley et al. (1988) also found a positive relation, but their results are not significant.
- 6 Only the empirical results of De et al. (1996) are significant.
- 7 See, for instance, Bradley et al. (1988), Frank and Harris (1989), Stulz et al. (1990), Petry and Settle (1991), Kang (1993), Datta and Iskandar-Datta (1995) and Cakici et al. (1996). On the other hand, Slusky and Caves (1991) and James and Wier (1987) found a significantly negative effect of competition on the returns to bidding firms.
- 8 Bernile (2005) shows that shareholders of bidding firms gain from releasing merger-related projection, when M&A deals are financed through cash-offers.