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Speculation Spreads in Swedish Tender Offers

Abstract

This thesis examines speculation spreads, risk arbitrage returns, and potential ex ante bid characteristics related to it, after initial acquisition announcements of 178 public offers on the Stockholm Stock Exchange from 1995 to 2008. Following Jindra and Walkling (2004), we define the speculation spread as the percentage difference between the bid price and the market price of the target company one day after the initial offer announcement. In our sample, mean and median speculation spreads are 2.9% and 1.7%, respectively, although with considerable cross-sectional variation. 19% of the speculation spreads are negative, indicating that the post-announcement price is higher than the initial bid price. The reasons for the speculation spread's cross-sectional variation, and its informational content, has not been previously studied on Swedish data. We find that speculation spreads are to a large extent associated with ex ante characteristics of the bid. Spreads are positively related to bid premium, bidder toehold and if the bidder is domestic, and negatively related to pre-bid share price runup and if the proposed payment is in cash. Furthermore, we find that an equally-weighted portfolio of takeover targets earns a significant abnormal return in the 1995-2009 period.

Keywords

Speculation spread, Risk arbitrage, Tender offer, Bid characteristics, Ownership structure, Bid premium

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1. Introduction

The share price of a company targeted in a takeover attempt generally experiences an upward revision subsequent to a bid announcement. However, an exact adjustment towards the bid price is seldom seen, as the target firm's stock often trades at a discount to the price offered. This discrepancy, known as the speculation spread, is the main topic of this thesis.

The efficient market hypothesis (see e.g. Brealey et al., 2006) proposes that after an offer announcement, the market value of a target firm's stock reflects all known information regarding the particular acquisition. This suggests that market prices convey investors' beliefs of the probabilities of different offer outcomes. Qualitatively, there are three possible outcomes of a takeover attempt: the bid may be consummated at the initial level, it may be raised, or it might fail. The perceived probabilities of these outcomes, in the light of the bid characteristics known at the time of the announcement, will be reflected in the market's pricing of the shares as a premium, a discount or a market price equal to the bid price. Jindra and Walkling (2004) were among the first who investigated to what extent certain bid characteristics related to the speculation spread. In a wider perspective, they tried to answer the question why some targets' shares trade at a discount to the bid price while other target firms' shares may trade above the bid.

Another fascinating feature of the speculation spread is that it is the starting point for risk arbitrage, an investment strategy that tries to take advantage of the spread by purchasing shares in a firm targeted in an acquisition. Risk arbitrage trading was for a long time considered highly mysterious, well beyond the understanding of ordinary investors. With the emergence of the infamous Ivan Boesky (later convicted for insider trading) and his limited partnership that specialized on risk arbitrage in 1975, things started to change.

*“It was a sleepy game then, but Boesky learned to play it with such daring and ruthlessness that he horrified the old hands. Who was this scary overachiever, this Russian revolutionary in their midst? “Ivan the Terrible,” they called him.”*¹

Boesky was featured in *Fortune* in December 1977 after having made \$30 million (along with a group of other arbitrageurs) by speculating in the takeover of Babcock & Wilcox by United Technologies (Wyser-Pratte, 2009). Attracted by the high returns, more and more investors engaged in this type of trading strategy and risk arbitrage departments emerged within investment banks (Cornelli and Li, 2001). With the increase in activity, risk arbitrage also started to appear in academic literature. Several scholars (see e.g. Asquith, 1983 and Bhagat et al., 1987) noticed that in successful takeovers, stocks of target

¹ “Money Was the Only Way”, Johnson, Koepp and Ungeheuer, *Time*, December 1st, 1986

companies earn excess cumulative returns while stocks of unsuccessful targets have a negative return in the period from the announcement to the completion (or failure) of the acquisition. Baker and Savaşoglu (2002) find monthly abnormal returns of 1% to a risk arbitrage portfolio during the period 1978-1996, while Jindra and Walkling (2004) find monthly excess returns of 2% to a portfolio of cash bids between 1981 and 1995. Dukes et al. (1992) find even higher returns (0.76% daily excess return) and claim that the benefits of risk arbitrage were ignored during, at least, the time period they studied (1971-1985).

In spite of these intriguing features of the speculation spread, no one has to our knowledge examined the spread, or the potential returns associated with it, on Swedish or European data. Our objective is therefore to investigate the magnitude and cross-sectional variation of the speculation spread in Sweden, as well as ex ante bid characteristics that, according to earlier literature, may be related to the spread. In addition, we will construct risk arbitrage portfolios and explore whether the excess returns observed on American data also exist in Sweden. To conduct this study we will use 178 tender offers on the Stockholm Stock Exchange between 1995 and 2008. Our methodology is closely related to a study by Jindra and Walkling (2004).

1.1 Relevance and contribution

Corporate takeovers, and especially returns to target and bidder shareholders, have been extensively researched. However, as mentioned in the introduction, a topic within this field that has been surprisingly neglected by researchers is the variation between prices offered in public bids and post-announcement stock prices. To our awareness, no previous study has been conducted on Swedish data, even though risk arbitrage trading has increased rapidly in volume over the last decades (see for example Cornelli and Li, 2002).

This thesis contributes to previous research by analyzing public offers on Swedish companies, which generally have a different type of ownership structure than Anglo-Saxon companies. Goergen and Renneboog (2003) write that firms on the London Stock Exchange are more widely held than Continental European companies, where most firms have a single, major shareholder. This is in agreement with Schoenberg and Thornton (2006), who describe Anglo-Saxon markets as relatively unrestricted and thereby more open for unanchored bids. Companies on the Swedish stock market on the other hand often have a large, controlling, shareholder (Agnblad et al., 2001). The bidder would therefore need that shareholder's support before launching a bid. Without an agreement with the main shareholder, a takeover attempt would most likely be pointless. This type of ownership structure should lead to less uncertainty regarding the outcome of a takeover bid (Hirschleifer and Titman, 1990), and thus lower speculation spreads in Swedish takeover bids compared to American bids.

The objective of this thesis is to describe the speculation spread phenomenon, its magnitude and cross-sectional variation, possible excess returns from risk arbitrage trading, and ex ante bid characteristics that might be related to the spread. The results in this study might be of interest both for investors using risk arbitrage strategies, as well as for corporate executives considering initiating a takeover attempt. However, the main purpose of this thesis is not to provide practical implications of our results, but rather to describe the phenomenon of speculation spreads and the market uncertainty that surrounds takeover attempts.

1.2 Outline

In the first section, we have given a brief introduction to the subject of speculation spreads and the contribution our study aims to make to existing research. In section two, we define the speculation spread and describe the distribution of spreads in Sweden. We also define the variables that in earlier literature have been related to takeover uncertainty and the speculation spread. Our methodology is described in section three, while section four comprises a description of the dataset. This is followed by section five, in which the research results are presented. Section six contains summary and conclusions. Lastly, we present suggested areas of further research in section seven.

2. Understanding the speculation spread

In this section, we will initially focus on the components of the speculation spread in order to give the reader a deeper understanding of this phenomenon. Later in this section, we will go into the distribution and statistics of the spread in the Swedish market.

2.1 Background and definition

We define the speculation spread as the percentage difference between the bid price and the share price of the target company one day after an offer announcement (see Jindra and Walkling, 2004). The reason why we, as Jindra and Walkling, choose the day *after* the announcement as our starting point is that it captures the fact that bids might have been announced at different times of the day. The closing share price on the day after the announcement would therefore make the market's initial reaction more comparable across all bids.

In Jindra and Walkling's study, an investor is assumed to respond to the first formal acquisition announcement at t_0 and buy a share in the target firm the day after the announcement for the price P_1 . Mathematically, we define the speculation spread in the same fashion as Jindra and Walkling:

$$Speculation\ spread_i = \frac{(BP_i - P_{1i})}{P_{1i}} \quad (1)$$

Here, BP_i is equal to the bid price for a share in company i , and P_{li} is equal to the closing share price of the target company one day after the takeover announcement. Earlier studies (see e.g. Samuelson and Rosenthal, 1986 and Brown and Raymond, 1986) have used a formula describing the merger probability instead of the speculation spread, when examining factors that may affect investors' beliefs of the expected value of the takeover outcome.

Conversely to Jindra and Walkling (2004) we choose to include takeovers with shares as a method of payment.² It is therefore important to describe the difference in the definition of the bid price in share offers compared to cash offers. In share offers, the value of the offer fluctuates with the value of the acquirer's shares. The BP_i in Eq. (1) used in share offers is therefore based upon the closing price of the acquirer's shares on the day after the acquisition.

At any given bid price, the post-announcement price determines the expected rate of return to risk arbitrageurs assuming that the bid will be successful at the initial bid price, and that all of a trader's shares are tendered and accepted. However, upward bid revisions are not uncommon and generate higher returns, while downward revisions of the bid price, partial tender offers, or unsuccessful bids would cause lower or even negative returns. Thus, one of three things will happen to an initial bid. The bid price will either be revised upward, downward, or remain unchanged. The probability of one of these events to occur should be reflected in the post-announcement price of the shares. As the probabilities change with the day of completion (or lapse) approaching, the share price will adjust accordingly. An investor who expects a higher final bid price, P_F , than the initial bid, BP_i , due to an increased or competing offer, will raise the post-announcement price. Higher post-announcement prices would create smaller, and possibly negative, speculation spreads. In a more likely scenario, investors will price the share at a discount to the bid price due to uncertainty about the offer outcome and the time value of money.

2.2 Distribution of the sample and speculation spread statistics

Figure 1 shows the average yearly speculation spread and the average yearly spread in absolute terms. The reason why we include the absolute spread in this graph is the possibility that during a given year, positive and negative spreads might have cancelled each other out.

² Takeovers where shares were the method of payment were also used in the study by Baker and Savaşoglu (2002).

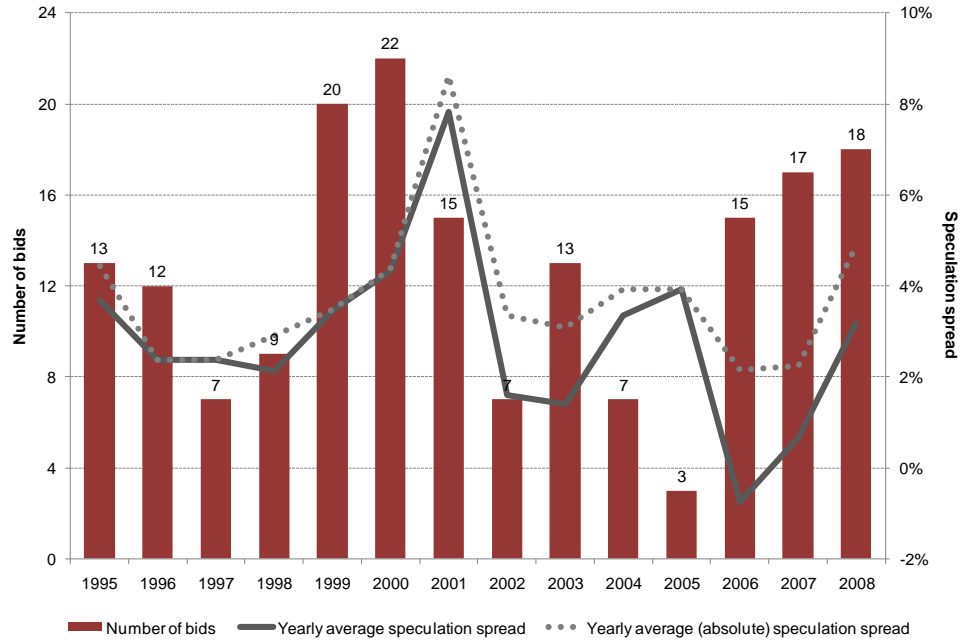


Figure 1: Average speculation spreads and number of bids per year

The mean and median speculation spreads in our sample are 2.9% and 1.7%, respectively. This implies that on average, the share price of a takeover target one day after a bid has been announced is 2.9% lower than the bid price.

The mean spread ranges from -0.8% in 2006 to 7.8% in 2001, and the mean *absolute* spread ranges from 2.1% in 2006 to 8.6% in 2001. The number of bids per year in the time period ranges from 3 in 2005 to 22 in 2000. In general, one could say that investors seem to be uncertain whether the bids will be consummated at the bid price, and shares therefore trade either above or below the bid price. The negative mean spread in 2006 implies that during this year, investors, on average, anticipated that a given initial bid level would be revised upwards.

Mean and median spreads for pure cash offers are 1.6% and 1.3% respectively, which can be compared to Jindra and Walkling (2004) who found mean and median spreads in cash bids of 1.9% and 2.1%, respectively. Intuitively, this would imply that investors on the Swedish stock market are slightly more confident than investors on the American market that a takeover will be successful at the first bid price.

Although speculation spreads exhibit both a positive mean and median, there is also a cross-sectional variation in the sample. The largest positive speculation spread in the sample is 42.7% (International Gold Exploration's hostile bid for IGE Nordic in October 2008), and the largest negative spread is -10.8% (Nordic Capital's hostile bid for Capio in September 2006). These characteristics are not distinctive for our sample; Jindra and Walkling (2004) found spreads ranging from -30% to 42%. The

large variation in the spread implies that there is an informational content within the speculation spread, as it indicates investors' anticipation of the bid outcome. This has been proven earlier by Samuelson and Rosenthal (1986) and Brown and Raymond (1986) who investigated the relation between the speculation spread and the probability of a successful offer. They concluded that the market is good at projecting tender offer success, meaning that the efficient market hypothesis holds. These results are validated in later studies by Mitchell and Pulvino (2001) and Branch and Yang (2008), in which the authors find that spreads are wider for unsuccessful takeovers, implying that the probability of deal failure is incorporated in the share price.

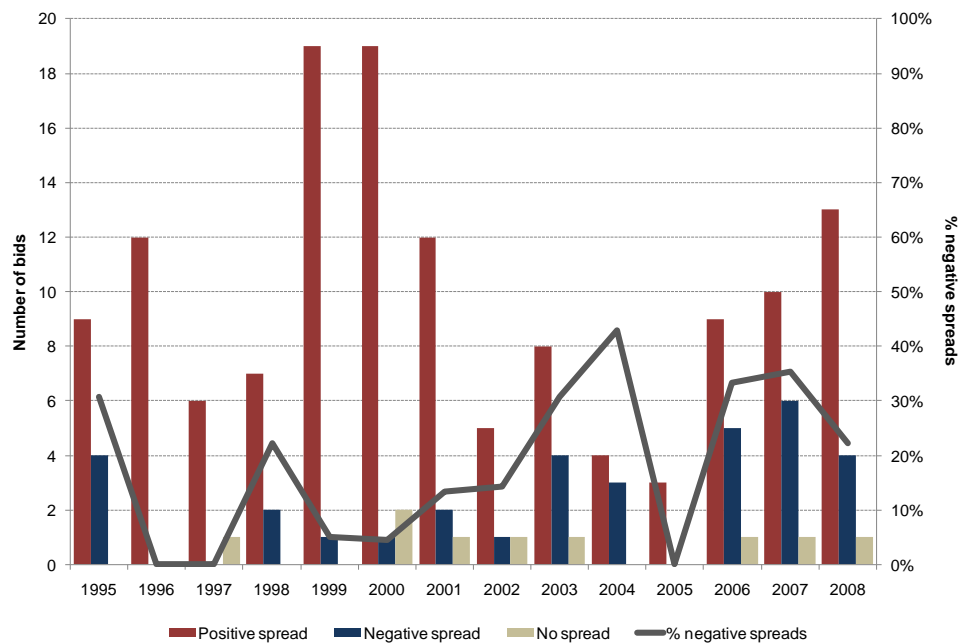


Figure 2: Positive and negative spreads

Overall, the percentage of negative spreads in the sample is 19%, with a yearly variation from 0% in three years to 43% in 2004 (see Figure 2). In only 5% of the bids, the shares of the target company closed exactly at the bid price one day after the takeover was announced. Intuitively, a spread should exist solely due to the time value of money. Even if a bid is perceived as certain to be completed, shareholders have the alternative to sell their shares at the market price shortly after the bid announcement and invest the proceeds in the risk-free rate.

36% of the takeover attempts that initially had a negative speculation spread were eventually revised upwards, while the corresponding figure for bids with zero or positive spread is 16%. This suggests that the market is fairly good at predicting the outcome of a takeover bid, which is in agreement with the earlier mentioned findings of for example Mitchell and Pulvino (2001).

The distribution of spreads is fairly concentrated. 56% of the bids have a spread between 0% and 4% (75% of the bids have a spread between –2% and 6%). The high proportion of low spreads indicates that market participants demand a small premium for holding the shares until resolution of the offer, even though a successful outcome of the takeover is almost certain. The distribution of speculation spreads is shown in Figure 3.

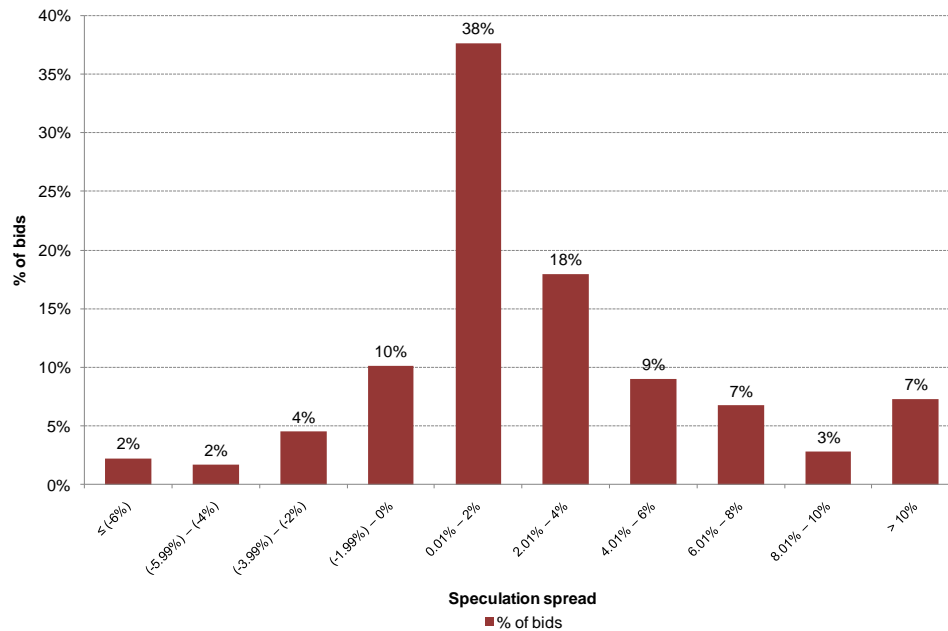


Figure 3: Distribution of speculation spreads

An interesting observation in Figure 3 is that 7% of takeover bids have spreads above 10%. 77% of these were stock offers, indicating that the uncertainty surrounding a bid is higher when the proposed payment is shares in the acquiring company, compared to plain cash payment. A reason for this could be that in stock offers, investors find it difficult to get rid of the risk associated with a decreasing value in the acquirer's shares, which could be caused by the difficulty of short-selling shares in Sweden.³

Cornelli and Li (2002) find that speculation spreads have narrowed over time, as more and more investors and institutions have become aware of the potential gains involved in risk arbitrage investments. The post-announcement price of target firms' shares therefore rise more rapidly towards the bid price nowadays. To test this conclusion on our sample, we divide the bids into two time periods, 1995-2001 and 2002-2008. The mean spread in 1995-2001 was 4.0%, compared to 1.5% in 2002-2008 (see table A5 in Appendix II). This difference in spreads is statistically significant at the 1% level, and adds to the substance of previous research.

³ For example, fund management companies are not allowed, according to Swedish law, to sell shares that they do not have at their disposal (i.e. to short-sell shares), 23§ Lag (2004:46) om investeringssonder.

2.3 *Ex ante* bid characteristics related to the spread

The aim of the analysis in the preceding section was to thoroughly describe the speculation spread in Swedish tender offers, and to indicate the size and cross-sectional variation of this spread. The existence and possible informational content of the spread highlights the importance of understanding its components. In this section, we will discuss to what extent speculation spreads can be related to *ex ante* observable bid characteristics.

When going through earlier literature on the subject, we notice that factors relating to the speculation spread often have ambiguous effects. On the one hand, the higher the certainty regarding the outcome of a proposed takeover, the narrower the spread. On the other hand, a higher certainty should also lead to a smaller probability of an increased bid after the initial announcement. To understand these dual effects, we consider two scenarios that are conditioned on the possibilities of a raised or failed bid. In these scenarios, we use the relationship between the spread and the bid premium as an example.

In the first scenario, the bid will either be successful at the initial level or fail. In other words, there is no possibility of a raised bid. A high bid premium should then lead to a smaller spread than a low bid premium, since the probability of a successful takeover increases with the size of the bid premium. Bear in mind that the bid cannot be revised upwards in this scenario, and investors can therefore receive *at most* the bid price. The relationship between the bid premium and the spread would be *negative* in this scenario, i.e. a higher bid premium leads to a smaller spread.

In the second scenario, the bid will either be successful at the initial level or at a higher level. Thus, there is no possibility of a failed takeover. In this case, a bid with a high premium should have a slightly negative spread, while a bid with a low premium should have a larger negative spread, since investors anticipate that there is a higher probability for a bid with a low premium to be contested (either by target management or by a competing bidder). Remember that the bid cannot fail in this scenario, thus investors know that they will receive *at least* the bid price. In this scenario, there should be a *positive* relationship between the bid premium and the spread, since a high premium is related to a less negative spread compared to a low premium.

The problem with these ambiguous effects remains when conducting a study that is not conditioned on the scenarios mentioned above. Whether there will be a negative or positive relationship between an explanatory variable and the spread is not always conclusive based on earlier literature. This means that we cannot reject regression results solely based on the sign of the coefficient.

The variables included in our study are bid premium, bidder toehold, pre-bid runup in the share price before a takeover announcement, form of payment, managerial attitude, industry similarity, bidder nationality and takeover activity. These factors have been related to takeover uncertainty in earlier literature.

The intuition behind a negative relationship between the *bid premium* and the speculation spread is that a high bid premium deters competing offers, as well as management resistance. This has been shown in studies by Jennings and Mazzeo (1993) and Hirschleifer and Titman (1990). They argue that the deterring effect of a high premium should make the outcome of a bid more certain, implying lower spreads. However, there are two reasons why the relationship between the speculation spread and the bid premium should be positive. Firstly, as Jindra and Walkling (2004) point out, since a high bid premium deters competing offers and management resistance, a bid with a high premium is less likely to be revised upwards compared to a bid with a low premium. Subsequently, it is more likely that a bid with a low premium will have a negative spread. Secondly, a very high bid premium may force investors to rebalance their portfolios, since the increase in market value would make their holding in the target company disproportionately large. Smith et al. (1997) argue that the rebalancing could lead to a downward pressure on the stock after the bid announcement, resulting in a higher spread for a bid with a high premium.

The relationship between bidder *toehold* and the spread shows similar ambiguities as the relationship between bid premium and the spread. A reason why a negative relationship between the spread and toehold could be expected is that the negotiating power of a bidding firm is higher if they have a toehold in the target before the acquisition attempt. The toehold would then make the outcome of the bid more certain, resulting in a lower spread. This has been shown by Hirschleifer and Titman (1990) and Schoenberg and Thornton (2006). Hirschleifer and Titman develop a model in which the probability of an offer's success depends on the initial holdings of the bidder in the target. Schoenberg and Thornton show that bids on Anglo-Saxon markets, where the ownership is more dispersed compared to Continental European markets, have a higher probability of being rejected. According to these arguments, high toeholds should be related to low spreads. However, in the same manner as for the bid premium, the probability of an upward revision after acceptance by major shareholders should be considered small if the toehold is high (Hirschleifer and Titman, 1990), implying that there is a positive relationship between toehold and the spread.

Pre-bid share price *runups* have been shown to be negatively related to speculation spreads (Jindra and Walkling, 2004). There is not much literature on the relationship between this variable and the spread, but we find it rather intuitive that runups are negatively related to one of the other explanatory variables, the bid premium. A large increase in the share price shortly before a takeover bid is launched should lead to a lower bid premium, since the potential premium is already priced in by the market. If pre-bid runups are related to lower bid premia, runups should affect speculation spreads in the same direction as bid premia. Since runups might affect spreads only indirectly through the bid premium, it is important to test these variables for multicollinearity (see section 5.3).

Morck et al. (1987) argue that bidding competition is less common in *friendly* bids compared to hostile bids. Goergen and Renneboog (2000) go further and state that the market should anticipate a raised bid if the takeover is hostile, since a proclamation by target management that the bid is hostile should be seen as a bargaining strategy in order to receive a higher bid. Following these authors, negative spreads should be more common in hostile takeovers than in friendly (implying a positive relationship between the speculation spread and friendly management). In addition, a positive relationship would be in line with the findings of Jindra and Walkling (2004). A reason why the relationship between the spread and friendly management could be negative is the high probability of failure for a hostile takeover. Schoenberg and Thornton (2006) find that only 44% and 62% of hostile bids were completed in the 1980's and 1990's, respectively, while Mitchell and Pulvino (2001) estimate, using a probit model, that hostile takeovers have a 12.8% higher probability of failure than friendly takeovers. In addition, studies by Dodd (1980) and Smith et al. (1997) show a high degree of uncertainty surrounding hostile takeovers. A high level of uncertainty would lead to high positive spreads for hostile takeovers, and thus a negative relationship between a friendly management attitude and the spread.

These dual effects are also present when considering the form of payment in an acquisition. A *cash offer* should, according to Smith et al. (1997) and Branch and Yang (2006), make a bid outcome less uncertain compared to a stock offer. Smith et al. argue that a cash offer is more definite since the value of a stock offer fluctuates with the value of the acquiring company's stock. Branch and Yang's argument is that the payment method is associated with risk asymmetry, where a share offer signals that the bidding firm perceives their shares as overvalued. This should lead to higher spreads in stock offers compared to cash bids. The relation between a cash offer and the spread would then be negative. However, there are also arguments in favor of a positive relationship between a cash offer and the spread. For example, Baker and Savaşoglu (2002) argue that stock bids could have more certain outcomes for professional investors, if they are able to short-sell the bidding company's stock and thereby get rid of the market risk. This is shown empirically by both Branch and Yang (2006) and Mitchell and Pulvino (2001). Branch and Yang show that risk arbitrage positions in cash bids generate a higher beta compared to stock offers, while Mitchell and Pulvino find that cash deals and depreciating stock markets are associated with an increasing risk of a failed takeover.

The speculation spread should be negatively related to an *industrial bidder* compared to a financial buyer. The intuition behind this, as Jindra and Walkling (2004) state, is that a bidder in the same industry as the target may be more prone to raise a bid than a financial buyer, due to possible synergies and to prevent competitors from acquiring the company.

Some authors (see e.g. Mantecon et al., 2009 or Wan and Wong, 2009) argue that *cross-border* acquisitions involve a higher degree of complexity than domestic bids, since legal and political issues add

to the uncertainty. This should lead to higher spreads in takeover attempts by foreign companies compared to domestic. The relationship between the speculation spread and a domestic bidder would then be negative. However, the findings of Shimizu et al. (2004) and Marr et al. (1993) suggest that a positive relationship between a domestic bidder and the speculation spread would be expected. Shimizu et al. describe the due diligence process as more comprehensive in cross-border acquisitions compared to domestic, when it comes to assurance from management and major owners that they will support the bid. This would result in a higher probability of a successful offer in international acquisitions compared to domestic. Marr et al. (1993) find that the returns of target firms are significantly higher in cross-border takeovers than in domestic takeovers. This is said to be explained by more synergies in international acquisitions.⁴ If foreign bidders are more prone to raise an offer due to higher potential synergies, the spread should be lower if the bidder is foreign.

We depart from our requirement of ex-ante characteristics to include *takeover activity* as a last variable. Jindra and Walkling (2004) find that speculation spreads are significantly lower in periods with intense takeover activity. The intuition behind this is that during such periods, investors are more confident that a bid will be successful at the initial bid level, and/or that a bid is more likely to be raised. Based on the results of Jindra and Walkling, it is possible that years with an intense takeover activity have a lower spreads than years with few takeovers also in our sample.

3. Research methodology

In this section, we introduce our main regression model. We also define our explanatory variables and describe how we construct risk arbitrage portfolios to test the economic significance of the spread. Our research results are presented in section five.

3.1 Regressions

Our analysis relating bid characteristics to speculations spreads comprises ten separate regressions. The main regression (Eq. (2), displayed below) consists of all 178 bids in our sample. In the remaining nine regressions, the sample is divided into sub-groups to increase the robustness of our result. The sub-groups are: friendly bids, hostile bids, cash bids, stock offers, bids during high, low, and normal takeover activity, as well as regressions with the sample divided in two, chronologically. Our main regression model is the following:

⁴ Shimizu et al. (2004) also mention geographical synergies and production synergies as additional factors in favor of cross-border acquisitions.

$$\begin{aligned}
\text{Speculation spread}_i = & \quad (2) \\
& \beta_0 + \beta_1 \text{Bid premium}_i + \beta_2 \text{Toehold}_i + \beta_3 \text{Runup}_i + \beta_4 \text{Friendly management}_i + \\
& \beta_5 \text{Cash payment}_i + \beta_6 \text{Industrial bidder}_i + \beta_7 \text{Domestic bidder}_i + \\
& \beta_8 \text{High activity}_i + \beta_9 \text{Low activity}_i + \varepsilon_i
\end{aligned}$$

The last five variables are dummy variables set to 1 or 0 depending on the characteristics of the bid. The dummy variable for managerial attitude is set to 1 when the bid is friendly and 0 if the bid is hostile. The variable for payment structure is set to 1 for cash bids, and 0 for stock offers. The variable for industry similarity is set to 1 if the target and bidder are in the same (or a related industry), and 0 if the bidder is financial. The dummy variable for bidder nationality is set to 1 if the acquirer is domestic and 0 if the acquirer is foreign. We include dummy variables set to 1 for periods of high or low takeover activity. See section 3.1 for full definitions of the explanatory variables.

3.2 Variable definitions

Following Jindra and Walkling (2004), the bid-premium is calculated as:

$$\text{Bid premium}_i = \frac{(BP_i - \bar{P}_{(-10,-30)i})}{\bar{P}_{(-10,-30)i}} \quad (3)$$

where BP_i is the price offered for a share in company i , and $\bar{P}_{(-10,-30)i}$ is the average closing share price of company i between 10 and 30 days before the announcement.

Toehold is defined as the sum of the bidder's proportion of votes in the target and the proportion of unconditional pre-acceptance from target shareholders at the time of the announcement. Our definition of this variable is somewhat different from Jindra and Walkling (2004), in which pre-acceptance from target shareholders is not included in the toehold. Also, the toehold in Jindra and Walkling's study is based on the bidder's percentage of the share capital in the target, not the percentage of votes. We believe that unconditional pre-acceptance will affect investors' beliefs regarding the probability of a successful acquisition at the initial bid level (and therefore also the post-announcement price and the speculation spread) similarly to an actual toehold. Pre-acceptance should therefore be added to the acquirer's existing ownership. When it comes to the percentage of votes, we believe that this is the most relevant measure of bidder ownership, because Swedish companies often issue shares with different voting power (Bergström and Rydqvist, 1990). Toehold defined as the bidder's percentage of shares would therefore not be optimal on Swedish data.

Pre-bid share price runup is defined as the percentage change in the share price of the target during 30 days leading up to the acquisition announcement:

$$Runup_i = \frac{(P_{-1i} - P_{-30i})}{P_{-30i}} \quad (4)$$

This is similar to Jindra and Walkling (2004), who use the percentage price change during 42 days prior to a bid. Since we find no explanation for the use of this particular period length, we have settled for a period of 30 days.

A bid is defined as friendly when the board of the target company recommends shareholders to accept the offer, or when there is no other statement that suggests that the bid is hostile. Conversely, a bid is defined as hostile if there is a recommendation from the board to reject the offer, or if there is some other statement that suggests that the bid is hostile.

We choose to include pure stock and pure cash offers only. The reason for not including mixed offers is the difficulty in finding the exact proportions that the different means of payment represent in such a bid. It should also be mentioned that we include some offers where the shareholder is presented with both a share offer and a cash offer. Sweco's attempt to acquire ÅF in September 2001 can be mentioned as an example. ÅF's shareholders could choose between a share offer without a bid premium, and a cash offer with a premium of almost 30%. Since the cash offer was much higher than the share offer, we assumed that rational investors would choose the cash alternative, and the bid was therefore classified as cash.⁵

Bidders in the same industry (both vertically and horizontally) as the target have been classified as industrial, while bids by private equity funds and investment companies are classified as financial. Conglomerate buyers have been classified as either industrial or financial on a case by case basis, depending on how closely related the conglomerate's businesses are to the operations of the target company.

Bids with more than one acquiring company, i.e. when a consortium of bidders launches a joint bid for a target firm, are considered domestic if at least one of the companies or stakeholders in the consortium is Swedish (for example in the case of Ratos' and 3i's joint bid for Atle in February 2001). When the bidder is a company registered in Sweden, but is in fact a subsidiary, acquisition vehicle, or by other means controlled by a foreign company, the bidder is classified as foreign. An example is the bid that was formally launched by CPST Sweden Holdings AB for Protect Data in November 2006. We classify the bid as foreign since CPST is a Swedish subsidiary of the Israeli software company Check Point.

⁵ It should also be noted that the share price traded in the region of the cash offer just after the announcement.

A “high” (“low”) activity period is defined as a year in which the number of bids is in the upper (lower) quartile of the sample distribution. This is similar to Jindra and Walkling, with the exception that they categorize their bids on a monthly basis. The reason for our deviation from their study is that we have a smaller sample, with many months without observations, and the cut-off points for the quartiles would therefore have been arbitrary.

3.3 Risk arbitrage portfolio construction

In order to investigate the economic significance of investing with a risk arbitrage strategy, we construct risk arbitrage portfolios from May 1995 until March 2009. In this analysis, we use cash offers only, which limits our sample to 141 bids. We believe that using stock offers in our risk arbitrage portfolios would add to the complexity more than it would add value to our thesis (see Baker and Savaşoglu, 2002). To include stock offers would force us to make assumptions regarding short positions in acquiring companies, assumptions that may not have been realistic due to difficulties of short-selling shares in both foreign and domestic markets.

We construct an equally-weighted and a value-weighted portfolio. To determine whether excess returns can be earned from using a risk arbitrage strategy, we will test the monthly returns from the risk arbitrage portfolios against the market return with the CAPM-formula:

$$R_{Risk\ arbitrage} - R_f = \alpha + \beta_{mkt}(R_{mkt} - R_f) + \varepsilon \quad (5)$$

As Jindra and Walkling (2004), we interpret α as the monthly excess return of the risk arbitrage portfolio. We will not perform tests using the Fama-French three-factor model as in previous research (see e.g. Baker and Savaşoglu, 2002, or Jindra and Walkling, 2004) since a study by Mitchell and Pulvino (2001) showed that the use of CAPM did not lead to large errors in estimating excess returns.

The following assumptions were made in order to perform the calculations. Firstly, a target company was included in the portfolio for the entire duration of a bid. The start of this period is the post-announcement date, and the end date is either the day the share was de-listed (“dead” in Datastream) or the day when the offer was withdrawn. Thus, an offer can be revised while the bid is active, and the company that makes the first offer does not have to be the company that eventually acquires the target. This follows the methodology of Jindra and Walkling (2004), who also assume that investors will hold the shares until the completion of the offer. If the trader holds the shares for the entire duration of the offer, the return will be:

$$TR_i = (P_{Fi} - P_{1i})/P_{1i} - H_i \quad (6)$$

where TR_i is the total speculation return for acquisition i , P_{Fi} is the final price received for shares in target company i and H_i is the percentage cost of holding a share in company i . We choose to disregard the cost

of holding shares in a target company, since Baker and Savaşoglu (2002) could not find any significant effect when including a holding cost. Subsequently, we define the total return as:

$$TR_i = (P_{Fi} - P_{1i})/P_{1i} \quad (7)$$

In a successful offer, P_{Fi} is the final price received from a bidder for target i , and in an unsuccessful offer P_{Fi} is the market price after the offer has lapsed.

The length of the active period for each bid is approximated as the closest following 30-day calendar period, i.e. if the bid is active for 31 days we assume that the active period is 60 days. It follows that every month is assumed to have 30 days, and a full year consists of 360 days. A target company is introduced into the portfolio the first day in the closest following month after an announcement, and a target is dropped from the portfolio the last day in the final month of a bid's duration. This way, every deal will have the correct compounded effect in the portfolio even though this effect is smoothed over a longer time period. The portfolio can then also be re-balanced the first day of every month in order to include the proper number of target companies. The value-weighted portfolio is re-weighted every month, as well as re-balanced in order to capture the increase or decrease in market capitalization yielded by the accumulated return. A numerical example of our approach is given in Appendix I.

4. Data

4.1 Sample selection

Our original sample consists of 218 bids on the Stockholm Stock Exchange between 1995 and 2008. This data is mainly based on a Master's thesis at Stockholm School of Economics by Bonnier and Forsvik (2009), who found 216 takeover bids. After some revisions, re-classifications and amendments, the data was reduced to 178 bids. Bids that include a stock and a cash component, as well as collar offers, are excluded from our sample. Collar offers are stock offers fixed to a specific amount of the acquiring firms' shares over some pre-specified range, and ensures that the takeover price is above some minimum level but does not exceed some maximum level (Baker and Savaşoglu, 2002). The reason for not including these types of offers is that it is hard to determine the actual ratios of cash and stock in a combined offer and the option-like structure of a collar offer. When multiple bidders have made offers for the same target firm, only the first bid is included in our sample. The reason is that it is the investors' expectations after an initial bid announcement that we want to investigate. In agreement with Jindra and Walkling (2004), a bid is considered new if there has been at least six months since the last bid was made. For example, KappAhl's bid for Lindex in August 2007 is included in the sample, while Stockmann's bid in October the same year is disregarded. Furthermore, we require that the bid is a public offer formally announced in

media (see Jindra and Walkling, 2004). We disregard bids intended to acquire only a limited stake in the target company, and mandatory bids that have been made in order to follow Swedish legislation and that were not intended to gain ultimate control.⁶ Pure mergers, without a real acquirer and target (for example Astra’s merger with Zeneca in December 1998) have also been disregarded. Some bids have been left out simply due to lack of reliable share price data. Lastly, we also excluded a particularly influential observation with an 88.0% speculation spread (Adera’s hostile stock offer for Mogul in February 2003). The reason behind this remarkable spread was uncertainty concerning Adera’s survival (and thereby the true value of their shares) in addition to the uncertainty regarding the outcome of the bid itself. Table 1 shows the number of bids we have excluded and the respective reasons. Detailed information on all remaining bids in the sample is displayed in tables A6 through A9 in Appendix II.

Table 1: Excluded bids

Reason	Number of bids
Mixed offer	12
Merger	5
No data	5
Not first bid	9
Mandatory bid	7
Collar offer	2
No. of excluded bids	40

We have downloaded share prices from Thomson Datastream to calculate speculation spreads, bid premia and pre-bid runups. Exchange rates, necessary in stock offers made by foreign companies, were gathered from the Swedish Riksbank’s homepage. The Swedish article database Affärsdata has been used to gather bid prices and information on bidder toeholds and pre-acceptance rates. Affärsdata has also been used if the share prices in Datastream have had to been adjusted to their true values.⁷

4.2 Distributions of explanatory variables

In this section, we go through the characteristics of the bids in our sample in terms of the explanatory variables. A summary over the most important bid characteristics is shown in Table 2.

⁶ A few bids in the sample is excepted from this, for example Ingman Foods’ mandatory bid for Åhus Glass in July 2002. Although Ingman Foods was formally obliged to make a public offer, they sought to acquire all shares in the target company.

⁷ Datastream accounts for splits in shares, which makes the calculations of bid premia and speculation spreads flawed if not using share prices applicable at the particular date.

Table 2: Bid characteristics

Year	Number of bids	Mean speculation spread (%)	Mean bid premium (%)	Mean toehold (%)	Mean pre- bid runup (%)	Friendly bids (%)	Cash bids (%)	Industrial bidders (%)	Domestic bidders (%)	Takeover activity
1995	13	3.67	29.72	49.95	2.43	85	92	77	85	Normal
1996	12	2.37	30.07	54.68	9.00	75	92	92	75	Normal
1997	7	2.37	30.40	54.69	15.64	86	43	100	57	Low
1998	9	2.14	29.33	26.81	-0.77	56	89	89	78	Normal
1999	20	3.46	48.26	49.12	13.80	85	80	70	55	High
2000	22	4.32	38.24	44.55	8.49	91	73	86	68	High
2001	15	7.83	62.72	39.59	12.77	80	60	87	87	Normal
2002	7	1.61	18.07	40.23	-0.86	71	71	86	43	Low
2003	13	1.39	31.38	39.14	1.99	85	77	77	69	Normal
2004	7	3.35	27.67	29.94	2.47	100	57	71	71	Low
2005	3	3.92	23.57	49.63	-6.45	100	33	100	33	Low
2006	15	-0.76	23.64	40.81	4.70	80	93	60	67	Normal
2007	17	0.68	24.75	39.38	2.30	71	94	82	41	High
2008	18	3.18	37.60	43.55	-7.02	56	89	33	67	High
1995-2008	178	2.90	34.96	43.26	5.04	79	79	75	66	-

Mean and median bid premia are 35.0% and 30.3%, respectively. The corresponding figures for the one-day bid premium are 27.4% and 23.9%, respectively. The yearly average premium ranges from a low of 18.1% in 2002 to a high of 62.7% in 2001. The year with the highest average bid premium, 2001, is also the year with the highest average speculation spread. The highest bid premium in our sample (327.1%) is observed in TMP Worldwide Inc's offer for Jobline in May 2001. The lowest premium is -28.8%, observed in International Gold Exploration's bid for IGE Nordic in October 2008. In friendly bids, the average bid premium is 34.2%. The average premium in hostile bids is 37.9%, which is in line with the findings of Schoenberg and Thornton (2006). They found an average bid premium for hostile takeovers in the United Kingdom between 35% and 45%. The distribution of bid premia based on average share prices from 10 to 30 days before the announcement, as well as the one-day bid premium, are shown in Figure 4.

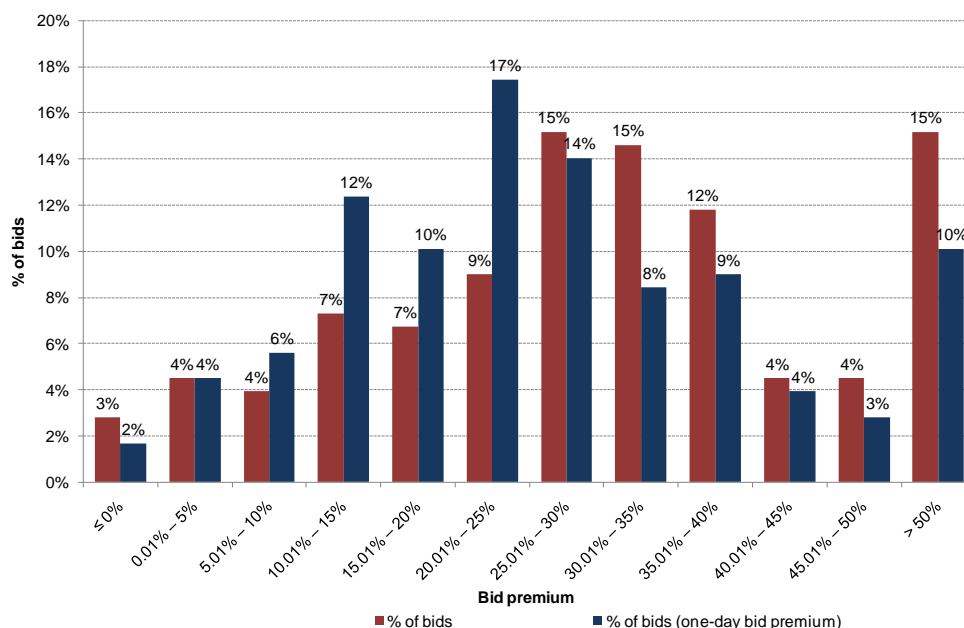


Figure 4: Distribution of bid premia

Figure 4 shows that 65% of takeovers have a bid premium of between 10% and 40%. For one-day bid premia, 71% of bids are within this interval. Since Jensen and Ruback (1983) found that the cumulative return of a target company was between 20-35% in the days around the acquisition announcement, our findings are not very surprising. The fact that 15% of the observations have premia above 50% may imply that it is common to launch a high takeover bid to thwart competing offers and management resistance.

The mean toehold plus unconditional pre-acceptance rate is 43.3%, and only 22 (or 12%) of the bidders have no toehold or pre-acceptance whatsoever. The toehold ranges between 0% and 92%, with a yearly average that ranges from 27% in 1998 to 55% in 1997. The average toehold in friendly bids is 48.6%, while the corresponding figure for hostile bids is 23.5%. Not surprisingly, a majority (64%) of the bids without any toehold or pre-acceptance was hostile. The distribution of bidder toeholds is displayed in Figure 5.

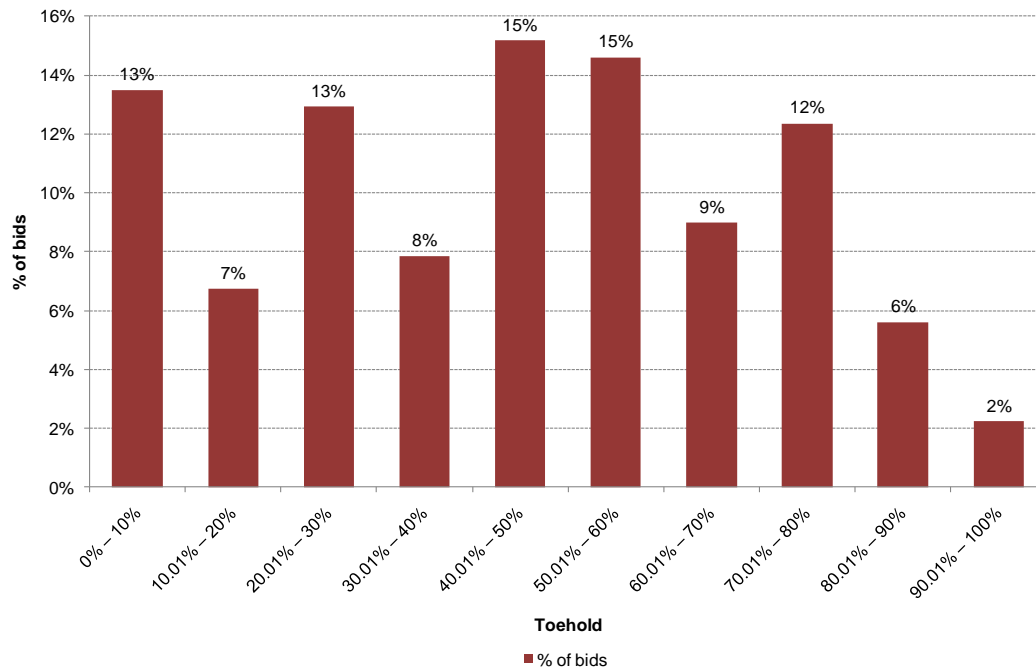


Figure 5: Distribution of toeholds

It is not clear whether acquirers in general aim to secure a specific proportion of ownership or pre-acceptance before launching a takeover bid. However, it appears as acquirers in Sweden are not very keen on attempting an acquisition unless they are confident that major shareholders in the target company will accept the proposal. In our sample, the median toehold is substantially higher than in Jindra and Walkling’s study, where the median bidder had no previous toehold in the target.⁸ This is a further indication of the considerable differences in ownership structures in listed Swedish and American companies (see for example Agnblad et al., 2001, and Goergen and Renneboog, 2003). It is also worth to notice that only 7 (17.9%) of the hostile bids in our sample had some sort of toehold or pre-acceptance. Relating the low toehold to the higher bid premium in hostile bids, the expression “money talks” comes well at hand. A hostile bidder will to a higher extent try to gain control of a target company by paying a high premium, rather than convincing shareholders with the advantages of a deal.

Mean and median pre-bid run-ups are 5.0% and 3.1%, respectively, with an immense cross-sectional variation. The highest runup during the specified period is 79.7% (Jobline’s share, prior to the bid from TMP Worldwide Inc in May 2001), while the lowest is –46.4% (IGE Nordic’s share, before the bid from International Gold Exploration in October 2008). Interestingly, the average 30-day runup almost makes up for the difference between our two measures of bid premium (7.6 percentage units).

⁸ As mentioned earlier, Jindra and Walkling (2004) do not include pre-acceptance by major shareholders in their definition of toehold.

140 (or 79%) of the bids are classified as friendly, and 38 (21%) are classified as hostile. The year with the largest proportion of hostile bids during a year was 44%, which occurred both in 1998 and 2008. In 2004 and 2005, there are no hostile bids in our sample. In fact, one third of all hostile takeovers were announced in 2007 or 2008. It is not surprising that a large number of hostile takeovers occurred during just a few years. For example, Goergen and Renneboog (2003) found that there were six times as many hostile takeovers in Europe in 1999 than in 1996, 1997, 1998 and 2000 combined. Although an interesting topic, the reasons for this apparent clustering of hostile takeover activity are beyond the scope of this thesis. 141 (79%) of the bids are classified as cash offers, and 37 (21%) are classified as stock offers. 134 (76%) of the takeover bids were made by bidders classified as industrial, while 44 (24%) of bidders are financial. 20 (45%) of the bids involving financial buyers occurred in the 2006-2008 period. 118 (66%) of the bids were made by domestic bidders. Of the foreign bidders, 25 (42%) are Anglo-Saxon companies (Canadian, Irish, British or American), 17 (28%) are from the Nordic region, 16 (27%) from another European country (but outside the Nordic region, UK and Ireland). The remaining two bidders are Japanese and Israeli companies. 101 (57%) of the offers occurred during years with abnormal acquisition activity (either high or low). The years with abnormally high acquisition activity (17 bids or more) are 1999, 2000, 2007 and 2008. The years with abnormally low acquisition activity (7 bids or fewer) are 1997, 2002, 2004 and 2005. All other years are considered having normal acquisition activity.

5. Results

In this section, we present the research results from the methodology outlined in section three. The results from our main regression model show that the speculation spread is significantly positively related to bid premium, toehold and if the acquirer is domestic, while the spread is negatively related to pre-bid runup and cash payment (see Table 3 for detailed results). The coefficients for friendly management, industrial bidder, and abnormal takeover activity are not significant in any of our regressions. Furthermore, our results show that an equally-weighted risk arbitrage portfolio outperforms the market portfolio in the 1995-2009 period, and both the equally-weighted and the value-weighted risk arbitrage portfolio outperform the market according to the Sharpe ratio.

5.1 Regression analysis of speculation spreads and ex ante variables

The bid premium is significantly positively related to the speculation spread in our main regression, as well as in several sub-samples. The dummy variable for cash payment is negative and significant at the 5% significance level across all regressions. In most regressions, speculation spreads have a negative and significant relationship to pre-bid runups, however no significance is shown in the regressions for stock offers and during low activity years. The coefficient for domestic bidder is positive and significant at the

10% level in the main regression as well as in the regressions for friendly bids, cash bids and during normal activity periods. Lastly, toehold is positively related to the speculation spread in the main regression at the 10% level. However, the coefficient changes signs across the regressions, and the result can therefore not be considered robust. The results from regressing the speculation spread on ex ante bid characteristics are displayed in Table 3.⁹

⁹ No observations were found where a financial buyer used shares as method of payment, thus no coefficients could be estimated for industrial bidders in stock offers.

Table 3: Regression results

Independent variables	1	2	3	4	5	6	7	8	9	10
All bids		Friendly	Hostile	Cash	Stock	High activity	Low activity	Normal activity	1995-2001	2002-2008
<i>N</i>	178	140	38	141	37	77	24	77	98	80
Intercept	4.247 (0.034)	4.400 (0.015)	3.776 (0.601)	-1.197 (0.355)	2.933 (0.634)	6.567 (0.040)	2.734 (0.493)	1.972 (0.523)	5.168 (0.066)	6.373 (0.024)
Bid premium	0.028 (0.023)	0.034 (0.009)	0.018 (0.535)	0.029 (0.003)	0.067 (0.408)	0.002 (0.935)	0.045 (0.432)	0.050 (0.005)	0.042 (0.012)	-0.010 (0.597)
Toehold	0.027 (0.089)	0.016 (0.279)	0.075 (0.188)	-0.001 (0.924)	0.104 (0.085)	0.053 (0.044)	-0.017 (0.638)	0.013 (0.623)	-0.003 (0.885)	0.065 (0.010)
Pre-bid runoff	-0.070 (0.006)	-0.055 (0.020)	-0.208 (0.047)	-0.039 (0.075)	-0.161 (0.141)	-0.091 (0.030)	-0.023 (0.652)	-0.075 (0.083)	-0.069 (0.054)	-0.098 (0.010)
Friendly management	-0.687 (0.512)	- (0.512)	- (0.512)	0.979 (0.281)	-5.774 (0.123)	0.368 (0.828)	1.120 (0.692)	-1.295 (0.451)	-0.292 (0.842)	-0.442 (0.765)
Cash payment	-6.030 (0.000)	-5.283 (0.000)	-8.167 (0.038)	- (0.000)	- (0.000)	-7.646 (0.000)	-5.464 (0.008)	-4.671 (0.006)	-4.550 (0.000)	-8.376 (0.000)
Industrial bidder	1.379 (0.172)	-0.298 (0.755)	4.644 (0.122)	0.722 (0.358)	- (0.000)	0.251 (0.877)	0.599 (0.851)	2.232 (0.146)	0.527 (0.712)	-0.706 (0.633)
Domestic bidder	1.703 (0.062)	1.533 (0.059)	3.131 (0.430)	1.374 (0.074)	4.164 (0.240)	0.664 (0.649)	1.917 (0.337)	2.811 (0.069)	1.966 (0.122)	-0.141 (0.912)
High activity	0.436 (0.601)	0.815 (0.281)	-2.716 (0.359)	0.044 (0.950)	1.502 (0.658)	- (0.000)	- (0.000)	- (0.000)	-0.034 (0.974)	1.405 (0.273)
Low activity	-1.522 (0.215)	-0.745 (0.478)	-4.246 (0.504)	-1.475 (0.211)	0.201 (0.960)	- (0.000)	- (0.000)	- (0.000)	-2.264 (0.270)	0.115 (0.940)
Adjusted R^2	0.254	0.267	0.316	0.054	0.153	0.277	0.257	0.258	0.193	0.381
<i>F</i> -value	7.704	7.341	3.140	2.004	1.932	5.159	2.139	4.777	3.579	6.411
<i>p</i> -value for <i>F</i>	0.000	0.000	0.011	0.051	0.100	0.000	0.099	0.000	0.001	0.000

The coefficient signs for bid premium, toehold and pre-bid runups are in line with the study by Jindra and Walkling (2004). A high bid premium or a high toehold seems to deter competing offers and lower the probability of a raised bid. Also, regarding the bid premium, it might be the case that investors rebalance their portfolios by selling shares in the target company if their holdings get disproportionately large due to the increase in value after a bid. The intuition behind the negative coefficient for runups is that a runup in the share price prior to a bid lowers the premium that an acquirer is prepared to pay, which in turn would implicitly lead to a higher probability of a raised bid.

The finding that a cash deal leads to a lower speculation spread than a stock offer might be related to signaling effects. An acquirer that proposes payment in stock signals that its shares are overvalued, and that the price of these shares is likely to be revised. Furthermore, it might be difficult for an investor to get rid of the market risk by short-selling the acquirer's shares due to regulatory issues. It would therefore be interesting to see whether the finding that cash payment is negatively related to the spread is robust in countries with different regulations regarding so called "naked" positions, where an investor or institution can sell shares that they do not own.

The significant positive coefficient for domestic bidder suggests that a domestic bidder increases the uncertainty of the outcome of a bid compared to a foreign bidder. A different interpretation could be that a foreign bidder is perceived as more willing to raise the bid if necessary. The relationships between the speculation spread and the variables bid premium and domestic bidder change from positive to negative in the 2002-2008 period, however insignificant.

The remaining variables (managerial attitude, industrial bidder and abnormal takeover activity) do not show any significant explanatory power in any regression. As discussed in section four, the variables' dual effect on the speculation spreads makes it difficult to formulate concluding remarks regarding the regression coefficients. For example, the coefficient for friendly management changes signs across the regressions, but it is more often than not negative. Thus, it seems as the market mostly expects raised or competing bids when an acquisition is announced as hostile. This deviation from the results of Jindra and Walkling (who found a significantly negative relationship between hostile bids and the spread), is probably related to the ownership structure in the Swedish market, as earlier mentioned. We believe that the more concentrated ownership in Swedish companies compared to Anglo-Saxon companies increases the likelihood that a hostile bid is rejected. This counteracts the negative effect on the spread from the possibility of an upward revision of the bid. Nonetheless, additional cross-country analyses of block holding in target firms in hostile takeovers are necessary before definite conclusions can be made.

The adjusted R^2 values are relatively high throughout the regressions, ranging from a high of 0.381 for bids in the period from 2002 to 2008, to a low of 0.054 for cash offers. This shows that the

variables included in the model are good at explaining the variation in the speculation spread. Jindra and Walkling (2004) found adjusted R^2 between 0.047 and 0.199. Our F -values are also high, and we reject the null-hypothesis of the coefficients being jointly equal to zero for all of our regressions at the 10% significance level.

The dummy variables for abnormal takeover activity are not significant in any regression. We can therefore conclude that in our sample, spreads are not related to takeover intensity. This differs from the results in Jindra and Walkling, who found that the spread was significantly lower in periods of high takeover intensity compared to periods with normal activity.

5.2 Risk arbitrage returns

In addition to analyzing how certain bid characteristics relate to the spread, we have investigated the potential returns from investing in acquisition targets. This is done by constructing risk arbitrage portfolios (see section 3.3 for methodology). The result from following this strategy is illustrated in Figure 6.

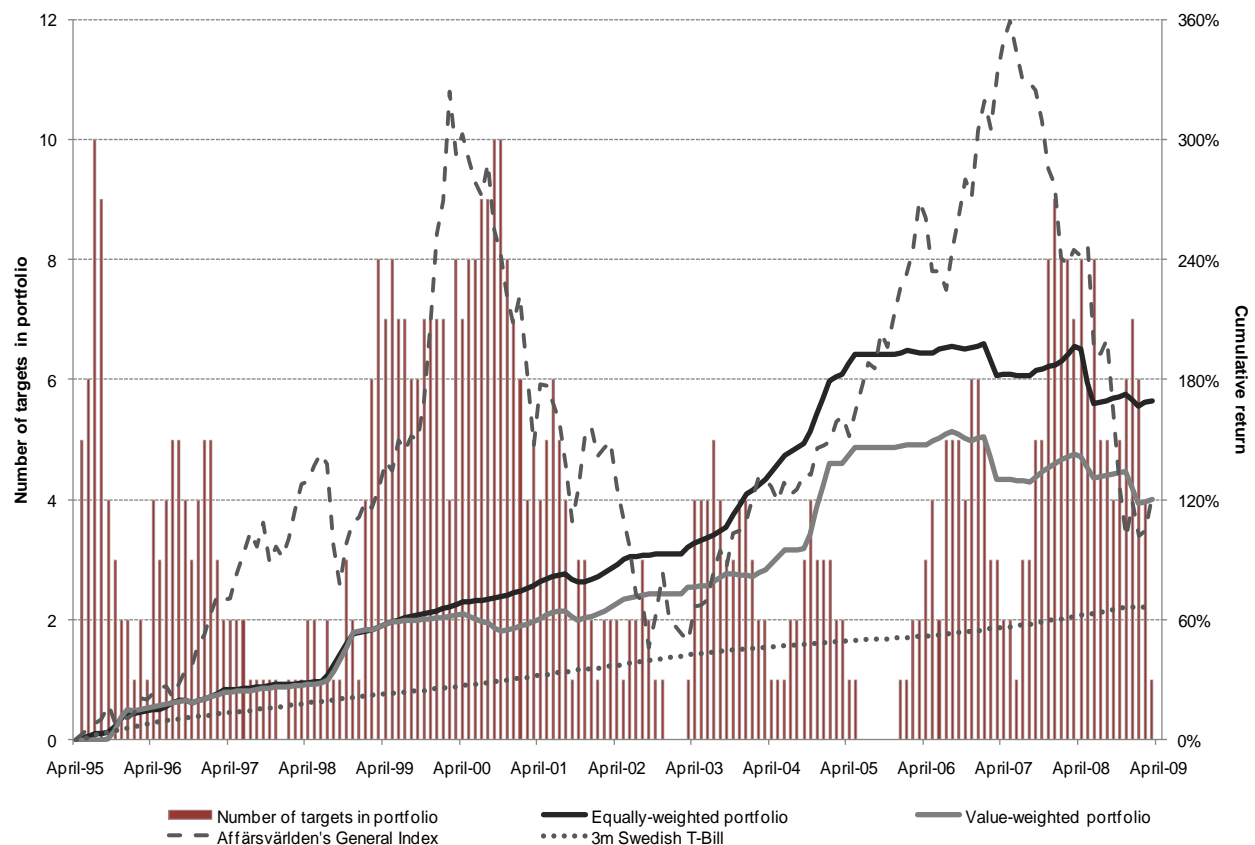


Figure 6: Risk arbitrage portfolio performance

The highest number of target companies included in the portfolio is ten, while the minimum is zero. The total cumulative return of the equally-weighted risk arbitrage portfolio from May 1st, 1995 until March 30th, 2009 is approximately 168%. This corresponds to roughly 1.4 times the return of the market portfolio, measured as Affärsvärlden's General Index. The cumulative return of the value-weighted risk arbitrage portfolio was 120%. This is slightly below the return of the market portfolio. The returns of our risk arbitrage portfolios are lower than in Jindra and Walkling (2004), in which a passive risk arbitrage portfolio yields a return of 1.5 to 2 times the return of the market (depending on the starting point of the investment) in the 1981-1995 period.¹⁰

The market yielded a higher cumulative return than the equally-weighted portfolio over certain time periods, and during almost every time period compared to the value-weighted portfolio. This is not consistent with the findings of Jindra and Walkling (2004). Furthermore, one can see that neither the equally-weighted nor the value-weighted risk arbitrage portfolio increase in value between 2005 and 2009. This could imply that during this time period, it has become more difficult to earn money by speculating in the spread, as described by Cornelli and Li (2002). The fact that the value-weighted portfolio returned less than the equally-weighted portfolio implies that investors are reluctant to invest in small takeover targets unless the potential return is high.¹¹

Table 4: Risk arbitrage portfolio performance (monthly)

Portfolio	Geometric mean return	Standard deviation	Abnormal return	Sharpe ratio
Risk arbitrage (VW)	0.47%	1.45%	0.16%	0.11
Risk arbitrage (EW)	0.60%	1.17%	0.29%	0.25
Affvärlden's General Index	0.48%	6.26%	0.17%	0.03
Risk-free rate	0.31%	0.13%		

Table 4 shows that the monthly abnormal returns to our risk arbitrage portfolios are smaller than the returns in earlier studies on American data. The monthly abnormal returns in these studies range from 0.6% (Baker and Savaşoglu, 2002) to approximately 2% (Jindra and Walkling, 2004). The differences might relate to dissimilarities in ownership structure between the American and the Swedish market. As mentioned earlier, Swedish companies often have a more concentrated ownership structure (Agnblad et al., 2001), and bids therefore have to be well anchored in order to be successful. Once announced, the outcome of a takeover attempt should then be less uncertain, and result in a narrower spread and lower

¹⁰ However, our returns are somewhat understated since we do not invest in the market portfolio (as Jindra and Walkling, 2004) or in the risk-free rate during months where no tender offer is outstanding (no target is "in play").

¹¹ A t-test shows that the mean spread in cash bids for small companies is significantly higher than the mean spread in bids for larger companies (see Table A5 in Appendix II).

abnormal return from risk arbitrage investments in our Swedish dataset. The fact that we use a later time series than the American studies mentioned above might also explain the lower abnormal return found in our study.¹² Dukes et al. (1992) find excess daily returns of 0.76% in the period 1971-1985, and claim that the benefits of risk arbitrage were ignored during this time period. This implies that a study conducted on earlier Swedish data may find higher returns than the ones in our study. The low standard deviation for the risk arbitrage portfolios indicates that this type of investment could be considered as fairly conservative compared to investing on the stock market, which is in line with the findings of Branch and Yang (2006).

The risk arbitrage portfolios clearly outperform the market portfolio measured by the Sharpe ratio. The monthly Sharpe ratio for our equally-weighted portfolio (0.25, annualized 0.87), is fairly close to the result in Baker and Savaşoglu (2002). They found a monthly Sharpe ratio of 0.29 (annualized 1.00), considering cash tender offers only. Their result for a risk arbitrage portfolio consisting of both cash and stock offers (a monthly Sharpe ratio of 0.39, annualized 1.35), might therefore provide guidance for a similar Swedish study.

The Sharpe ratio for the value-weighted portfolio (0.11, annualized 0.38), shows that an investor would be better off investing in an equally-weighted portfolio, both in terms of absolute return and with respect to the risk-return relationship. A lower Sharpe ratio for the value-weighted portfolio was also found in the study by Baker and Savaşoglu (0.22, annualized 0.76). Even though the value-weighted portfolio underperforms the equally-weighted portfolio, it still has a higher Sharpe ratio than the market portfolio.

As a last analysis, we tested the monthly abnormal returns from the equally-weighted and the value-weighted risk arbitrage portfolio against the market return with the CAPM-formula (see Eq. (5)). The regressions results are shown in Table 5.

Table 5: CAPM regressions

Portfolio	N	Intercept		$R_{\text{mkt}} - R_f$		R^2
		α	p -value	β_{mkt}	p -value	
Value-weighted	167	0.17%	0.124	0.000	0.978	0.000
Equally-weighted	167	0.28%	0.002	0.007	0.626	0.001

According to the CAPM, the excess return from the equally-weighted portfolio (0.28%) is significant on the 1% level, while the excess return from value-weighted portfolio does not show significance even at

¹² As mentioned earlier, spreads have narrowed over time (see Cornelli and Li, 2002).

the 10% level. Moreover, the risk arbitrage portfolios do not show any significant correlation with the market. This is not surprising, as the relationship between risk arbitrage returns and the market return has been shown to be non-linear in earlier literature (Mitchell and Pulvino, 2001).

In summary, the returns from a risk arbitrage investment strategy are economically significant and even though the possibility for excess returns seem to be lower on the Swedish market, our findings are similar to earlier American studies.

5.3 Robustness tests

As an additional robustness test (in results not reported), we run the main regression with the one-day bid premium, instead of using the premium based on the average price from 10 to 30 days before the announcement. All significant coefficients in the main regression are still significant with the same signs as in the main regression. This supports our findings that these variables are related to the spread and that our results are robust.

Multicollinearity, i.e. a linear relationship between explanatory variables, is a potentially severe problem in regressions of the type that we perform (see for example Gujarati, 2003). We suspect that we might have multicollinearity in the data since the bid premium has been connected to many of our other explanatory variables in earlier literature (see e.g. Marr et al., 1993, Hirschleifer and Titman, 1990, Goergen and Renneboog, 2003 and Huang and Walkling, 1987). Table A2 in Appendix II shows pair-wise correlations between the explanatory variables in the main regression. According to Edlund (1997) a correlation between explanatory variables above 0.8, or several correlations above 0.5, are indications of multicollinearity. As we suspected, the highest correlation of 0.457 is between the variables bid premium and pre-bid runup (see section 2.3). Although quite high, we do not believe that this is reason enough for us to reject pre-bid runup as an explanatory variable.

High pair-wise correlations are a sufficient but not a necessary condition for the existence of multicollinearity (Gujarati, 2003). Table A3 in Appendix II shows the tolerance levels and variance-inflating factors (VIFs) for the different variables. VIFs show how the variance of an estimator is inflated by the presence of multicollinearity (Gujarati, 2003), and a VIF higher than 10 would indicate that an explanatory variable is strongly collinear (Edlund, 1997). Our variables have VIFs between 1.2 and 1.4, and together with the low pair-wise correlations, this suggests that there is no perfect multicollinearity in our sample.

6. Summary and conclusions

This thesis has studied the speculation spread, i.e. how investors value a takeover target relative to the bid price. To our knowledge, no earlier study has been conducted on speculation spreads in the Swedish

market. In the first part of this thesis we describe the magnitude and cross-sectional variation of the speculation spread observable in Sweden. The second part of this study focuses on bid characteristics that could be related to the spread, as well as potential excess returns from speculating in the spread.

In most takeovers, the closing share price of the target one day after a bid is different from the bid price. The mean speculation spread in our sample is 2.9%. In other words, the closing share price of a takeover target one day after a bid has been announced is, on average, 2.9% lower than the bid price. This spread is an indication of the uncertainty surrounding the bid, and the market's beliefs regarding *if* and *when* the takeover will be completed. Spreads in cash bids in our study are smaller than in a comparable American study, implying that investors in Sweden have a higher confidence that a takeover will be successful at the initial bid level. We believe that the lower spread in Sweden can be linked to our more concentrated ownership structure, which forces a bid to be well-anchored in order to be successful. Takeover attempts on the Stockholm Stock Exchange are therefore more likely to be successful, once announced, than American takeovers, leading to less uncertainty and lower spreads.

The speculation spread exhibits considerable cross-sectional variation. Approximately 19% of the takeover targets trade at higher prices than the bid price one day after an announcement. A higher proportion of bids with negative spreads compared to bids with zero or positive spreads are eventually revised upward in Sweden. We therefore find it probable that spreads observed in Sweden carry an informational content regarding the expected outcome of a takeover, and investors seem to be fairly good at predicting the outcome of an offer.

We perform several regressions relating the speculation spread to certain ex ante observable bid characteristics, and find that bid premium, the form of payment, share price runup prior to the bid, bidder nationality and toehold are significantly related to the spread. These variables are significant in the main regression, as well as in sub-samples, which gives us confidence in believing that our results are fairly robust. This finding might help investors to anticipate the market's reaction to an offer in the light of certain bid characteristics.

Furthermore, our results show that there seem to be excess returns to make by speculating in takeovers in the Swedish market, although smaller than in earlier American studies. We construct an equally-weighted and a value-weighted portfolio of takeover targets, and test the return with a market model. Our equally-weighted risk arbitrage portfolio shows a significant excess return, and outperforms the market from May 1995 to March 2009, while our value-weighted portfolio performs in line with the market during the same period.

7. Further research

Our results indicate that the speculation spread (and thereby the potential risk arbitrage return) is smaller in Sweden than in America, in large takeover targets compared to small, and that it has decreased over time. Additional research could provide further insights in these areas. One could for example compare the results over different time periods and include stock offers in the risk arbitrage portfolio.

This study focused on the spreads between the bid price and the post-announcement share price. One could take a similar approach but apply it to the bid premium instead of speculation spreads. From what we have seen in earlier literature, managerial attitude, form of payment and bidder nationality, at least, seem to affect the bid premium.

Jindra and Walkling (2004) extended their research by including ex post bid characteristics in their study. Variables included were for example offer duration and bid revisions. A similar study on Swedish data would contribute further to existing research. Other variables used by Jindra and Walkling that may be of interest in future research on Swedish or international data, are abnormal trading volume around an announcement, management ownership and block holding, and if the bidder has a track record of successful acquisitions.

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Appendix I

We will now present examples of how we constructed our risk arbitrage portfolios (see section 3.2). Assume that there are two companies, Anacott Steel (Anacott) and Bluestar Airlines (Bluestar). A bid is placed on Anacott on January 20th, 2009. The takeover is successful, and the company is de-listed on April 13th, 2009. The share traded with a speculation spread of 2.5% the day after the announcement. A bid is placed on Bluestar on February 6th, 2009. The bid is unsuccessful and the bidder withdraws the offer on April 2nd, 2009. The difference between the post-announcement share price and the closing price on the day the offer is withdrawn is –5%.

We have done the following to simplify our calculations: The exact time the offer for Anacott is outstanding is 83 days, and this does not change even if we assume that every month has 30 days (the 28 days in February make up for the 31 days in both January and March). For Bluestar however, the offer is outstanding for 45 days, but since we assume that every month has 30 days, the number of outstanding days becomes 46. This problem becomes negligible since we smooth out the monthly return evenly over a certain number of complete months. The number of active days in the portfolio becomes 90 (exactly three months) for Anacott and 60 (exactly two months) for Bluestar.

Since we only re-balance the portfolio in the beginning of each month, the starting date of the attempted takeover will be moved to the first day the following month. Thus, Anacott is introduced into the portfolio from February 1st to April 30th, 2009. The respective dates for Bluestar are March 1st and April 30th, 2009. The monthly return is calculated according to the following formula:

$$r_{monthly,i} = TR_i^{30/t} \quad (A1)$$

Here, t is the duration of the bid (in number of days). In the equally-weighted portfolio, the monthly return is calculated as an arithmetic average:

$$R_{EW} = \frac{(r_1 + r_2 + \dots + r_n)}{n} \quad (A2)$$

In the value-weighted portfolio, the monthly return is calculated as a weighted average:

$$R_{VW} = \frac{(Mkt\ cap_1 \times r_1 + Mkt\ cap_2 \times r_2 + \dots + Mkt\ cap_n \times r_n)}{\sum_{i=1}^n Mkt\ cap_i} \quad (A3)$$

The monthly returns for the equally-weighted portfolio in this example are displayed in Table A1.

Table A1: EW portfolio return (example)

Month	Number of target firms	Return	Cumulative return
January	0	0.00%	0.00%
February	1	0.83%	0.83%
March	2	-0.85%	-0.03%
April	2	-0.85%	-0.89%

The equally-weighted portfolio consisting of Anacott Steel and Bluestar Airlines generates a cumulative return of -0.89% from February 1st to April 30th, 2009.

Appendix II

Table A2: Pair-wise correlations from main regression (Eq. (2))

	Speculation spread	Bid premium	Toehold	Runup	Friendly manageme	Cash payment	Industrial bidder	Domestic bidder	High activity	Low activity
Speculation spread	1.000	.046	.056	-.176	-.042	-.445	.140	.218	.020	-.019
Bid premium	.046	1.000	-.069	.457	-.043	.045	-.014	-.088	.069	-.111
Toehold	.056	-.069	1.000	.107	.398	.054	-.025	.067	.037	-.010
Runup	-.176	.457	.107	1.000	.188	.045	.045	-.211	-.008	-.018
Friendly management	-.042	-.043	.398	.188	1.000	-.030	.218	-.145	-.043	.085
Cash payment	-.445	.045	.054	.045	-.030	1.000	-.289	-.137	.084	-.244
Industrial bidder	.140	-.014	-.025	.045	.218	-.289	1.000	-.297	-.143	.146
Domestic bidder	.218	-.088	.067	-.211	-.145	-.137	-.297	1.000	-.134	-.096
High activity	.020	.069	.037	-.008	-.043	.084	-.143	-.134	1.000	-.345
Low activity	-.019	-.111	-.010	-.018	.085	-.244	.146	-.096	-.345	1.000

Table A3: Multicollinearity statistics from main regression (Eq. (2))

Variable	Tolerance	VIF
Bid premium	0.758	1.320
Toehold	0.802	1.246
Runup	0.716	1.396
Friendly management	0.755	1.325
Cash payment	0.804	1.243
Industrial bidder	0.747	1.339
Domestic bidder	0.750	1.334
High activity	0.816	1.226
Low activity	0.794	1.260

Table A4: *t*-test of the speculation spread over time

Period	<i>N</i>	Mean spread	<i>t</i>	<i>p</i> -value
1995-2001	98	4.02%	2.940	0.004
2002-2008	80	1.52%		

Table A4 shows that the spread in bids 1995-2001 is significantly higher than the spread in 2002-2008.

Table A5: *t*-test of the speculation spread in bids for “small” and “large” companies

Market cap	<i>N</i>	Mean spread	<i>t</i>	<i>p</i> -value
<500 MSEK	69	2.42%	-2.531	0.012
>500 MSEK	72	0.80%		

Table A5 shows that the spread in cash bids for companies with a market capitalization of less than 500 MSEK on the day before the announcement is significantly higher than the spread in cash bids for companies worth more than 500 MSEK.

Table A6: Bids 1995-1998

Date announced	Target company	Industry	Bidder	Similar industry	Managerial attitude	Form of payment	Bidder nationality	Takeover activity	T oehold	Runup	Bid price (SEK)	Bid premium	Speculation spread
April 3, 1995	Swegon	Ventilation	Latour	No	Friendly	Cash	Swedish	Normal	89%	-6%	36.50	1.6%	1.3.9%
April 3, 1995	Prodra	Investment company	Atle	Yes	Friendly	Cash	Swedish	Normal	53%	4%	46.25	3.2%	-1.60%
April 3, 1995	Partnerinvesteringar	Investment company	Atle	Yes	Friendly	Cash	Swedish	Normal	55%	3%	45.20	3.6%	-1.09%
April 3, 1995	KapN	Investment company	Atle	Yes	Friendly	Cash	Swedish	Normal	52%	13%	42.00	3.4%	-1.41%
April 7, 1995	Skåne Gripen	Furniture and fixtures	Industri Kapital	No	Hostile	Cash	Swedish	Normal	0%	1%	67.50	2.8%	6.30%
May 22, 1995	Owll Svenska	Computer hardware and services	W M-data	Yes	Friendly	Stock	Swedish	Normal	45%	1%	162.12	55%	8.28%
May 31, 1995	Abu Garcia	Fishing equipment	Berkley Inc	Yes	Friendly	Cash	American	Normal	83%	-12%	18.00	-13%	2.86%
June 2, 1995	Bruksens Nordic	Steel	EQT	No	Friendly	Cash	Swedish	Normal	81%	3%	24.50	2.8%	3.81%
June 6, 1995	LIC Care	Medical equipment	Gelinge	Yes	Friendly	Cash	Swedish	Normal	0%	-8%	73.00	3.3%	3.55%
June 9, 1995	Hilab	Real estate	Exab	Yes	Friendly	Cash	Swedish	Normal	23%	27%	28.00	2.7%	4.09%
June 26, 1995	Fristads	Work and protection clothing	Kansas Erhvervsbeskædning	Yes	Friendly	Cash	Danish	Normal	10%	14%	200.00	3.8%	4.17%
September 4, 1995	Hassefors	Investment company/Forestry	AssiDomän	Yes	Hostile	Cash	Swedish	Normal	0%	0%	265.00	4.8%	18.30%
November 20, 1995	Karolin Invest	Investment company/Industrial	Atle	Yes	Friendly	Cash	Swedish	Normal	92%	-5%	225.00	2.2%	-0.88%
January 2, 1996	Gambro	Medical equipment	Incentive	Yes	Friendly	Cash	Swedish	Normal	74%	12%	155.00	3.4%	1.97%
March 11, 1996	Synectics Medical	Medical equipment	Medtronic Inc	Yes	Friendly	Cash	American	Normal	73%	-1%	291.00	20%	1.75%
March 13, 1996	United Tankers	Shipping	Broström	Yes	Friendly	Cash	Swedish	Normal	68%	1%	35.00	2.6%	2.64%
April 1, 1996	Kanthal	Steel	Sandvik	Yes	Hostile	Cash	Swedish	Normal	23%	-6%	124.50	37%	5.06%
May 31, 1996	Sifo	Nonphysical research	Scribona	Yes	Hostile	Cash	Swedish	Normal	40%	0%	80.00	1.4%	1.27%
June 10, 1996	Skåne Gripen	Furniture and fixtures	Skanska	Yes	Friendly	Cash	Swedish	Normal	54%	4%	82.50	27%	2.48%
September 12, 1996	Trustor	Investment company	ON-Invest	Yes	Friendly	Cash	Swedish	Normal	77%	10%	4.00	3.1%	2.83%
September 16, 1996	Hemstaden	Real estate	Anders Döbs AB	Yes	Friendly	Stock	Swedish	Normal	71%	4%	7.75	2.1%	2.67%
October 4, 1996	Sfab	Real estate	T ornet	Yes	Hostile	Cash	Swedish	Normal	0%	2%	36.00	2.3%	1.12%
October 7, 1996	Forsbela	Sealing products	TI Group PLC	Yes	Friendly	Cash	British	Normal	64%	17%	225.00	4.8%	1.81%
October 29, 1996	Orrefors Kosta Boda	Glass products	Proventus, SEP and Royal Copenhagen	No	Friendly	Cash	Swedish	Normal	71%	46%	155.00	4.3%	1.97%
November 4, 1996	Terra Mining	Mining	William Resources	Yes	Friendly	Cash	Canadian	Normal	42%	20%	162.50	37%	2.85%
January 7, 1997	Cyncrona	Electronics production equipment	OEM International	Yes	Friendly	Stock	Swedish	Low	76%	6%	114.00	17%	5.22%
March 3, 1997	VenCap	Investment company	Grimaldi Industrier	Yes	Friendly	Cash	Swedish	Low	82%	14%	68.00	26%	0.00%
August 8, 1997	Goric	Real estate	Vasakronan	Yes	Friendly	Cash	Swedish	Low	57%	1%	19.00	1.4%	1.06%
September 1, 1997	ICB Shipping	Shipping	Frontline	Yes	Hostile	Stock	Norwegian	Low	0%	13%	113.83	2.1%	5.48%
October 2, 1997	Trygg-Hansa Forsikring	Life insurance	SEB	Yes	Friendly	Stock	Swedish	Low	39%	15%	237.25	3.6%	0.91%
December 9, 1997	Linjebuss	Intercity and rural bus services	CGEA Transport SA	Yes	Friendly	Cash	French	Low	77%	66%	112.00	82%	0.90%
December 19, 1997	Forceenergy	Petroleum and natural gas	Forceenergy Inc	Yes	Friendly	Stock	American	Low	52%	-5%	109.10	1.6%	3.01%
March 31, 1998	Marieberg	Newspaper publishing	Bonnier	Yes	Friendly	Cash	Swedish	Normal	72%	0%	246.50	27%	1.23%
April 14, 1998	Storheden	Real estate	W hlborgs	Yes	Friendly	Stock	Swedish	Normal	43%	9%	47.16	3.6%	7.56%
June 12, 1998	Tryckinvest i Norden	Printing	Carl Bennet AB	No	Hostile	Cash	Swedish	Normal	0%	8%	154.00	1.1%	6.21%
September 9, 1998	Näckebo	Real estate	Drott	Yes	Hostile	Cash	Swedish	Normal	0%	-16%	126.00	4%	-1.18%
September 21, 1998	Benima Ferator	Engineering services	Sigma	Yes	Friendly	Cash	Swedish	Normal	0%	-33%	34.00	2.9%	3.03%
November 30, 1998	PLM	Packaging	Rexam PLC	Yes	Friendly	Cash	British	Normal	23%	2%	118.00	50%	1.29%
December 2, 1998	Liljeholmens	Stearine candles	Duni	Yes	Hostile	Cash	Swedish	Normal	0%	28%	14.50	3.6%	1.40%
December 14, 1998	Caran	IT services	W M-data	Yes	Friendly	Cash	Swedish	Normal	42%	-3%	100.00	4.9%	2.04%
December 17, 1998	Kalmar Industries	Forklift trucks	Patriek	Yes	Hostile	Cash	Finnish	Normal	61%	-1%	85.00	2.0%	-2.30%

Table A7: Bids 1999-2000

Date announced	Target company	Industry	Bidder	Similar industry	Managerial attitude	Form of payment	Bidder nationality	Takeover activity	Toehold	Runup	Bid price (SEK)	Bid premium	Speculation spread
January 7, 1999	Spectra-Physics	Optical instruments	T thermo Instrument Systems Inc	Yes	Friendly	Cash	American	High	0%	-5%	160.00	71%	2.56%
January 19, 1999	JP Bank	Banking services	Matteus	Yes	Friendly	Stock	Swedish	High	74%	-10%	46.80	17%	9.19%
February 1, 1999	BTL	Transportation	Sinners AG	Yes	Hostile	Cash	German	High	50%	15%	45.00	71%	0.45%
February 11, 1999	Dahl International	Hydronics	EQT and Ratos	No	Hostile	Cash	Swedish	High	28%	11%	120.00	45%	1.69%
March 1, 1999	Priifast	Real estate	Balder	Yes	Friendly	Cash	Swedish	High	47%	-1%	75.00	35%	1.35%
March 3, 1999	Enator	IT services	Tieto Oy	Yes	Friendly	Stock	Finnish	High	15%	5%	250.91	27%	4.57%
March 8, 1999	Asitcus	Real estate	IVG AG	Yes	Friendly	Cash	German	High	0%	16%	117.00	54%	0.86%
April 26, 1999	ASG	Freight and cargo	Danzas AG	Yes	Friendly	Cash	Swiss	High	52%	10%	265.00	43%	-0.19%
April 29, 1999	BPA	Construction and installation	Procuritas	No	Friendly	Cash	Swedish	High	65%	11%	28.00	31%	2.56%
May 12, 1999	Sendit	Software	Microsoft	Yes	Friendly	Cash	American	High	43%	44%	325.00	103%	1.56%
May 25, 1999	Sorb Industri	Industrial group	Carl Bennet AB	No	Friendly	Cash	Swedish	High	0%	-1%	45.00	31%	7.14%
July 27, 1999	Scancem	Concrete products	Heidelberg Zement AG	Yes	Friendly	Cash	German	High	91%	2%	378.15	4%	1.65%
August 10, 1999	Eldon	Industrial group	EQT	No	Friendly	Cash	Swedish	High	68%	4%	180.00	28%	1.69%
August 16, 1999	AGA	Industrial gases	Linde AG	Yes	Friendly	Cash	German	High	63%	25%	141.00	26%	1.08%
September 17, 1999	Martinson Gruppen	Information technology	Ale	No	Hostile	Cash	Swedish	High	53%	12%	80.00	40%	1.91%
October 4, 1999	Hansk makarn	Leather retailer	W edins	Yes	Friendly	Stock	Swedish	High	60%	-9%	59.85	40%	16.17%
November 16, 1999	Celsius	Navigation equipment	SA AB	Yes	Friendly	Cash	Swedish	High	62%	9%	179.00	39%	3.17%
November 19, 1999	Monark Siga	Motorcycles and bicycles	Grimaldi	No	Friendly	Cash	Swedish	High	72%	24%	46.00	85%	2.00%
December 16, 1999	Midata	Computer programming	Sigma	Yes	Friendly	Stock	Swedish	High	57%	71%	184.51	95%	7.14%
December 22, 1999	Althin Medical	Medical equipment	Baxter International Inc	Yes	Friendly	Cash	American	High	83%	45%	100.00	80%	2.56%
January 18, 2000	Diligentia	Real estate	Castellum	Yes	Friendly	Stock	Swedish	High	24%	3%	77.50	13%	0.63%
February 2, 2000	Piren	Real estate	Rodamco Continental Europe NV	Yes	Friendly	Cash	Dutch	High	65%	27%	69.60	18%	-0.57%
February 9, 2000	Balder	Real estate	Drott	Yes	Hostile	Cash	Swedish	High	23%	-6%	135.00	33%	0.75%
February 14, 2000	Kjessler & Mannerstrale	Technology consultant	T traction	No	Friendly	Cash	Swedish	High	48%	6%	65.00	26%	1.56%
February 17, 2000	Evidentia	Real estate	Claesson & Anderzen AB	Yes	Friendly	Cash	Swedish	High	79%	-4%	91.00	11%	1.68%
March 18, 2000	Naturkompaniet	Leisure clothing and equipment	Filifilbolaget	Yes	Friendly	Stock	Swedish	High	78%	19%	64.00	52%	23.87%
April 4, 2000	BT Industries	Forklift trucks	Toyoda Automatic Loom Works	Yes	Friendly	Cash	Japanese	High	25%	11%	275.00	41%	7.42%
April 10, 2000	Perstorp	Industrial chemicals	Industri Kapital	No	Friendly	Cash	Swedish	High	32%	27%	125.00	33%	6.84%
May 8, 2000	Folkbolagen	Metals	Lindab	Yes	Friendly	Cash	Swedish	High	31%	2%	43.50	61%	8.21%
May 12, 2000	Zeteco	Industrial machinery	Parek Oy	Yes	Friendly	Cash	Finnish	High	85%	3%	199.00	1%	0.00%
May 15, 2000	Entra Data	Software	TietoEnator Oy	Yes	Friendly	Stock	Finnish	High	50%	16%	358.02	35%	0.73%
June 15, 2000	Lifco	Healthcare	Carl Bennet AB	No	Friendly	Cash	Swedish	High	51%	-11%	42.00	15%	4.48%
June 21, 2000	Svedala Industri	Industrial group	Metso Oy	Yes	Friendly	Cash	Finnish	High	11%	-2%	185.00	54%	8.82%
August 16, 2000	Iro	Industrial machinery	Michel Van De Wiele NV	Yes	Friendly	Cash	Belgian	High	25%	15%	122.50	46%	6.99%
August 21, 2000	Norrporten	Real estate	NS Holding	Yes	Friendly	Cash	Swedish	High	48%	11%	140.00	30%	2.19%
August 22, 2000	Aligon	Telephone antennas	LGP Telecom	Yes	Hostile	Stock	Swedish	High	0%	-7%	142.24	33%	2.99%
September 11, 2000	Resco	IT consultant	Fi-System	Yes	Friendly	Stock	French	High	57%	55%	57.62	123%	3.05%
September 13, 2000	Arete	IT consultant	T urn IT	Yes	Friendly	Stock	Swedish	High	39%	9%	181.87	60%	3.60%
September 21, 2000	Bulten	Automotive components	Finaveden	Yes	Friendly	Cash	Swedish	High	59%	3%	45.00	57%	0.00%
September 27, 2000	Anders Diös AB	Real estate	AP Fastigheter	Yes	Friendly	Cash	Swedish	High	0%	11%	78.00	42%	1.96%
October 6, 2000	FB Industri	Industrial group	Bergman & Beving AB	Yes	Friendly	Cash	Swedish	High	71%	-4%	30.00	41%	5.26%
October 31, 2000	Sena Line	Shipping	Sena	Yes	Friendly	Cash	Swedish	High	79%	3%	8.00	16%	5.26%

Table A8: Bids, 2001-2005

Date announced	Target company	Industry	Bidder	Similar industry	Managerial attitude	Form of payment	Bidder nationality	Takeover activity	Toehold	Runup	Bid price (SEK)	Bid premium	Speculation spread
February 19, 2001	Atle	Investment company	Ratos and 3i	Yes	Friendly	Cash	Swedish	Normal	31%	5%	162.00	28%	3.51%
February 26, 2001	Svenska Brand Försäkring	Insurance company	Länsförsäkringar	Yes	Friendly	Cash	Swedish	Normal	61%	0%	81.00	42%	6.58%
April 6, 2001	Platzer	Real estate	Tornet	Yes	Hostile	Stock	Swedish	Normal	0%	-2%	15.20	34%	10.37%
April 10, 2001	Mattews	Security brokers	Nordiska	Yes	Friendly	Stock	Swedish	Normal	40%	-17%	17.50	21%	18.84%
April 30, 2001	Spendrups Bryggeri	Brewery	Spendrup family	No	Friendly	Cash	Swedish	Normal	74%	15%	42.00	40%	0.00%
May 14, 2001	Lindab	Industrial group	Ratos	No	Friendly	Cash	Swedish	Normal	68%	18%	138.00	32%	0.73%
May 25, 2001	Johline	Employment website	TMP Worldwide Inc	Yes	Friendly	Cash	American	Normal	49%	80%	30.70	327%	2.68%
May 31, 2001	Friidtsbolaget	Leisure clothing and equipment	Fjällräven	Yes	Friendly	Stock	Swedish	Normal	61%	6%	11.75	34%	23.76%
June 21, 2001	Lundin Oil	Petroleum and natural gas	Talisman Energy Inc	Yes	Friendly	Cash	Canadian	Normal	27%	59%	36.50	27%	-5.44%
September 3, 2001	Vision Park Entertainment	Computer entertainment	KF Media	Yes	Friendly	Cash	Swedish	Normal	35%	-2%	5.00	24%	3.09%
September 24, 2001	Ångpanneföretagen	Technology consultant	Sveco	Yes	Hostile	Cash	Swedish	Normal	28%	-7%	180.00	150%	19.21%
October 10, 2001	AssDomän	Forestry and paper	Sveaskog	Yes	Friendly	Cash	Swedish	Normal	47%	13%	280.00	38%	18.43%
October 26, 2001	Netwise	Information technology	Trio	Yes	Hostile	Stock	Swedish	Normal	0%	9%	10.00	80%	11.47%
December 10, 2001	AU-System	IT consultant	Teleca	Yes	Friendly	Stock	Swedish	Normal	28%	26%	13.40	58%	4.65%
December 18, 2001	Kipling Holding	IT consultant	Dimension	Yes	Friendly	Stock	Swedish	Normal	46%	-11%	6.67	7%	-0.50%
January 29, 2002	Munksjö	Forestry	Jefferson Smurfit	Yes	Hostile	Cash	Irish	Low	33%	2%	77.00	21%	-6.10%
February 18, 2002	Intelligent Micro Systems Data	Information technology	Martinson Informationssystem	Yes	Friendly	Cash	Swedish	Low	19%	-42%	4.05	24%	4.65%
April 23, 2002	Realia	Real estate	Columna	Yes	Friendly	Stock	Swedish	Low	90%	15%	92.50	2%	3.63%
May 24, 2002	Eselle	Office supplies	JW Childs Equity Partners II	No	Friendly	Cash	American	Low	42%	41%	90.00	32%	1.12%
July 1, 2002	Åhus Glass	Ice cream	Ingman Foods Oy	Yes	Friendly	Cash	Finnish	Low	46%	-19%	11.00	0%	0.00%
July 5, 2002	Pronyx	IT consultant	Teleca	Yes	Friendly	Cash	Swedish	Low	24%	-5%	3.30	8%	0.61%
August 29, 2002	JP Nordiska	Investment advice	Kaupthing	Yes	Hostile	Stock	Icelandic	Low	28%	3%	11.25	40%	7.34%
January 21, 2003	Allgon	Telephone antennas	LGP Telecom	Yes	Friendly	Stock	Swedish	Normal	15%	-10%	25.90	76%	8.85%
February 13, 2003	Difchamb	Laboratory instruments	Raisio Yhtymä Oy	Yes	Friendly	Cash	Finland	Normal	42%	4%	42.00	52%	3.70%
March 12, 2003	Realia	Real estate	Gösta Welandsson and Thomas Hopkins	No	Friendly	Cash	Swedish	Normal	46%	10%	40.00	33%	5.26%
March 20, 2003	Mandamus	Real estate	LRF Fastigheter	Yes	Friendly	Cash	Swedish	Normal	28%	3%	84.00	21%	-2.89%
March 25, 2003	Svenska Orient Linien	Shipping	Imperial Shipping, Navalmar and Martin Björinger	Yes	Friendly	Cash	Swedish	Normal	64%	9%	7.00	26%	0.72%
April 7, 2003	Biora	Biotech	Straumann AG	Yes	Friendly	Cash	Swiss	Normal	24%	5%	17.00	48%	3.03%
June 13, 2003	Celtica	Real estate	Ljungberg Gruppen	Yes	Friendly	Cash	Swedish	Normal	81%	2%	58.00	16%	0.87%
June 26, 2003	Perbio Science	Biotech	Fisher Scientific International Inc	Yes	Friendly	Cash	American	Normal	3%	14%	142.50	26%	-3.72%
September 19, 2003	Binar Elektronik	Electronics	Pomona	No	Hostile	Cash	Swedish	Normal	49%	-1%	10.75	28%	-2.27%
October 20, 2003	Tornet	Real estate	Lehman Brothers and Ratos	Yes	Friendly	Cash	Swedish	Normal	55%	3%	190.00	8%	-2.06%
November 4, 2003	Pandox	Hotels and motels	Elendomspar and Sundt	No	Hostile	Cash	Swedish	Normal	37%	18%	105.00	26%	0.00%
November 24, 2003	Dimension	IT consultant	Pro Act IT	Yes	Friendly	Stock	Swedish	Normal	48%	-45%	2.93	-2%	6.25%
December 1, 2003	LGP Allgon	Telecom	Powerwave Technologies Inc	Yes	Friendly	Stock	American	Normal	19%	14%	61.91	53%	0.39%
May 6, 2004	RKS	IT consultant	Sigma	Yes	Friendly	Stock	Swedish	Low	0%	-6%	6.14	5%	12.78%
June 29, 2004	Drott	Real estate	Sena Fastigheter	Yes	Friendly	Cash	Swedish	Low	56%	5%	150.00	11%	-0.33%
August 24, 2004	Frango	Software	Cognos	Yes	Friendly	Cash	Canadian	Low	61%	-7%	85.00	57%	1.19%
September 14, 2004	Song Networks	Telecom	TDC A/S	Yes	Friendly	Cash	Danish	Low	30%	17%	70.00	61%	-0.56%
November 1, 2004	Ainax	Holding company	Scania	No	Friendly	Stock	Swedish	Low	31%	3%	257.50	3%	0.76%
November 15, 2004	Finnveden	Industrial group	Nordic Capital	No	Friendly	Cash	Swedish	Low	10%	-12%	75.00	28%	-1.32%
December 22, 2004	TurnIT	Information technology	Nocom	Yes	Friendly	Stock	Swedish	Low	22%	17%	1.06	28%	10.71%
April 12, 2005	Focal Point	Software	Telelogic	Yes	Friendly	Stock	Swedish	Low	73%	-3%	21.38	13%	10.18%
May 12, 2005	Riddarhyttan Resources	Mining	Agnico-Eagle Mines Ltd	Yes	Friendly	Stock	Canadian	Low	14%	-2%	10.24	26%	0.77%
November 22, 2005	Optimail	Courier services	Posten Norge AS	Yes	Friendly	Cash	Norwegian	Low	62%	-14%	18.75	32%	0.81%

Table A9: Bids 2006-2008

Date announced	Target company	Industry	Bidder	Similar industry	Managerial attitude	Form of payment	Bidder nationality	Takeover activity	Toehold	Runup	Bid price (SEK)	Bid premium	Speculation spread
January 9, 2006	Resco	IT consultant	AcandoFrontec	Yes	Friendly	Cash	Swedish	Normal	45%	19%	5.25	35%	-1.77%
February 8, 2006	Trio	Telecom	Telgent	Yes	Friendly	Stock	Swedish	Normal	30%	9%	2.94	19%	2.20%
February 8, 2006	Gloabalnet	Telecom	Telenor ASA	Yes	Friendly	Cash	Norwegian	Normal	50%	-10%	4.00	1%	0.00%
March 14, 2006	Strålfors	Printing	Posten	Yes	Friendly	Cash	Swedish	Normal	82%	10%	95.00	35%	0.69%
April 3, 2006	Gumbro	Medical equipment	EQ T and Investor	No	Friendly	Cash	Swedish	Normal	26%	13%	111.00	35%	0.91%
June 5, 2006	Netwise	Information technology	Ericsson	Yes	Friendly	Cash	Swedish	Normal	76%	-6%	60.00	23%	1.27%
June 20, 2006	Biacore	Laboratory instruments	GE Healthcare Ltd	Yes	Friendly	Cash	British	Normal	41%	-1%	330.00	31%	0.76%
June 30, 2006	Medcover	Healthcare	Celox SA	No	Friendly	Cash	Swedish	Normal	35%	-2%	120.00	26%	1.27%
July 24, 2006	Senea	Electronics	Kamstrup A/S	Yes	Friendly	Cash	Danish	Normal	51%	-3%	17.60	7%	-4.35%
September 1, 2006	Cupio	Hospitals	Nordic Capital and Apex	No	Hostile	Cash	Swedish	Normal	0%	-1%	153.00	38%	-10.79%
September 11, 2006	Narkes Elektriärska	Electronics	Segulah	No	Friendly	Cash	Swedish	Normal	73%	2%	145.00	11%	1.05%
October 2, 2006	Cybercom	Information technology	JCE Group	No	Hostile	Cash	Swedish	Normal	37%	17%	38.00	47%	1.60%
October 2, 2006	Semcon	Information technology	JCE Group	No	Hostile	Cash	Swedish	Normal	0%	0%	65.00	16%	-1.14%
November 8, 2006	Custos	Industrial pumps	SPX Corporation	Yes	Friendly	Cash	American	Normal	55%	11%	78.00	17%	0.65%
November 20, 2006	Protect Data	IT consultant	Check Point	Yes	Friendly	Cash	Israeli	Normal	10%	12%	180.00	13%	-3.74%
January 15, 2007	Tradedubler	Online marketing services	AOL	Yes	Friendly	Cash	American	High	20%	8%	215.00	9%	-7.13%
January 15, 2007	Pergo	Floors	Pfleiderer	Yes	Friendly	Cash	German	High	42%	-12%	51.00	8%	0.99%
February 19, 2007	Surdus	Foods	Atria Group PLC	Yes	Friendly	Cash	Finnish	High	57%	24%	115.00	26%	0.00%
April 26, 2007	Invik	Investment company	Milestone	Yes	Friendly	Cash	Icelandic	High	63%	11%	230.00	27%	-0.65%
June 11, 2007	Telelogic	Software	IBM	Yes	Friendly	Cash	American	High	0%	23%	21.00	25%	-1.87%
June 14, 2007	El och Industrimontage	Electronics	Rolf Tannergård	Yes	Friendly	Cash	Swedish	High	56%	-4%	96.00	20%	1.32%
August 13, 2007	Index	Clothing retailer	KappAhl	Yes	Hostile	Cash	Swedish	High	0%	-4%	102.00	13%	-0.73%
August 20, 2007	SalusAnsvär	Insurances	DnB Nor	Yes	Friendly	Cash	Norwegian	High	51%	-11%	35.00	45%	4.17%
August 27, 2007	Nefab	Packaging	Nordic Capital	No	Friendly	Cash	Swedish	High	83%	4%	97.00	30%	1.57%
September 24, 2007	ACSC	Plastic cards	Xpon Card	Yes	Friendly	Stock	Swedish	High	30%	-5%	35.73	12%	7.16%
September 25, 2007	Elverket i Vallentuna	Power plant	EON	Yes	Hostile	Cash	German	High	16%	2%	55.00	37%	2.80%
October 8, 2007	Mandator	IT consultant	Fujitsu	Yes	Friendly	Cash	British	High	29%	1%	3.00	31%	1.35%
October 22, 2007	Ark Travel	Travel agencies	Carlson Wagonlit Travel	Yes	Friendly	Cash	Dutch	High	51%	27%	67.00	27%	2.29%
October 29, 2007	Karolin Machine Tool	Industrial machinery	Nordstjernan	No	Hostile	Cash	Swedish	High	42%	-23%	105.00	17%	1.94%
November 13, 2007	Securitas Direct	Security services	EQ T and Latour	No	Hostile	Cash	Swedish	High	41%	8%	26.00	35%	-2.26%
December 11, 2007	Gant	Clothing retailer	Maus Freres	Yes	Hostile	Cash	Swiss	High	13%	-3%	310.00	29%	-0.64%
December 14, 2007	Gymgrossisten	Nutritional supplements	CDON	Yes	Friendly	Cash	Swedish	High	77%	-7%	33.10	30%	1.22%
January 14, 2008	Human Care	Healthcare	GGC Healthcare	No	Friendly	Cash	American	High	30%	-5%	88.00	28%	2.03%
February 1, 2008	Boss Media	Software	GT och och Medströms	Yes	Friendly	Cash	Swedish	High	13%	11%	19.00	32%	-7.77%
February 19, 2008	Xpon Card	Security and ID cards	Oberthur Technologies SA	Yes	Friendly	Cash	Swiss	High	51%	2%	157.00	45%	0.64%
March 20, 2008	Tieto Enator	IT consultant	Nordic Capital	No	Hostile	Cash	Swedish	High	4%	-12%	15.50	25%	-3.13%
March 27, 2008	Sigma	IT consultant	Akerö	No	Hostile	Cash	Swedish	High	28%	0%	6.90	34%	-4.17%
April 30, 2008	Cision	Information retrieval	Triton	No	Hostile	Cash	British	High	0%	-24%	20.00	32%	1.52%
May 16, 2008	Ballingslöv	Kitchen interiors	Siena Adactum	No	Hostile	Cash	Swedish	High	38%	-11%	185.00	239%	-0.27%
May 26, 2008	Zodiak Television	TV production	De Agostini	No	Friendly	Cash	Swedish	High	30%	26%	40.00	56%	1.27%
May 26, 2008	Kontakt East	Information retrieval	Kinnevik and Vostok Nafia	No	Friendly	Cash	Swedish	High	52%	-9%	35.00	39%	1.45%
July 22, 2008	Gunnabo Industrier	Iron and steel forgings	Segulah	No	Friendly	Cash	Swedish	High	58%	-4%	185.00	58%	2.21%
August 27, 2008	Broström	Shipping	AP Möller-Maersk	Yes	Friendly	Cash	Danish	High	56%	23%	57.00	21%	1.33%
September 23, 2008	SIX	Information retrieval	Telekurs Holding AG	Yes	Friendly	Cash	French	High	80%	-10%	55.00	15%	0.00%
September 30, 2008	Arena Personal	HR consultant	NorgesInvestor 4 AS	No	Friendly	Cash	Swedish	High	72%	-6%	6.25	22%	5.93%
October 15, 2008	Peab Industri	Construction	Peab	Yes	Hostile	Stock	Swedish	High	71%	-18%	52.65	4%	4.45%
October 23, 2008	Enaco	Office construction	Mannerheim Invest	No	Hostile	Cash	Swedish	High	30%	-14%	10.00	17%	2.56%
October 30, 2008	IGE Nordic	Mining	International Gold Exploration	Yes	Hostile	Stock	Swedish	High	75%	-46%	2.20	-29%	42.70%
October 31, 2008	Teleca	IT consultant	CayTel	No	Friendly	Cash	American	High	49%	-32%	3.25	-1%	2.20%
November 3, 2008	Q-Med	Medical equipment	EQ T and Bengt Ågerup	No	Hostile	Cash	Swedish	High	48%	4%	39.00	40%	4.28%