Post-Takeover Effects on Thai Bidding Firms: Are Takeovers in the Bidder's Interests?

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Abstract

This paper analyses takeover effects on the Thai stock market in terms of the impact on bidding firms' shareholders. Various shareholder wealth effects are reported including those from a matched reference portfolio control method with bootstrapped skewness-adjusted t-statistics. The findings are consistent with past studies: see the survey studies by Jensen and Ruback (1983), Agrawal and Jaffe (1999), Bruner (2002) and Campa and Hernando (2004). Thai takeovers result in significant negative abnormal returns over the following period (+1, +16) months, varying from -4% to -6%, and -0.20% (monthly) for bidding firm's shareholders. They do not appear to add to their wealth.

1. Introduction and Literature Review

Much of the research on the financial performance of mergers and acquisitions has focused on stock returns surrounding announcement dates but fewer studies have concentrated on long-term post-event returns, perhaps because a belief in market efficiency indicates what the results should be (Agrawal & Jaffe, 1999 p. 3). At the same time, numerous earlier studies report negative abnormal returns in the year following the takeover announcement, but the evidence is controversial because different studies report different results (see the survey by Jensen & Ruback, 1983; Dodd & Ruback, 1977; Malatesta, 1983; see Mandelker, 1974; also see Asquith, 1983; Langetieg, 1978). The later studies show results that are either support or refute the previously reported results (see the summary of Agrawal & Jaffe, 1999 and Bruner, 2002; see Hubbard & Palia, 1999; Kruse, Park, Park, & Suzuki, 2002; Loughran & Vijh, 1997; also see Rau & Vermaelen, 1998, see Brown & da Silva Rosa, 1998; Mitchell & Stafford, 1998, amongst others).

A comparison of the outcomes from different markets is interesting. In the UK, Franks and Harris (1989, p. 239) show the bidder achieves significant negative abnormal returns of -12.60% in the 24 months following the bid completion when the market model is used, supporting results reported by Kennedy and Limmack (1996). Limmack (1991) reports the long-term abnormal returns are a significant at -4.67% for the event month up to 24 months following the bid completion, using the London Business School beta model, and are significant at -14.96% and -7.43% for the market and zero-one models respectively. Meanwhile, Higson and Elliot's (1993) results are not significant. The significantly positive abnormal returns of 4.50% are shown when the CAPM is used as the benchmark by Franks and Harris (1989). This is consistent with Gregory and McCorriston (2002) who report that a closer investigation reveals that there are economically and statistically significant abnormal returns for those U.K. acquiring firms which acquire U.S. target firms. These results are broadly similar to Conn, Cosh, Guest, and Hughes (2001), despite the fact that they use a different methodology and sample periods, Faccio, McConnell, and Stolin (2002)[1] and Raj and Forsyth (2002).

In Australia, Brown and da Silva Rosa (1998) suggest that survival is an important issue in event studies, and they assess the long-term performance of acquiring firms by controlling for survival, firm size and measurement biases in return cumulation, yet still report similar results.

The more recent studies in the U.S. also confirm past results. For instance, the study by Rosen (2003) provides evidence that the short-term reaction to the merger announcement is fully reversed over the next three years; Bouwman, Fuller, and Nain (2003) report that acquiring firms that acquire target firms in high-valuation markets significantly under-perform in the three years following the acquisition. They argue that these reversals are due to a combination of market irrationality and managerial hubris, which is consistent with Rosen (2003).

By comparison, only a small number of merger studies have concentrated on developing or emerging stock markets, see, for example, studies by Estrada, Kritzman, and Page (2004), Fernandes (2003) and Lins and Servaes (2001), who examine the value of corporate diversification in seven emerging markets, including the Thai stock market. Furthermore, even fewer studies have focused on merger and acquisition activities on the SET, see, for instance, by Anuchitworawong (2001), Jarusomridhi (2002), Leemakdej (1998) and Varaboontweesuk (2003). More importantly, these studies have investigated only performance during the bid announcement period. Thus, a more comprehensive study of merger and acquisition performance on the SET is justified.

However, this review shows that the same pattern of long-term negative post-event abnormal returns for bidding firm's shareholders has been identified in U.S., U.K. and Australian takeovers. The conclusion is similar to that reported in the summary of 22 and 11 studies featuring long-term abnormal returns for acquiring firm's shareholders by Agrawal and Jaffe (1999) and Bruner (2002) respectively, which are broadly consistent with the previous survey of Jensen and Ruback (1983). Additionally, Bruner (2002, p. 55) notes that his review of the studies shows a slight tendency for declining returns over time. The returns seem to be more positive in the 1960s and 1970s than in the 1980s and 1990s, except for

mergers and acquisitions in technology and banking in which the returns for bidding firm's shareholders appear to increase in the 1990s. This is consistent with Bradley, Desai, and Kim (1988), Jarrell, Brickley, and Netter (1988) and Loderer and Martin (1992) (also see Appendix A, Table A2 (A2.3) for the details of long-term negative abnormal returns for bidding firm's shareholders in Soongswang, 2005). In short, the literature concludes that the long-term performance of bidding firms is significantly negative following mergers while the performance is either significantly or insignificantly positive following tender offers. However, takeovers in more recent years have produced significantly negative abnormal returns for acquiring firm's shareholders.

Clearly, a number of the recent studies have been devoted to bidding firm's long-term performance investigation. Also many studies have searched for explanations of the phenomenon and have adopted more sophisticated methodologies. Therefore, overtime, several potential causes have been used to explain the conflicting conclusions evident in past results. However, some later studies override the former arguments, see, for example, Agrawal and Jaffe's (1999, p. 51) evidence that does not support the argument that under-performance is specifically due to a slow adjustment to merger news. This confirms Jensen and Ruback's (1983 p. 610) comment that the explanation of the post-event negative abnormal returns is an unsettled issue. There are some others, see the model selection discussion (see Baker & Limmack, 2001, p. 4; Rau & Vermaelen, 1998, p. 224; also see Limmack, 1991, p. 247); size effects (see Agrawal, Jafee, & Mandelker, 1992; Dimson & Marsh, 1986, p. 137; Fama & French, 1996; Franks, Harris, & Titman, 1991; Loughran & Vijh, 1997; Rau & Vermaelen, 1998; including the U.K. study by Gregory, 1997, p. 998; Kennedy & Limmack, 1996, amongst others). Thus, Agrawal et al. (1992, p. 41) do not identify what is the cause of the negative performance. That pre or post event data should be used to estimate the model parameters is another issue associated with the choice of benchmark or model (see Agrawal et al., 1992; Baker & Limmack, 2001, p. 6; Gregory, 1997, p. 999); the aggregation process used in the calculation of long-term returns (see Baker & Limmack, 2001, p. 4; Ikenberry, Lakonishok, & Vermaelen, 1995; Kothari & Warner, 1997, p. 337; Lyon, Barber, & Tsai, 1999, amongst others).

Another concern is related to the excessive extrapolation of prior performance which has interesting implications for negative abnormal returns (see Agrawal & Jaffe, 2000; Rau & Vermaelen, 1998; also see Loughran & Ritter, 1997). However, a different view is taken by Baker and Limmack (2001) who indicate that the post-outcome negative abnormal returns for acquiring firm's shareholders are not a function of prior performance. Agrawal and Jaffe's (2000) results are related to payment methods which report greater under-performance following stock-financed acquisitions than cash-financed acquisitions, but these are contrary to Rau and Vermaelen's (1998, p. 251) findings which show that their results are independent of the method of payment.

In Australia, Brown and da Silva Rosa (1998, p. 28 and 37) confirm that survival related biases are an important issue in event studies and suggest matching the sample firms with control firms on the basis of survival (but how long a period should be used is an open question). However, Baker and Limmack (2001), in a U.K. study, show that the post-outcome negative abnormal returns for acquiring firm's shareholders are not a function of survivorship.

Nevertheless, the more recent research views the significance of long-term post-event abnormal returns as worthy of investigation, see, for more example, Ikenberry, Lakonishok, and Vermaelen (1995) who suggest that the full impact of corporate announcements can extend over several years. This is in accordance with Hayward and Hambrick (1997). Kothari and Warner (1997) assert that the possibility exists of delayed stock price reaction to at least a dozen events with abnormal performance apparently persisting for some years following the event. Bouwman, Fuller, and Nain (2003) indicate that the bidder returns in takeovers are hard to measure: target firms are relatively small in relation to bidding firms. Thus, takeovers can have little impact on the bidder's stock price, if a bidder is known to be engaging in a takeover, the reaction to any takeover will only represent how different market perceptions view the anticipated takeover. Furthermore, the resistance of the target will make the takeover process take a longer time.

In addition to the U.S. studies, there is other support for the importance of post-event performance examination. For instance, an Australian study by Brown and da Silva Rosa (1998, p. 35) notes that the share market tends to display "speculative bubbles" that result in

bidding firm's shares being overvalued for investigation periods. It is often associated with the view that a correction to the unjustified market and over-valuation will be observed only in the long-term. This is consistent with the studies by Rosen (2003) and Bouwman, Fuller, and Nain (2003), suggesting that the market does not act quickly to eliminate systematic bias in estimates of firm potentials. A U.K. study by Gregory and McCorriston (2002, p. 10) notes that their study concentrates on long-term returns for acquiring firm's shareholders because short-term event studies may not fully reflect the value-increasing or value-decreasing impact of an acquisition.

The remainder of the paper consists of another four sections: the data is introduced in section two, the research method in section three, the results are presented in section four and the paper concludes in section five.

2.   Data

For this study, stock price data rather than accounting data[2] is used for the takeover performance measurement. There are four significant sources of data for this study set out below:

(a)   To mitigate issues relating to survivor bias, we are careful to include delisted companies and companies in "REHABCO"[3]. Thus, we scrutinised the list of delisted companies, the list of companies traded under the rehabilitation sector or "REHABCO", plus the list of total companies listed on the Stock Exchange of Thailand (SET) at any point of time during the period 1991-2003, the list of listed companies that have their names changed, supplementary information about listed companies (in Form 56-1) and the SET's rules and guidelines regarding takeovers and delisting were collected from the SET.

(b)   All tender offer statistics between August 1992 and October 2002, and specific information such as the rules, conditions and procedures to be followed in tender offers, other additional information associated with tender offers, offerors (bidding firms) and offerees (target firms) (in report forms: Form 247-2, 247-3, 247-4, 247-5 and 247-6) and target share purchase result report forms (Form 256-1 and 256-2) were gathered from the SEC.

(c)   The Datastream database was used to provide information relating to stock prices, market values (*MV*) or market capitalisations and book values (*BV*) or net tangible assets (*NTA*) of the sample firms.

(d)   The Brooker Group Public Co., Limited, which is a customer-focused, research and consulting company based in Bangkok, Thailand, was a minor source of data for cross-checking the book values obtained from the Datastream to make sure of the data quality in the sense of accordance of definitions for Thai companies and data accuracy, and to fill in the missing firms' book values.

3.   Research Methodology

We are well-aware that errors in risk adjustment can make a difference in measured abnormal performance over long-term period. Two main methods for assessing and calibrating post-event risk-adjusted abnormal performance are used in long-term event studies: the characteristic-based matching approach (also known as the buy-and-hold abnormal returns, BHARs[4] or the buy-and-hold benchmark approach), and the calendar-time portfolio approach (also known as the Jensen's alpha approach). Furthermore, a bootstrapped skewness-adjusted *t*-statistic test as developed by Lyon, Barber, and Tsai (1999) was used to address the cross-correlation and skewness biases. Jegadeesh and Karceski (2004) propose a correlation and heteroskedasticity-consistent test to overcome weaknesses in previous tests, a suggestion supported by Kothari and Warner (2004, p. 39) who argue that it might be the most appropriate to reduce miss-specification in tests of long-term event studies. However, two general long-term problems still remain: these relate to the power of the tests and increases in variance. Finally, Kothari and Warner (2004, p. 40) conclude that methods which best address long-term concerns continue to be an open question.

Therefore, the previously reported long-term investigation results and their explanations make the study of later acquisitions particularly interesting. Nonetheless, even though several studies report large abnormal returns subsequent to the events, the interpretation of such findings is contentious. Therefore, it is interesting to examine abnormal return performances over a long-time period on the Thai stock market to have more evidence about whether the outcomes are similar to those from developed stock markets. Also, the Thai literature shows

that there has been much less in the way of research studies either on long-term return performances or bidding firm performance in a Thai context.

The analysis in this study is based on tender offer statistics obtained from the SEC between 1992 and 2002. The sample period was selected because these statistics are records of total corporate takeovers on the SET when the study was commenced. To be a comprehensive Thai study, required having a very few cases of unsuccessful tender offers, but they were not ignored in the study. The sample firms were classified according to whether they were involved as a bidder. In addition, where there were any tender offers that involved repeated bidders, either of the same target and the same bidder or a different target and the same bidder, the latest tender offer was first selected, then, the second, and then the third latest one, were selected respectively in this sequence. This procedure was adopted so that the later tender offer selection means that the more recent data for both the stock prices and related financial data are required and there therefore more can be made in terms of data utilised from the limited available sources of data. This is in line with Baker and Limmack (2001, pp. 9-10). However, these selected tender offers were considered with respect to no less than one year's length between each tender offer. This is in accordance with the data selection criteria used in Asquith (1983, p. 75) and similar to Baker and Limmack (2001, p.11, p. 15 and 28).

During the time selected, total takeovers on the SET involved 151 tender offers. From this database, a sample was set up according to the following criteria:

(a)   A tender offer was classified as being successful if the bidder increased its holding of the target shares or purchased at least some[5] of the outstanding target shares that were tendered for. Thai security legislation also defines a proportion from 25% of the target shares' holdings as a strategic shareholder and the bidder is required to tender an offer for the total remaining outstanding shares of the target.

(b)   Any tender offer was excluded from the sample when it occurred with the purpose of a de-listing[6]. Those cases were also deleted when the tender offer was cancelled later or the target firm was in the process of listing.

(c)   The survivorship period of time in this study is the period over (-48, +16), due to the limitation of available stock price data (see Healy & Palepu, 1995; Baker & Limmack, 2001, p. 9).

(d)   There are approximately 70% of the total 151 tender offers that were individuals or made up of a group of investors or non-listed companies, or a mixed combination with these characteristics. To obtain a larger sample size, either single bidder or consortiums or a sub-set of the consortium that tendered an offer to the targets on the SET at that time were included in the sample. Also, the stock price data must be available for the survivorship period of time in the study (-48, +16). Thus, approximately 30% or 44 out of total 151 tender offers were selected to be the bidder sample for this study. Finally, these restrictions reduced the initial sample to 28 tender offers and to 42 bidders or 36 bidders (no repeated bidders).

Specifically, this study is mainly based on a sample of successful tender offers. The analysis emphasises abnormal performance measurement using monthly stock price data[7]. The firm's stock price reaction to the takeover announcement was estimated as the rate of abnormal returns for the bidding firm's shareholders. The raw returns for one month were simply the change in stock price and any dividends paid, divided by the closing stock price the month before. The event period is the post-bid period or over the period (+1, +16), month '0' was defined as the event month and the event date (month) was defined as the submission date (month) of the tender offer by the bidder to the SEC or the date (month) that the proposal was filed at the SEC.

3.1   Measurement of Abnormal Returns

3.1.1 A matched reference portfolio method

This study used a two-factor benchmark[8]. Furthermore, the size of the Thai stock market is small, having a total number of listed companies between 320 and 454 firms during the period 1992-2003. Thus, sorting by another factor, beta, will further reduce the number of firms in any control group so as to be too small, and the number could be less than twenty firms, and will be not worthy of study in terms of using a matched reference portfolio method.

This is partly similar to Gregory and McCorriston (2002, p. 14). A matched reference portfolio was selected to be a benchmark[9] for this study.

In event studies, the benchmark group of firms or a reference portfolio of firms is usually the companies in the market portfolio. We adopted the same methodology by using all the firms listed on the SET and then deleted the firms that are related to takeover activities[10] and under the 'Rehabilitation' sector. Also, we excluded the firms that reported negative book value of common equities. Moreover, the sample firms with non-available book values needed to be excluded from the sample. The returns were calculated and it is assumed that the sample firm's returns would have changed in the same way as those of the benchmark group. The effects of the takeovers were examined by comparing the performance of the event firms with those of a reference portfolio of non-event firms.

The matched reference portfolio of firms was formed by using a control group of firms matched on the basis of size and book-to-market ratio rankings[11]. Size is measured by market value of equity (market capitalisation) and book-to-market ratio is valued by the book value of common equity reported on the firm's balance sheet divided by the market value of the common equity. The formation of control groups resulted in the number of firms in a control group varying between 298 and 420 firms and the number of firms in a portfolio varying between 57 and 95 firms. The matched reference portfolios were built up by following a set of determining criteria for the procedures for construction of the matched reference portfolios. This resulted in about 29.59% or 29 reference portfolios being dropped from a total of 98 reference portfolios, and there remained a total of 69 reference portfolios or approximately 70.41% for 42 bidders. The number of firms in each portfolio varied between 18 and 32 firms (See details for the construction of control groups of firms and matched reference portfolio of firms in Soongswang, 2005)

At the same time, it is posited that the BHAR method is an alternative procedure that is important for assessing long-term abnormal return, even if the CAR method is straightforward. Despite the fact that long-term buy-and-hold abnormal returns are significantly right-skewed, they are worthy of examination if we wish to know whether the event firms earn abnormal stock returns over a particular time period of analysis (Kothari & Warner, 1997, p. 302; Lyon, Barber, & Tsai, 1999, p. 192). Additionally, Ang and Zhang

(2002, p. 4) argue that it is close to the approach that is taken by traditional short-term event studies and is easy to follow. Therefore, in this study, both the CAR and BHAR methods were applied to calculate abnormal returns relative to the earlier mentioned benchmark.

(a)   Long-term CAR method

The long-term cumulative abnormal returns (CARs) were calculated as

$$CAR = \sum_{t=1}^{T} [R_{it} - E(R_{it})]$$

where R_{it} is the monthly return of a sample firm (firm i) and $E(R_{it})$ is the return on a matched reference portfolio

This formula is very similar to the one used by Lyon, Barber, and Tsai (1999) who note that conventional t-statistics are only well-specified when reference portfolios are purged of new listing or survivor bias. Thus, the T-period cumulative abnormal returns (CARs) for firm i beginning in period s were calculated as

$$CAR = \sum_{t=s}^{s+T} [R_{it} - \frac{1}{n_t^s} \sum_{j=1}^{n_t^s} R_{jt}]$$

where R_{jt} is the monthly return for the $j = 1, \ldots, n_t^s$ firms that are in the same size/book-to-market reference portfolio as firm i, which are also publicly traded in both period s and t.

(b)   Long-term BHAR method

The long-term buy-and-hold abnormal returns (BHARs) of firm i, denoted as AR_i, were computed as

$$AR_i = R_i - BR_i$$

where R_i is the long-term buy-and-hold return of firm i, and BR_i is the long-term return for a particular benchmark of firm i.

The long-term buy-and-hold returns of firm i over T months post-events were obtained by compounding monthly returns, that is

$$R_i = \prod_{t=0}^{T-1}(1 + r_{it}) - 1$$

where r_{it} is the return on firm i in month t, $t = 0$ is the event month or the beginning period, and $T - 1$ is the period of investment (in months).

Calculation of the long-term benchmark returns of firm i (BR_i) were given below. There are two formulas that were applied for BR_i computing.

$$BR_i(R_{bh}) = \frac{1}{n}\sum_{i=1}^{n}\prod_{t=0}^{T-1}(1 + r_{it}) - 1 \tag{1}$$

where R_{bh} is the long-term benchmark buy-and-hold return and n is the number of firms in a reference portfolio.

Another alternative was used to calculate the returns for the size and book-to-market reference portfolios. In reference to the rebalanced nature of this return calculation, they are also called rebalanced returns.

$$BR_i(R_{rb}) = \prod_{t=0}^{T-1}(1 + \frac{1}{n}\sum_{i=1}^{n}r_{it}) - 1 \tag{2}$$

where R_{rb} is the long-term benchmark rebalanced return.

We disentangle the impact of methods of computing long-horizon abnormal returns by using as many methods as possible. Therefore, another alternative, the

average compounded or holding-period abnormal returns (AHPARs)[12] were calculated as

$$AHPAR = \frac{1}{n}\sum_{i=1}^{n}(HPR_i - HPR_{\text{benchmark}i})$$ (3)

where HPR_i is the long-term buy-and-hold return of stock i (firm i) and $HPR_{\text{benchmark}i}$ is the long-term return for a particular benchmark of stock i (firm i).

(c) Monthly average long-term abnormal returns

The monthly long-term abnormal returns were estimated by means of the matched reference portfolio method. The simple average was then used for the abnormal return calculation.

3.2 Significance tests of abnormal returns

3.2.1 Bootstrapped skewness-adjusted t-statistics

The empirical distribution of average or mean abnormal returns under the null hypothesis is generated and the statistically significance of the sample mean is evaluated based on this empirically generated distribution. We adopted this *t*-statistic method[13] by applying the significance tests to the CAARs, ABHARs and monthly average abnormal returns. The bootstrapping involves drawing b re-samples of size m with replacement from the original sample. As suggested by Kothari and Warner (2004), $b = 1,000$ times of re-samplings are implemented in the procedures. Lyon, Barber, and Tsai (1999) suggest that the skewness adjustment results in more conservative test statistics as the size of the bootstrap resample decreases. Bootstrap resample sizes of $n/2$ yield well-specified inference meanwhile, those of n do not. As for this study, m is 1 and 5, and 5 is approximately a quarter of the number of firms in typical reference portfolios in this research. The skewness-adjusted *t*-statistic was calculated as shown in the formula below. Finally, to test the null hypothesis of zero mean at the significance level of α, the critical values for the skewness-adjusted *t*-statistic are based on the tabulated distribution of *t*-statistics.

$$t_{sa} = \sqrt{n}\,(S + \frac{\hat{\gamma} S^2}{3} + \frac{\hat{\gamma}}{6n})$$

$$S = \frac{\overline{AR_T}}{\sigma(AR_T)}$$

$$\hat{\gamma} = \sum_{i=1}^{n} \frac{(AR_{iT} - \overline{AR_T})^3}{n\sigma(AR_T)^3}$$

where t_{sa} is the skewness-adjusted t-statistic, $\sqrt{n}\,S$ is the conventional t-statistic of $t = \overline{AR}_T/\sigma$ $(AR_T)/\sqrt{n}$, and $\hat{\gamma}$ is an estimate of the coefficient of skewness.

4. Results

The matched reference portfolio method was used for the estimation of long-term abnormal returns for the bidding firm's shareholders. The CAR, BHAR (three different formulas) and monthly average abnormal return methods were then employed for the return measurements. The results are presented and explained in the following section in terms of the performances of the average long-term (LT) abnormal returns, both the cumulative average abnormal returns (LTCAARs) and the average buy-and-hold abnormal returns (LTABHARs) for the bidding firm's shareholders. The main issues are the size and signs of these abnormal returns and whether or not they are significantly different from zero. The details of the results are shown in Table 1, 2, 3 and 4.

Tables 1 and 2 show that for the post-bid period or the period (+1, +16), the long-term average buy-and-hold abnormal returns (LTABHARs) for the bidding firm's shareholders are negative. The LTABHARs estimated from the BHARs(1), or LTABHARs(1), are negative at -6.10%, meanwhile, those estimated from the BHARs(2), or LTABHARs(2), and the BHARs(3), or LTABHARs(3), are negative at -3.50% (method 1) and -3.60% (method2); and -3.70% respectively. In terms of consistency, these results are strongly supported by the percentages of the negative abnormal returns which are up to 73.17% for the LTABHARs(1), 60.87% for the LTABHARs(2) and 60.98% for the LTABHARs(3). The results are further confirmed by the significance tests which are significant with t statistics of -21.76, -4.89

and -6.58 for the LTABHARs(1), LTABHARs(2) (method 2) and LTABHARs (3) respectively, but insignificant with *t* statistics of -1.18 for the LTABHARs(2) (method 1). Accordingly, Table 3 shows that for the post-bid period or the period (+1, +16), the monthly average long-term abnormal returns are significantly negative at -0.20% (monthly) ($t = -5.36$). It is further supported by the percentage of the negative abnormal returns of 58.54%. Therefore, the results of this study are consistent with each other in terms of both the negative return direction and their magnitude. At the same time, Table 4 shows that for the post-bid period or the period (+1, +16), the long-term cumulative average abnormal returns (LTCAARs) for the bidding firm's shareholders are negative at -0.30% (method 1) and -0.80% (method 2), even though they are insignificant with *t* statistics of -0.03 and -0.77 respectively. The results are supported by the percentage of the negative LTCAARs of 57.97%. Also, the results confirm those suggesting negative abnormal returns, as previously discussed, even though they are of different magnitude.

Furthermore, each earlier result is supported by the percentages of the negative skewness-adjusted *t*-statistics for the abnormal returns. Table 1 reveals that the percentages of negative skewness-adjusted *t*-statistics are 73.17% and 60.98% for the LTABHARs(1) and LTABHARs(3) respectively. Likewise, Table 3 shows that the percentage of negative skewness-adjusted *t*-statistics for the monthly average long-term abnormal returns is 63.41%. Thus, the results are completely robust and consistent when compared across the same and different methods as well as when calculated with the different formulas. All results are consistent with each other: the LTABHARs(1), the LTBHARs(2), the LTBHARs(3), the monthly average long-term abnormal returns and the LTCAARs for the bidding firm's shareholders. Moreover, these results are consistent with past studies which have widespread findings suggesting that the bidding firm's shareholders experience significant negative abnormal returns over one to three or five years post the takeover announcement month, as previously discussed. Therefore, it is obvious that the post-bid period abnormal returns for the Thai bidding firm's shareholders are certainly negative, and the magnitude of the returns is small or modest at about -0.20% for the long-term monthly average abnormal returns, -0.30% and -0.80% for the LTCAARs and varying from -3.50% to -6.10% for the LTABHARs. Finally, the findings are entirely supportive of those from previous studies, even when using different samples, different methods and different periods for the investigations and we

concluded that the takeover announcement results in negative long-term abnormal returns for Thai bidding firm's shareholders in this sample.

5.   Conclusion

This paper reports the results of a study of takeover announcement effects experienced by the bidding firms listed on the SET. The analysis is based on tender offer statistics for the years between 1992 and 2002. The matched reference portfolio method was employed for the abnormal return estimations for the post-bid period, (+1, +16) months, investigation.

The study gives light to results which are robust with respect to the different return measurement methods. The findings are consistent with each other, particularly in terms of the negative abnormal return direction at least, when comparisons are made between the CAR and BHAR methods and also with the monthly average abnormal return method. Remarkably, the results are internally consistent when compared within this study itself and also with most of the findings of previous studies of developed stock markets, as indicated earlier in the literature review. The evidence indicates that takeover announcements reduce the wealth of the bidding firm's shareholders by inducing negative long-term abnormal returns. The long-term ABHARs over the period from (+1, +16) are negative at about -3.50% to -6.10% and long-term CAARs are -0.30% and -0.80%, meanwhile, the monthly average long-term abnormal returns over the same time period are negative at -0.20% (monthly).

This study contributes to the understanding of the long-term impact of takeovers on bidding firms traded on the SET. This research is innovative in terms of applying the latest research methods and metrics to a long-term analysis of Thai takeover studies and also enriches the Thai financial literature by augmenting and extending the limited prior literature on Thai takeovers. It further supports the conclusion that we must look to causes other than the enhancement of shareholder wealth for an explanation of takeover activity.

Table 1: The Long-term Average Buy-and-Hold Abnormal Returns, LTABHAR's (1) and
LTABHAR's (3), Estimated from the Matched Reference Portfolio Method
for Bidding Firms (Post-bid Period) Investigation

A matched reference portfolio method was applied for the measurements of the long-term abnormal returns for the bidding firm's shareholders. The results estimated from a total of 69 reference portfolios for 41 bidding firms for the post-bid period (+1, +16) were analysed. This table provides the long-term average buy-and-hold abnormal returns for the bidding firm's shareholders, LTABHARs(1), which BR_i was calculated from $BR_i(R_{bh})$ =

$1/n \sum_{i=1}^{n} \prod_{t=0}^{T-1}$ $(1+r_{it})-1$….(1) and LTABHARs(3), which were calculated from AHPAR = $1/n \sum_{i=1}^{n}$ (HPR$_i$ -

HPR$_{benchmarki}$)….(3). The return performances were measured from all tender offers occurring from 1992-2002. Any bidding firms that were listed at any point of time of the takeovers were selected. The bidding firm was either the single bidding firm or a consortium. Their price data was available over the period (-48, +16) correspondence with the takeover announcement months. The monthly data during the period (+1, +16) was used to estimate the returns to the bidding firms and the reference portfolios matched on size and book-to-market ratios. The long-term buy-and-hold returns or compounded monthly returns to obtain a holding period buy-and-hold returns of the bidding firms and each subset of the reference portfolios were calculated as in the following

formulas: $R_{iT} = \prod_{t=0}^{T-1}$ $[1+R_{it}]-1$. The bootstrap approach was applied by using 1000 time re-sampling from each

subset of the reference portfolios then, randomly selecting five of them which is about 25% of the typical reference portfolios. The returns on the mentioned five reference portfolios were added together and averaged to get the return on one bootstrapped reference portfolio from 1000 simulations. The previously described

procedures resulted in the long-term buy-and-hold returns to the bidding firms as $R_i = \prod_{t=0}^{T-1}$ $(1+r_{it})-1$; and the

reference portfolio as $BR_i(R_{bh}) = 1/n \sum_{i=1}^{n} \prod_{t=0}^{T-1}$ $(1+r_{it})-1$….(1). The long-term buy-and-hold abnormal returns

(AR_i) to the bidding firms were estimated from the difference between the long-term buy-and-hold returns to the bidding firm and the bootstrapped reference portfolios using the following formula, $AR_i = R_i - BR_i$. Likewise, the bootstrap approach was applied by using 1000 times re-sampling from each subset of the reference portfolios then, the long-term buy-and-hold abnormal returns to the bidding firms were calculated according to the

following formula: AHPAR = $1/n \sum_{i=1}^{n}$ (HPR$_i$ - HPR$_{benchmarki}$)….(3). Then, the means or the LTABHARs to the

bidding firms were calculated. Also, the skewness-adjusted t-statistics were calculated as in the following

formula: $t_{sa} = \sqrt{n} (S+1/3 \hat{\gamma} S^2+1/6n \hat{\gamma})$, $S = \overline{AR}_T/\sigma (AR_T)$, and $\hat{\gamma} = \sum_{i=1}^{n} (AR_{iT} - \overline{AR}_T)^3 /n\sigma (AR_T)^3$. Finally, to test

the null hypothesis of zero means at a significance level of α, the critical values for the skewness-adjusted t-statistics are based on the tabulated distribution of t-statistics. Significant means at 1% and 5% levels that are shown by ** and * respectively.

Sample	LTABHARs (1)	Skewness-adjusted t-statistic	LTABHARs (3)	Skewness-adjusted t-statistic
Bidding Firms (41 firms)				
Average	-0.061	-21.76**	-0.037	-6.58**
% of negative	73.17	73.17	60.98	60.98

Table 2: The Long-term Average Buy-and-Hold Abnormal Returns, LTABHAR's (2), Estimated from the Matched Reference Portfolio Method for Bidding Firms (Post-bid Period) Investigation

A matched reference portfolio method was applied for the measurements of the long-term abnormal returns for the bidding firm's shareholders. The results estimated from a total of 69 reference portfolios for 41 bidding firms for the post-bid period $(+1, +16)$ were analysed. This table provides the long-term average buy-and-hold abnormal returns for the bidding firm's shareholders, LTABHARs(2), which BR_i was calculated from $BR_i(R_{rb}) = \prod_{t=0}^{T-1}(1+1/n\sum_{i=1}^{n} r_{it})-1$ ….(2). The return performances were measured from all tender offers occurring from 1992-2002. Any bidding firms that were listed at any point of time of the takeovers taking place were selected. The bidding firm was either the single bidding firm or a consortium. Their price data was available over the period $(-48, +16)$ corresponding with the takeover announcement months. The monthly data during the period $(+1, +16)$ was used to estimate the returns to the bidding firms and the reference portfolios matched on size and book-to-market ratios. The long-term buy-and-hold returns of the bidding firms and the set of reference portfolios were calculated as in the following formulas: $R_i = \prod_{t=0}^{T-1} (1+r_{it})-1$; $BR_i(R_{rb}) = \prod_{t=0}^{T-1}(1+1/n\sum_{i=1}^{n} r_{it})-1$ ….(2), respectively. Then, the means or the LTABHARs(2) to the bidding firms were calculated by the simple average method (method 1) and bootstrap approach (method 2). Also, the skewness-adjusted t-statistics were calculated as in the following formula: $t_{sa} = \sqrt{n}\ (S+1/3\ \hat{\gamma}\ S^2+1/6n\ \hat{\gamma})$, $S = \overline{AR}_T/\sigma\ (AR_T)$, and $\hat{\gamma} = \sum_{i=1}^{n}\ (AR_{iT}- \overline{AR}_T)^3\ /n\sigma\ (AR_T)^3$.

Finally, to test the null hypothesis of zero means at a significance level of α, the critical values for the skewness-adjusted t-statistics are based on the tabulated distribution of t-statistics. Significant means at 1% and 5% levels and are shown by ** and * respectively.

	Measurement[1]	
Sample	LTABHARs (2) Method 1	LTABHARs (2) Method 2
Bidding Firms (41 firms)		
Average	-0.035	-0.036
Skewness-adjusted-t statistic	-1.18	-4.89**
% of negative difference between l-t BHARs[2]	60.87	

Note: [1] Method 1is the simple average method and Method 2 is the bootstrap approach
[2] The difference between LTBHARs of the bidding firm - LTBHARs of a set of portfolios which are actually averaged by the number of the sub-sets

Table 3: The Monthly Average Long-term Abnormal Returns Estimated from the Matched
Reference Portfolio Method for Bidding Firms (Post-bid Period) Investigation

A matched reference portfolio method was applied for the measurements of the long-term
abnormal returns for the bidding firm's shareholders. The results estimated from a total 69
reference portfolios for 41 bidding firms for the post-bid period (+1, +16) were analysed. This
table provides the monthly average long-term abnormal returns for the bidding firm's
shareholders. The return performances were measured from all tender offers occurring from
1992-2002. Any bidding firms that were listed at any point of time of the takeovers taking
place were selected. The bidding firm was either the single bidding firm or a consortium.
Their stock price data was available over the period (-48, +16) corresponding with the
takeover announcement months. The monthly data during the period (+1, +16) was used to
estimate the returns to the bidding firms and the reference portfolios matched on size and
book-to-market ratios. The monthly long-term abnormal returns for the bidding firm's
shareholders were estimated from the difference between the monthly long-term returns to the
bidding firms and a reference portfolio or each subset of the reference portfolios. The
bootstrap approach was applied by means of using 1000 times re-sampling from the monthly
long-term returns of each subset of the reference portfolios. Then, the monthly average long-
term abnormal returns to the bidding firms were calculated which resulted in 498 monthly
average abnormal returns (observations) to the total bidding firms in the sample. Also,
skewness-adjusted t-statistics were calculated as in the following formula: $t_{sa} =$

$$\sqrt{n} \ (S + 1/3 \, \hat{\gamma} \, S^2 + 1/6n \, \hat{\gamma}), \ S = \overline{AR}_T / \sigma(AR_T), \ \text{and} \ \hat{\gamma} = \sum_{i=1}^{n} \ (AR_{iT} - \overline{AR}_T)^3 \ / n\sigma \ (AR_T)^3. \text{ The means}$$

of the monthly average long-term abnormal returns and skewness-adjusted t-statistics to each
of the bidding firms were calculated and are shown in the table. Finally, to test the null
hypothesis of zero means at a significance level of α, the critical values for the skewness-
adjusted t-statistics are based on the tabulated distribution of t-statistics. Significant means at
1% and 5% levels are shown by ** and * respectively.

Sample	Monthly average LT abnormal returns	Skewness- adjusted t-statistic
Bidding Firms (41 firms)		
Average	-0.002	-5.36**
% of negative	58.54	63.41

Table 4: The Long-term Cumulative Average Abnormal Returns, LTCAAR's, Estimated
from the Matched Reference Portfolio Method for Bidding Firms
(Post-bid Period) Investigation

A matched reference portfolio method was applied for the measurements of the long-term abnormal returns for the bidding firm's shareholders. The results estimated from a total of 69 reference portfolios for 41 bidding firms for the post-bid period (+1, +16) were analysed. This table provides the long-term cumulative average abnormal returns for the bidding firm's shareholders, LTCAARs. The return performances were measured from all tender offers occurring from 1992-2002. Any bidding firms that were listed at any point of time of the takeovers taking place were selected. The bidding firm was either the single bidding firm or a consortium. Their price data was available over the period (-48, +16) in correspondence with the takeover announcement months. The monthly data during the (+1, +16) was used to estimate the returns to the bidding firms and reference portfolios matched on size and book-to-market ratios. The cumulative method was applied to estimate the long-term cumulative returns for the bidding firms ($R_{it)}$) and the reference portfolios ($E(R_{it})$). The long-term cumulative abnormal returns (LTCARs) to the bidding firms were calculated from the difference between the long-term cumulative returns to the bidding firms and the reference portfolios as in the following formulas: $CAR = \sum_{t=1}^{T} [R_{it}-E(R_{it})]$. Then, the means or the l-t CAARs to the bidding firms were calculated by the simple average method (method 1) and bootstrap approach (method 2). Also, the skewness-adjusted t-statistics were calculated as in the following formula: $t_{sa} = \sqrt{n}\,(S+1/3\,\hat{\gamma}\,S^2+1/6n\,\hat{\gamma})$, $S = \overline{AR}_T/\sigma\,(AR_T)$, and $\hat{\gamma} = \sum_{i=1}^{n}\,(AR_{iT}-\overline{AR}_T)^3\,/n\sigma\,(AR_T)^3$. Finally, to test the null hypothesis of zero means at a significance level of α, the critical values for the skewness-adjusted t-statistics are based on the tabulated distribution of t-statistics. Significant means at 1% and 5% levels are shown by ** and * respectively.

Sample	Measurement[1]	
	LTCAARs Method 1	LTCAARs Method 2
Bidding Firms (41 firms)		
Average	-0.003	-0.008
Skewness-adjusted-t statistic	-0.03	-0.77
% of negative difference between LTCARs[2]	57.97	

Note: [1] Method 1is the simple average method and Method 2 is the bootstrap approach
[2] The difference between LTCARs of the bidding firm - LTCARs of a set of portfolios which are actually averaged by the number of the sub-sets

Notes

1.   Cited in Campa and Hernando (2004, p. 58).

2.   See more in Bruner (2002, p. 50).

3.   "Companies under Rehabilitation Sector" or "REHABCO" is a sector established by the SET in March 1998 to clearly separate listed companies requiring major restructuring due to substantial losses over time. Initially, 33 companies were under REHABCO.

4.   Mitchell and Stafford (2000, p. 296) describe BHARs as the average multiyear returns from a strategy of investing in all firms that complete an event and selling at the end of a pre-specified holding period versus a comparable strategy using otherwise similar non-event firms.

5.   The control of a firm can increase continuously from none for those who own no shares to complete for those who own 100% of the target's shares or voting rights operations (see more in Bradley, Desai, & Kim, 1988, p. 5; also see Dodd & Ruback, 1977, p.352). The evidence shows that the tender offer for target shares varies from 43.79% to 52.11%, the purchased target shares vary from 25.60% to 28.99%, after shares are purchased, the holding of target shares of 62.83%, on average, whilst the biggest target share holding is 99.91%.

6.   There are about 22.52% of the total tender offers are engaged with delisted purposes and approximately 60.78 % of the total delisted companies are caused by mandatory delisting.

7.   Partly due to its advantages over daily data, see, for example, Fama, 1976, ch.1; Scholes & Williams, 1977; Canina, Michaely, Thaler, & Womack, 1996; Binder, 1998.

8.   See for the discussion in Fama & French, 1992; Ang & Zhang, 2002, p. 24, amongst others.

9.   See for advocated suggestions in Ang & Zhang, 2002, p. 2; Lyon, Barber, & Tsai, 1999; Rosen, 2003, p. 15.

10.   The criteria used are similar to previous studies. However, exclusion of any firm that itself engages in a takeover during the period under investigation is controlled for by the approach that is consistent with that advocated by Baker and Limmack (2001, p. 10), Jegadeesh (2000), Loughran and Ritter (2000), and Bouwman, Fuller, and Nain (2003, p. 14) who argue that otherwise this will bias the perceived performance, or the test will be biased towards finding no abnormal return.

11.   For the particularly given reasons for the factor controlling, see more in Barber & Lyon, 1997 and 1997b; Brav, Geczy, & Gompers, 2000; Chan, Jegadeesh, & Lakonishok, 1995; Davis, 1994; Fama & French, 1992 and 1997; Loughran & Vijh, 1997; Moeller, Schlingemann, & Stulz, 2003.

12.   See for more explanations in Cowan and Sergeant (2001, p.749).

13.   See for supportive suggestions in Kothari &Warner,1997; Lyon, Barber, & Tsai,1999, p. 174.

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