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Acquisition Announcement and Stock Price Behaviour: The Malaysian Experience

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ABSTRAK

Kajian ini menyelidiki kesan pengumuman tentang pengambilalihan keatas pergerakan harga saham syarikat penawar dan syarikat sasaran. Teknik kajian peristiwa berasaskan indeks tunggal atau model pasaran telah digunakan untuk mengira pulangan luar biasa. Walau bagaimanapun, dua model lagi, iaitu model penentuan harga aset modal (CAPM) dengan persilangan berkonstren dan tanpa berkonstren, dan model pasaran dengan parameter berkonstren $\alpha = 0$ dan $\beta = 1$ juga digunakan untuk memastikan sama ada penentuan pulangan yang dikawal memberi kesan kepada keputusan yang diperolehi. Kesimpulannya tiada terdapat perbezaan yang ketara dalam menggunakan model yang berlainan.

ABSTRACT

This paper examines the effects of acquisition announcement on the price behaviour of the Malaysian bidders and target firms. Event study technique is the method used to compute abnormal returns, based on the single index or market model. However, two other models, the capital asset pricing model (CAPM) with unconstrained and constrained intercept, and the market model with constrained parameters $\alpha = 0$ and $\beta = 1$ are also included in this study to ascertain whether the specification of control returns affect the results. There are no obvious difference in the conclusions from using different models.

INTRODUCTION

There is a consensus among the studies that target firms earned abnormal positive returns during the announcement period. Nevertheless, evidence on the bidder is not clear and in fact is contradictory Malatesta (1983) investigated the difference in abnormal returns that arise using different models. He used an unconstrained Sharpe version of the CAPM, similar to Dodd's (1980) use of the market model, but differing from Asquith (1979) and Langetieg (1978). Asquith used a zero-beta version of the CAPM and an intercept equal to zero. Langetieg (1978) used an industry index model and interpreted the estimated intercept as a component of abnormal returns. Malatesta found that

the discrepancy between his result and that of Asquith (1979) and Langetieg (1978) may derive from the difference in the measurement of abnormal returns, specifically from the cumulative average of the estimated intercept generated from the regressions model used. Halpern (1983) noted that 'the choice as to which model should be used to estimate abnormal returns is unresolved since it depends upon which return generating process is the appropriate description of reality'

Frank and Harris (1989) used three different models to determine C_{jt}, a control return that calculates and estimate of what shareholder returns would have been in the absence of a merger; market model ($C_{jt} = \alpha_j + \beta_j R_{mt}$), market model with $\alpha = 0$ and $\beta = 1$ for all firms and capital asset pricing model with $C_{jt} = R_{ft} + \beta_j (R_{mt} - R_{ft})$ where, β is from the market model and R_{ft} is the yield in three-month Treasury obligation converted to a one-month yield basis. Using the market model, they reported a negative post merger performance for bidders. The other two models give a much different picture and suggest that after mergers, bidder shareholder match or slightly outperform the market in general. They noted that the differences in model results are directly attributable to the cumulative effects of subtracting the intercept values from the realised returns of bidding companies when the market model is used.

Based on the availability of data and the discrepancy between the results from the previous studies that may derive from differences in the measurement of abnormal returns, three alternative models will be employed in this paper. The results will be used to determine the effects of acquisition announcement on the price behaviour of the Malaysian bidders and targets. The first, a one factor market model, is used to estimate the parameters α and β which will then be used to calculate and estimate of what shareholder returns would have been in the absence of merger. The second model is based on the capital asset pricing model both with the estimated intercept not constrained and constrained to zero. In the third model however, the regression estimation of $\alpha = 0$ and $\beta eta = 1$ are set. The second and the third models are included in the analysis to see whether the specification of control return affects the results of this study.

METHODOLOGY

DATA COLLECTION

This study uses the daily common stock returns of the Kuala Lumpur Stock Exchange for 200 days before the acquisition announcement date and 200 days after. The study includes all acquisition news announced by bidders listed on the Kuala Lumpur Stock Exchange to acquire listed and non-listed target firms. The news were only those which were first announced, and the

bidders subsequently carried out the acquisition programme as announced. The period covered in this study is from January 1st, 1977 through December 31st, 1989 The data for the acquired firms, however, include only the listed firms which were acquired by the listed bidding firms.

The date of announcement which was chosen as the event date, is the announcement date as recorded on the first press release of takeover kept in the companies' file of the Kuala Lumpur Stock Exchange library

The daily price which were obtained from The Securities Clearing Automated Network Sendirian Berhad (SCAN) database, must be available over the analysis and estimation period. The price relative used were adjusted for capital adjustment (stock splits, stock dividend, and rights). No adjustment for cash dividens were made on ex-dividend dates.

ANALYSIS OF DATA. THE MODELS

MARKET MODEL

The basic methodology of this study involves the use of the following one factor market model or single index model;

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \ldots\ldots\ldots (1)$$

Where, $R_{i,t}$ = the daily return of either the bidding or the target firm i at time t,

$R_{m,t}$ = the daily returns at time t of the market index, the Kuala Lumpur Stock Exchange Composit index,

$\alpha_i = E(R_{i,t}) - \beta_i E(R_{m,t})$,
β_i = covariance $(R_{i,t}, R_{m,t})$ / variance $(R_{m,t})$,
$\varepsilon_{i,t}$ = stochastic error term.

This model is assumed to satisfy the normal requirements of a linear regression model. That is,

1. all $\varepsilon_{i,t}$ has a mean (or expectation) of zero; $E(\varepsilon_{i,t}) = 0$,
2. all $\varepsilon_{i,t}$ have a common constant and finite variance for σ^2_i for all t,
3. error terms are serially independent and
4. the distribution of $\varepsilon_{i,t}$ independent of the explanatory variables, $R_{m,t}$.

Some of the studies using the market model include Dodd and Ruback (1977), Dodd (1980), and Bradley, Desai and Kim (1983).

To see whether the specification of control returns affects the results, two other models were used to determine $R_{i,t}$ from equation (1), capital asset pricing model and market model with $\alpha = 0$ and $\beta = 1$.

UNCONSTRAINED CAPM

The following empirical version of the capital asset pricing model is used in this study The intercept, α is not constrained to zero and is treated as a parameter of the equilibrium return generating process;

$$R_{i,t} - R_{f,t}' = \alpha_{i,t} + \beta_{i,t} (R_{m,t} - R_{f,t}) + \epsilon_{i,t} \quad \text{.....(2)}$$

where,
$R_{f,t}$ = the yield on three-month Treasury bills converted to a daily yield basis,
$R_{m,t}$ = the market rate of return,
$\beta_{i,t}$ = the regression estimation from the market model,
$\alpha_{i,t}$ = the stochastic error term, assumed to be i.i.d. normal with mean zero and constant variance σ^2_i.

This model has also been used by Malatesta (1983). In this study, it produced quite a similar result to the market model. In fact, as shown in Table 1, while the ß for both the market model and the unconstrained CAPM model are the same, the intercept α is just slightly different. This result could be due to the fact that the event is based on a daily basis and the period covered is not long enough to see any effect by using Treasury bills as the risk free rate.

TABLE 1. Coefficient estimates from market model and unconstrained CAPM

	MM	CAPM
Targets		
ALPHA	0.0145	0.0126
BETA	0.7271	0.7271
Bidders		
ALPHA	0.0591	0.0588
BETA	0.9452	0.9452

If the intercept is constrained to be equal to its theoretical implied value, then the abnormal return measure would be the sum of α_i estimated from this unconstrained CAPM model plus the estimated residuals, a procedure which was also adopted by Langetieg (1978).

CONSTRAINED CAPM

The other approach is to assume that the intercept, α is equal to the equilibrium value of zero. That is,

$$R_{i,t} - R_{f,t} = \beta_{i,t} (R_{m,t} - R_{f,t}) + \epsilon_{i,t} \quad \text{.....(3)}$$

This model has also been used by Mandelker (1974), and Schipper and Thompson (1983).

Market model with constrained alpha = 0 and beta = 1

This third model follows Madden (1981) by assuming beta equal to one or unity and intercept equal to zero. This procedure implies that the market is in equilibrium and the systematic risk for all securities is the same.

EXCLUSION PERIOD

Initially, the return data during the 401 interval period beginning at 200 days and ending at 200 days before the announcement date were used to estimate the parameters of the standard market model and capital asset pricing model. However, the effects are more appropriate if they are measured by comparing a security's return, when the information about the acquisition occurs, to the ex ante expected return. Hence, the estimates should be computed on data excluding an interval of time on either side of the acquisition announcement date when the residuals are thought to behave abnormally. Failure to exclude these data could result in biased estimates of the parameters (Frank 1978). Thus, the exclusion criterion for this study is based in visual examination of the residuals when they behave abnormally A number of different periods were tested and a visual examination of the residuals indicated that abnormal price movement was largely confined within the 7 days prior to 6 days after the acquisition announcement. As a result, the parameters for the market and capital asset pricing model were estimated using the data from the last 200 days through 200 days after but, excluding the period 7 days prior to and 6 days after the acquisition announcement for both the targets and bidders.

ESTIMATING BETA FOR A SMALL THINLY TRADED STOCK MARKET

The main statistical problems associated with the empirical application of the single index model and capital asset pricing model to thinly traded securities are the presence of heteroskedasticity and autocorrelation. With such errors, particularly with the use of daily data, ordinary least squares regression for the market model and capital asset pricing model can lead to an incorrect conclusion. Fuller and Farrell (1987) have made the general statement that the betas for securities which do not trade frequently will tend to be underestimated if standard regression techniques are used to estimate the betas. Many specific alternatives considered to the ordinary least square betas were suggested like the Scholes and Williams (1977) procedure, the Dimson

(1979) method, the Blume (1975) model, the Vasicek (1973) Bayesian model, the Chen and Lee (1983) model, the Dimson and Marsh (1983) trade to trade method and the Cohen, Hawawini, Maier, Schwartz, and Whitcomb (1983) aggregated coefficients method.

Berglund, Liljeblom and Loflund (1989) in investigating the relative merits of the Cohen, Hawawini, Maier, Schwartz and Whitcomb (1983) model, the Dimson and Marsh (1983) trade to trade beta estimates, and the Vasicek (1973) Bayesian method, concluded that ordinary least square betas are not as inferior as would have been expected on the basis of their theoretical deficiencies and none of the corrections as such are likely to produce much improvement compared to the ordinary least square betas. Berglund, Liljeblom and Loflund (1989) also concluded that we had not advanced very far from the ordinary least squares beta in producing a better beta estimator to be used on daily beta. The Brown and Warner (1985) event study also concluded that procedures other than ordinary least square for estimating the market model in the presence of non-synchronous trading. convey no clear-cut benefit in detecting abnormal performance.

In fact, this paper also sets out to compare the estimates produced by ordinary least square for estimating the market model with those produced by general least square on trade to trade returns as proposed by the Dimson and Marsh (1983) single index for both targets and bidders. That is,

$$R_{it} / \sqrt{d_t} = \alpha_i / \sqrt{d_t} + \beta^{tt}i\, R_{mt} / \sqrt{d_t} + \varepsilon_{it},$$

where,

R_{it} = the measured return on the it security during period t, which is the period between two recorded trades in security i,
R_{mt} = the corresponding return on the market,
d = the number of days that the return spans and ε an error term.

Table 2 reveals that the everage intercept and slope coefficient for targets are 0.0145 and 0.7271 for OLS, and for trade to trade (T-t) are 0.0806 and 0.4927 respectively For bidders, they are 0.0591 and 0.9452 for OLS, and for trade to trade 0.1164 and 0.6824 respectively The R^2 and adjusted R^2 for the trade to trade method are lower than OLS for both targets and bidders.

TEST FOR AUTOCORRELATION

The average autocorrelation coefficients, p_L, are also estimated for values of lag (L) one up to five on all the firms for all models. The criterion for statistical significant[1] is that,

$$|p_L| > 2.0 / \sqrt{(400 - L + 1)}$$

All autocorrelation at lag 1 and beyond lag 2 for targets, and beyond lag 1

for bidders in Table 3 are negative, but none of them is statistically significant.

TABLE 2. Results from OLS and trade to trade estimation

	OLS	T-t
Targets:		
alpha	0.0145	0.0806
beta	0.7271	0.4927
R square	0.1987	0.1565
adjusted R square	0.1959	0.1538
Bidders:		
alpha	0.0591	0.1164
beta	0.9452	0.6824
R square	0.2526	0.1863
adjusted R square	0.2423	0.1735

TABLE 3. The average autocorrelation coefficients for all models

	market model	constrained CAPM	unconstrained CAPM	market model with alpha = 0 beta = 1
Targets:				
lag1	-0.0179	-0.0179	-0.0181	-0.0768
lag2	+0.0042	+0.0042	+0.0042	+0.0003
lag3	-0.0416	-0.0416	-0.0417	-0.0329
lag4	-0.0083	-0.0085	-0.0086	-0.0195
lag5	-0.0236	-0.0237	-0.0234	-0.0053
Bidders:				
lag1	+0.0181	+0.0181	+0.0165	-0.0242
lag2	-0.0171	-0.0171	-0.0153	-0.0237
lag3	-0.0315	-0.0312	-0.0304	-0.0259
lag4	-0.0064	-0.0060	-0.0079	-0.0073
lag5	-0.0207	0.0207	-0.0225	-0.0167

TEST FOR HETEROSKEDASTICITY

The heteroskedasticity test is also performed using the specs option of SAS version 6. The test suggested by white (1980) involves regressing the estimated residuals ε^2_t on R_{mt} and R^2_{mt}. The results shown in Table 4 indicate that a total of only 2 out of 38 targets and 27 out of 188 bidders are statistically significant, and that the errors are heteroskedastic for both the market and the unconstrained CAPM model. For the constrained CAPM, the figures are slightly higher, that is, 6 out of 38 targets and 32 out of 188 bidders are statistically significant.

TABLE 4. Results for heteroskedasticity test

	Statistically significant	Statistically insignificant	Total
Targets:			
market model	2	36	38
unconstrained CAPM	2	36	38
constrained CAPM	6	32	38
Bidders:			
market model	27	161	188
unconstrained CAPM	27	161	188
constrained CAPM	32	156	188

Thus, based on the discussion above and on the results of the trade to trade method, the test on autocorrelation and heteroskedasticity, no adjustment for infrequent trading is made to either the market model or the CAPM.

CHANGES IN BETA

In order to examine significant shifts in the risk parameters for the pre and post bid annoucement, the following dummy variable regression is run.

$$R_{jt} = a_j + a'_j D_t + b_j R_{mt} + b'_j D_t R_{mt} + e_{jt}.$$

These regressions are run using data from day -200 through -6 and +7 to +200 for both targets and bidders. The dummy variable, D_t is set equal to zero for the period before the event, and equal to unity after the event. The t- statistic on the coefficient b'_j is used to test for risk shifts. If the t-statistics are not significant (at the 0.05 level of significance), then there is no difference in β_j pre and post the acquisition announcement. A significant positive t-statistic implies an increase in β_j post the acquisition announcement, and a significant negative t statistic indicates a decrease in β_j. Table 5 presents the frequency of changes in beta for bidder and target firms. A total of 16 out of 38 target firms and 62 out of 188 bidders show evidence of a significant risk shift. Thus, replications were made to calculate residuals for both models using separate coefficients estimated before and after the event, excluding the exclusion period. Since the results produced an identical conclusion as that reported by Firth (1980), and Dodd and Ruback (1977), the residuals for both the models were calculated using coefficient estimates before and after the event, excluding the exclusion period.

TABLE 5. Frequency of changes in beta for target and bidder firms

	Statistically significant	Statistically insignificant	No Significant change	Insufficient data for test	Total
Targets:	7	9	22	-	38
Bidders	27	35	111	15	188
Total	34	44	133	15	226

MEASURING ABNORMAL PERFORMANCE

To measure the abnormal performance, the residuals for each firm, $R_{i,t}$ are calculated below, based on the model stated above. These models in fact are used as the benchmark to measure the security's price performance.

(1) Single Index or Market model

$$AR_{i,t} = R_{i,t} - (\alpha_{i,t} + \beta_{i,t} R_{m,t})$$

where, $\alpha_{i,t}$, $\beta_{i,t}$ are estimates from equation (1).

(2) Capital asset pricing model

(a) Unconstrained CAPM

$$AR_{i,t} = R_{i,t} - [(\alpha_{i,t} + \beta_{i,t} (R_{m,t} - R_{f,t})]$$

where, $\alpha_{i,t}$ and $\beta_{i,t}$ are the parameters from equation (2).

(b) Constrained CAPM

$$AR_{i,t} = R_{i,t} - \beta_{i,t} (R_{m,t} - R_{f,t})$$

where, $\beta_{i,t}$ is the parameter form equation (3).

(3) Market model with constrained $\alpha = 0$ and $\beta = 1$

$$AR_{i,t} = R_{i,t} - R_{m,t}$$

The average residual (AR) for each day relative to the acquisition is calculated as;

$$AR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{i,t}$$

where, N is the number of firms which have abnormal returns in day t.

and the cumulative average residual (CAR) over an interval K to L is calcuated as:

$$CAR = \sum_{t=k}^{L} AR_t$$

SIGNIFICANCE TEST ON ABNORMAL PERFORMANCE

The significance test for the average and cumulative residual above can be analysed by using the parametric and non-parametric test. In order for the test statistic to be distributed student-t, security returns must be normally distributed. For a less restrictive assumption than the t-test, the non-parametric test of the the performance measure is used. The study by Brown and Warner (1980, 1985) demonstrated that certain non-parametric tests used in event studies, specifically the sign test and Wilcoxon signed rank test are not correctly specified. On the other hand, Corrado (1988) noted that the problem

with this non-parametric tests is the requirement that excess return distributions be symmetrical for correct specification. He suggested the non-parametric test where the requirement for symmetry necessary for the correct specification of the signed rank and sign test is not required. In fact, he shows that the rank test is better specified under the null hypothesis and more powerful under the alternative hypothesis than the parametric t-test. However, in this study only the parametric t test will be used to test the significance of the abnormal return from the average residual and the cumulative average residual.

The following t-statistic is employed to determine whether AR_t differs significantly from zero for any event day The test statistic is the ratio of the average residual to its estimated standard deviation[2]

$$t = \frac{AR_t}{\sigma_{AR,t}}$$

where,

$$\sigma_{AR,t} = \left[\frac{1}{N-1} \sum_{t=-200}^{+200} (AR_t - AAR)^2\right]^{1/2}$$

$$\text{with } AAR = \frac{1}{N} \sum_{t=-200}^{+200} AR_t$$

N = number of average residuals in the estimation period,
AAR = average measure of average residuals in the estimation period.

The test statistic on the cumulative average residual is the ratio of the cumulative average residual to its standard deviation[3] which is given by

$$t = \frac{CAR}{\sigma_{CAR}}$$

where, $\sigma_{CAR} = \sigma_{AR}\sqrt{K}$ and σ_{AR} is the standard error of the daily return over the estimation period excluding the exclusion period, and K is the number of days in the CAR statistic.

FINDINGS

Estimated average residual and cumulative average residuals on using different models, the market or the single index model, the capital asset pricing model with unconstrained and constrained intercept and the market model with constrained $\alpha = 0$ and $\beta = 1$ for targets and bidders are calculated[4] The results

of the cumulative average residuals for the targets and bidders using different models are plotted in graph form in Figures 1 and 2 respectively.

The average residual of targets and bidders for all models shows an approximate constant variation with an indefinite pattern, but with an obvious evidence of positive abnormal performance which begins to occur on day -42 for targets and -101 for bidders, both of which are statistically significant. The unusual price performance in the form of cumulative average residuals also occurs in the periods starting from -116 days for targets and -107 days for bidders and continues to increase until the announcement date itself. This result reflects that merger announcements are poorly kept secrets that there is an information leakage to the market.

The average residuals for day -42, -41, -40, -12, -8, -6, -5 and 1 for the market, and the capital asset pricing model with unconstrained and constrained intercept and for day -42, -41, 12, -8, -6, -5 and -1 for the market model with constrained $\alpha = 0$ and $\beta = 1$ for targets, show a strong upward movement which is significant at the 5 percent level. This result may indicate that for some acquisitions, positive information concerning a forthcoming corporate takeover is considered 'good' news for the shareholders of targets firms. This increase in share prices prior to the announcement may also be due to information leakage to the market, or to the buying support by the bidder which forces the prices up before the announcement. Unfortunately, again, it was impossible to quantify these factors with existing data. In order to test a hypothesis of insider trading it would be necessary to isolate the bidders, who were in possession of pre- merger equity interest or 'toehold' interest and made abnormal returns around the merger announcement date (Frank 1978; Frank & Harris 1989).

As for bidders, the significant positive average residuals of either at 5 or 10 percent level or both, on day -128, -123, -101, 59, -20, -18, -7, -6, -2, and on the announcement date for the market, and the capital asset pricing model with unconstrained and constrained intercept, and on day -123, -101, -59, -20, -18, 6, -2, and on the announcement date for the market model with constrained $\alpha = 0$ and $\beta = 1$, also confirm that for some acquisitions, positive information concerning a forthcoming corporate takeover is considered 'good' news for bidders' shareholders. The significant positive average residuals on the announcement date are also consistent with the positive impact hypothesis that the bidding firm is implementing an operating strategy which increases the wealth of its shareholders. The increase in share prices prior to the announcement may also be due to information leakage to the market. Unfortunately, it was impossible with existing data to quantify this factor as insider trading. In order to test such a hypothesis, it would first be necessary to consider whether or not certain monopoly positions exist, or could be created whereby bidders have access to private information which could be exploited for above normal profit.

Results on targets for all models show the highest cumulative average residuals and insignificant average residuals are reported on the day after the announcement date for the market, and the capital asset pricing model with unconstrained and constrained intercept, and on the day of the announcement date itself for the market model with constrained $\alpha = 0$ and $\beta = 1$ Thus, it shows that the market appears to adjust immediately to the acquisition announcement. Subsequently, on the day after the announcement date for the market model with constrained $\alpha = 0$ and $\beta = 1$, and the second day after the announcement day for the market, and the capital asset pricing model with unconstrained and constrained intercept, it begins to decline gradually and in fact a test on most of the remaining average residuals is not statistically significant. This result indicates that there are no net gains from altering the operation of the target. This may also suggest that no new information is released, and the market reaction to this new public information is complete on the day after the announcement date for the market model with constrained $\alpha = 0$ and $\beta = 1$, and on the second day after the announcement day for the market, and the capital asset pricing model with unconstrained and constrained intercept. Thus, it could be interpreted as evidence in support of a hypothesis that the Kuala Lumpur Stock Exchange is reasonably efficient in its response to a takeover announcement. With significant average residuals on +81 (at 5 percent significant level) and +82 days (at 10 percent significant level) for the market, and the capital asset pricing model with unconstrained and constrained intercept, and with statistically significant only on day +81 for the market model with constrained $\alpha = 0$ and $\beta = 1$, and considering the study period is short, the merger effect on the target firms may not be apparent yet. However, with the sign of downward movement of the cumulative average residuals from +158 to +200 days for all models except the market model with constrained $\alpha = 0$ and $\beta = 1$, where the downward movement begins from +156 days, it appears that there are no net gains from altering the operation of the target. This evidence might again indicate the bid-ask errors in transaction prices rather than market overreaction due to measurement problems on the daily returns computed based on the 'closing price' provided by SCAN of the Kuala Lumpur Stock Exchange. This closing price can deviate from the true price and will result in bid-ask effect or bid-ask errors. As also noted by Kaul and Nimalendran (1990) a more detailed investigation is necessary to test the validity of this conjecture and such an investigation is the topic of future research. Figure 1 also seems to show that the period from -117 to +200 days has higher cumulative average residuals than the period from -200 to -116 days. Although there is a negative drift from +158 to +200 days for the market, and the capital asset pricing model with unconstrained and constrained intercept, and from +156 to +200 days for the market model with constrained $\alpha = 0$ and $\beta = 1$, none of the average residuals is statistically significant. Thus, there is an implication that takeovers

in Malaysia lead to an economically beneficial transfer of productive resources, or may be that the target's poor management beforehand has been replaced by the more efficient management of bidders.

As for bidders, the results for all models also show the highest cumulative average residual reported on day 0, that is on the announcement date itself. Thus, it indicates that the market appears to respond immediately to the acquisition announcement. Immediately 3 days (at 5 percent level) after the announcement date for all models, and 4 days (at 10 percent level) for all models except the market model with constrained $\alpha = 0$ and $\beta = 1$, it began to decline significantly. Thus, with significant negative average residuals immediately after the announcement date, this result is obviously inconsistent with the efficient market hypothesis because the initial reaction does not accurately reflect the true implication of the information on the share value. It is also inconsistent with the positive impact hypothesis that the manager acts to maximise the shareholders' wealth. However, with a significant positive average residual on day +29, +57, +107, +114, +127 for all models, and considering that the study period is short, the merger effect on the bidding firms might also not be apparent yet. In the short term, evidence on the significant negative changes after the announcement, may suggest that the bidders have over estimated the future efficiency of gains from the merger. Nevertheless, returns initially rise before the announcement and then decline after it, leaving bidder shareholders no better off as a result of the mergers. With the sign of the downward movement of cumulative average residuals from +158 to +200 days for all models except the market model with constrained $\alpha = 0$ and $\beta = 1$, it appears that there are no be gains from investing in the targets. On the other hand. analysing figure 2, the period from -107 to 200 days does have higher cumulative average residuals than the period from -200 to -108 for all models. Hence, there is an implication that takeovers in Malaysia are creating quite large benefits for shareholders and appear to facilitate resource allocation within the Malaysian economy.

Based on the above findings, and as also shown in Figures 1 and 2 on the cumulative average residuals for both the target and bidder firms, there are no obvious differences in the conclusions when using different models. They do show a slight difference in magnitude in the cumulative average residuals. Table 6 shows abstracts of different results of estimators and the abnormal performance of targets and bidders respectively, depending on how control returns are constructed. A slight different in intercept (alpha) between the market model and unconstrained CAPM and with the same beta makes no obvious difference in the magnitude of the average residuals, but gives a slight difference in the magnitude of cumulative average residuals for targets. Even a failure to account for an intercept of 0.0126 using constrained CAPM, would yield lower cumulative average residuals than the unconstrained CAPM. With an average intercept of 0.0145 and 0.0126, and an average beta of

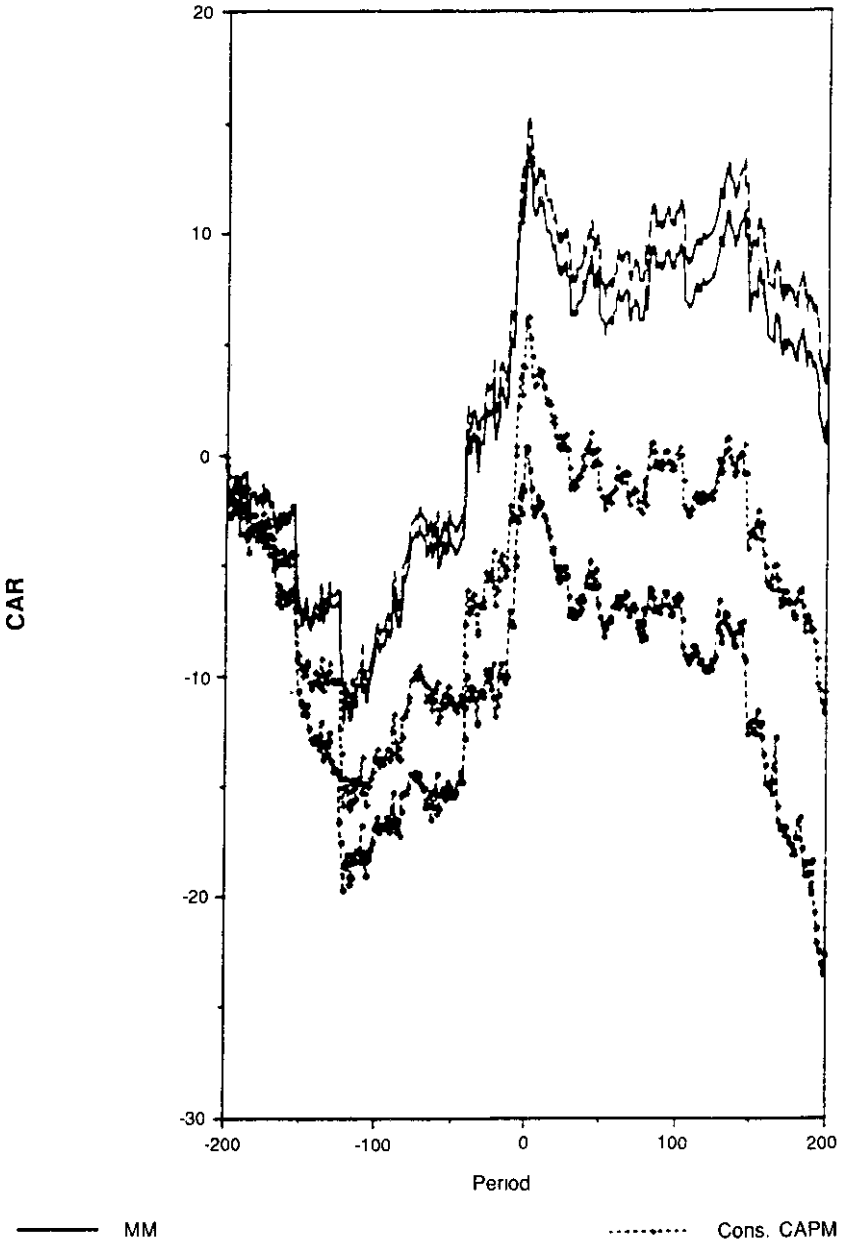

FIGURE 1. Differences in using Different models - Targets

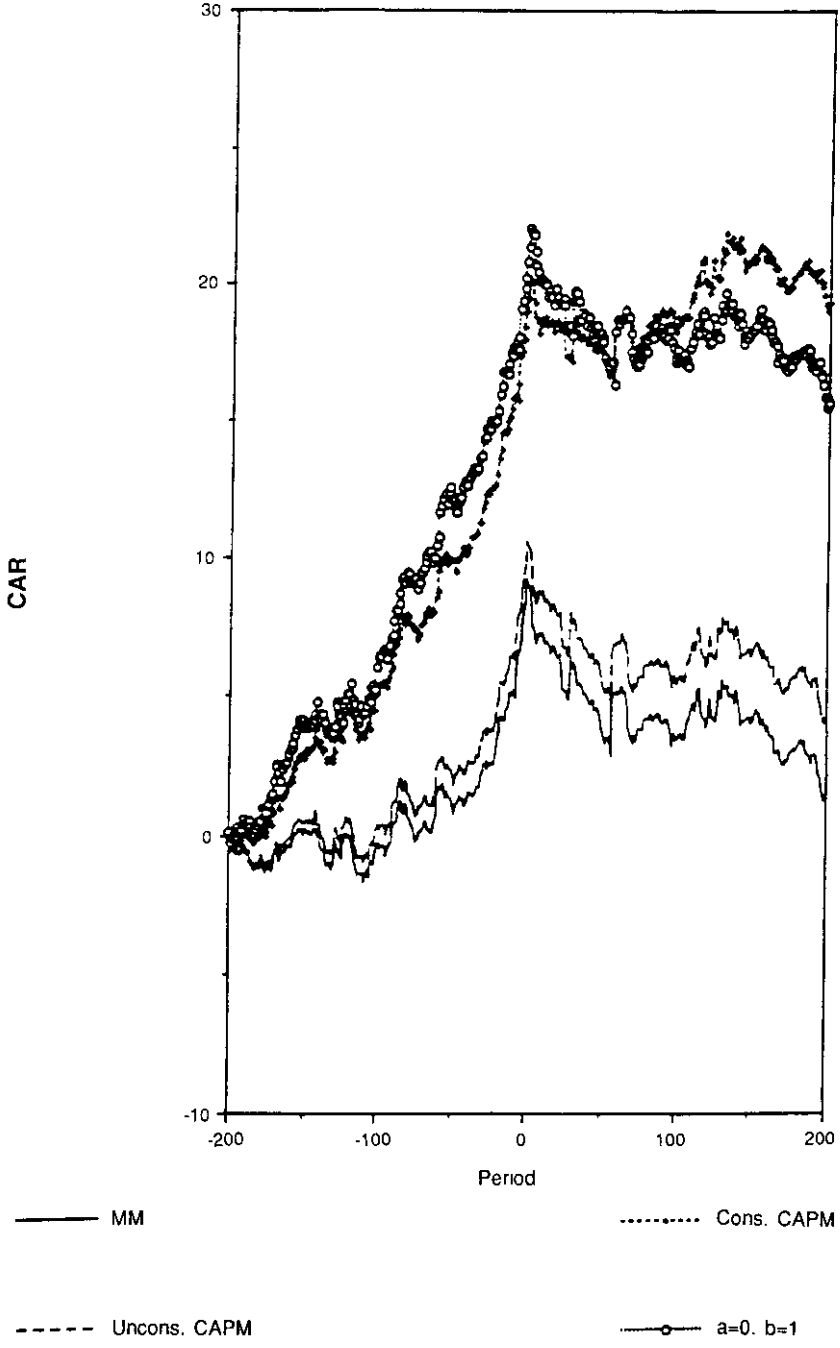

FIGURE 2: Differences in using different models - Bidders

0.7271 per day for targets, when using both the market model and unconstrained CAPM respectively, it indicates that targets were outperforming the market by at least 0.01 percent per day A failure to repeat the performance using these two models greatly affects the cumulative average residuals when using the market model with constrained $\alpha = 0$ and $\beta = 1$.

In addition, a slight difference in intercept (alpha) between the market model and unconstrained capital asset pricing and with the same beta shows no obvious difference in magnitude of the average residuals but, indicates a slight difference in magnitude of the cumulative average residuals for bidders. Failure to account for an intercept of 0.0588 using constrained CAPM, would give much higher cumulative average residuals than the unconstrained CAPM. With an average intercept of 0.0591 and 0.0588, and an average beta

TABLE 6. Differences in using different models

	alpha	beta	-6	0	+6	CAR (-200 to 0)
Targets:						
Single Index	0.0145	0.7271	1.80	0.27	0.09	13.69
t-value			2.70	0.41	0.14	1.45
CAPM						
unconstrained	0.0126	0.7271	1.80	0.28	0.10	15.01
t-value			2.71	0.42	0.15	1.59
constrained	-	0.7370	1.79	0.28	0.09	6.10
t-value			2.68	0.42	0.13	0.65
market model						
alpha=0, beta=1	0	1	1.63	0.22	0.20	0.39
t-value			2.25	0.29	0.27	0.04
Bidders:						
Single Index	0.0591	0.9452	1.01	0.76	-0.48	9.21
t-value			3.39	2.54	- 1.61	2.17
CAPM						
unconstrained	0.0588	0.9452	0.17	0.77	-0.48	10.60
t-value			3.41	2.56	-1.59	2.50
constrained	-	0.9624	1.05	0.80	-0.43	20.27
t-value			3.51	2.66	-1.44	4.76
market model						
alpha=0, beta=1	0	1	1.04	0.73	-0.34	22.09
t-value			3.28	2.31	-1.06	4.92

of 0.9452 for both the market and unconstrained CAPM respectively, there is no obvious difference in the magnitude of the average residuals, but the cumulative average residuals are much higher using the market model with constrained $\alpha = 0$ and $\beta = 1$. Although no actual comparison is yet to be made from this and other published studies on this subject, the results in the magnitude of residuals however, depend on the estimated intercept and beta of the model used. As noted by Halpern (1983) 'the choice as to which model should be used to estimate abnormal returns is unresolved since it depends upon which return generating process is the appropriate description of reality'.

CONCLUSION

The above findings on the target's share prices behaviour can be classified or divided into the following groups by using the market model results on the cumulative average residuals. It is to be noted again that there are no differences in the conclusions when using different models. The classification of results are shown in Figure 3.

1. ***Prior decline*** (days -200 to -117) This evidence indicates that target firms experience negative cumulative average residuals before the leakage of information and that the bidding firm is assumed to be motivated by the information on the inefficiency of the target firms.

2. ***Prebid rumors*** (days -116 to +1) This evidence indicates that there is a leakage of information. It also indicates that target firms experienced good performance and it is consistent with the positive impact hypothesis that information concerning a forthcoming acquisition releases positive information.

3. ***Random walk*** (days +2 to +157) This evidence indicates that no new information is released. Thus, it could be interpreted as evidence in support of a hypothesis that the Kuala Lumpur Stock Exchange is reasonably efficient in its response to takeover announcements.

4. ***Tail anomaly*** (days +158 to +200) This evidence might indicate the bid-ask errors in transaction prices rather than market overreaction due to measurement problems on the daily returns computed, based on the 'closing price' provided by SCAN of the Kuala Lumpur Stock Exchange. This closing price can deviate from the true price and will result in a bid-ask effect or bid-ask errors. As also necessary to test the validity of this conjecture and such an investigation is the topic of future research.

The above findings on the bidder's share prices behaviour can be also classified or divided into the following groups by using the market model results on cumulative average residuals. It is also to be noted again there are

no differences in the conclusions when using different models. The classification of results are shown in Figure 4.

1. ***Random Walk*** (days -200 to -108). This evidence indicates that bidding firms experience normal cumulative average residuals before the leakage of information.

2. ***Prebid rumours*** (days -107 to 0). This evidence indicates that there is a leakage of information. It also indicates that bidding firms experienced good performance and is consistent with the positive impact hypothesis. It implies that managers act to maximise the shareholders' wealth and that the tender offers are an attempt by the bidding firm to exploit some specialised resources by gaining control of the target and implementing a higher value operating strategy

3. ***Anomalous decline*** (days +1 to +56). This evidence might indicate that it is inconsistent with the positive impact hypothesis that managers act to maximise the shareholders wealth. This may also suggest that the bidder has over estimated the value of the target which may result in paying too much for the target's assist. On the other hand, if there is an overreaction to the acquisition announcement, it could be due to the bid-ask errors in transaction prices using the daily returns computed, based on the 'closing price' provided by SCAN of the Kuala Lumpur Stock Exchange. This closing price can deviate from the true price and will result in a bid-ask effect or bid-ask errors. As also noted by Kaul and Nimalendran (1990) a more detailed investigation is necessary to test the validity of this conjecture and such an investigation is the topic of future research.

4. ***Random walk*** (days +57 to +157). This evidence indicates that no new information is released and the bidder's stock returns have reverted to their normal relationship with market returns.

5. ***Tail anomaly*** (days +158 to +200). This evidence might again indicate the bid-ask errors in transaction prices rather than market overreaction due to measurement problems on the daily returns computed, based on the 'closing price' provided by SCAN of the Kuala Lumpur Stock Exchange. This closing price can deviate from the true price and will result in a bid-ask effect or bid-ask errors. However, is necessary to test the validity of this conjecture and such an investigation is the topic of future research.

The target's insignificant negative returns and the bidder's significant negative returns after the announcement date, could be explained by two factors: (1) the issue of shares as the method of payment to the target, and (2) the conglomerate type of merger that exists after the acquisition.

In the Malaysian experience, most acquisitions have been financed by the issue of shares by the bidder to the target's shareholders [Mat-Nor and Iskandar (1986)]. Hence, this finding is consistent with the study by Asquith and Mullins (1986) which states that it is consistent both with the hypothesis

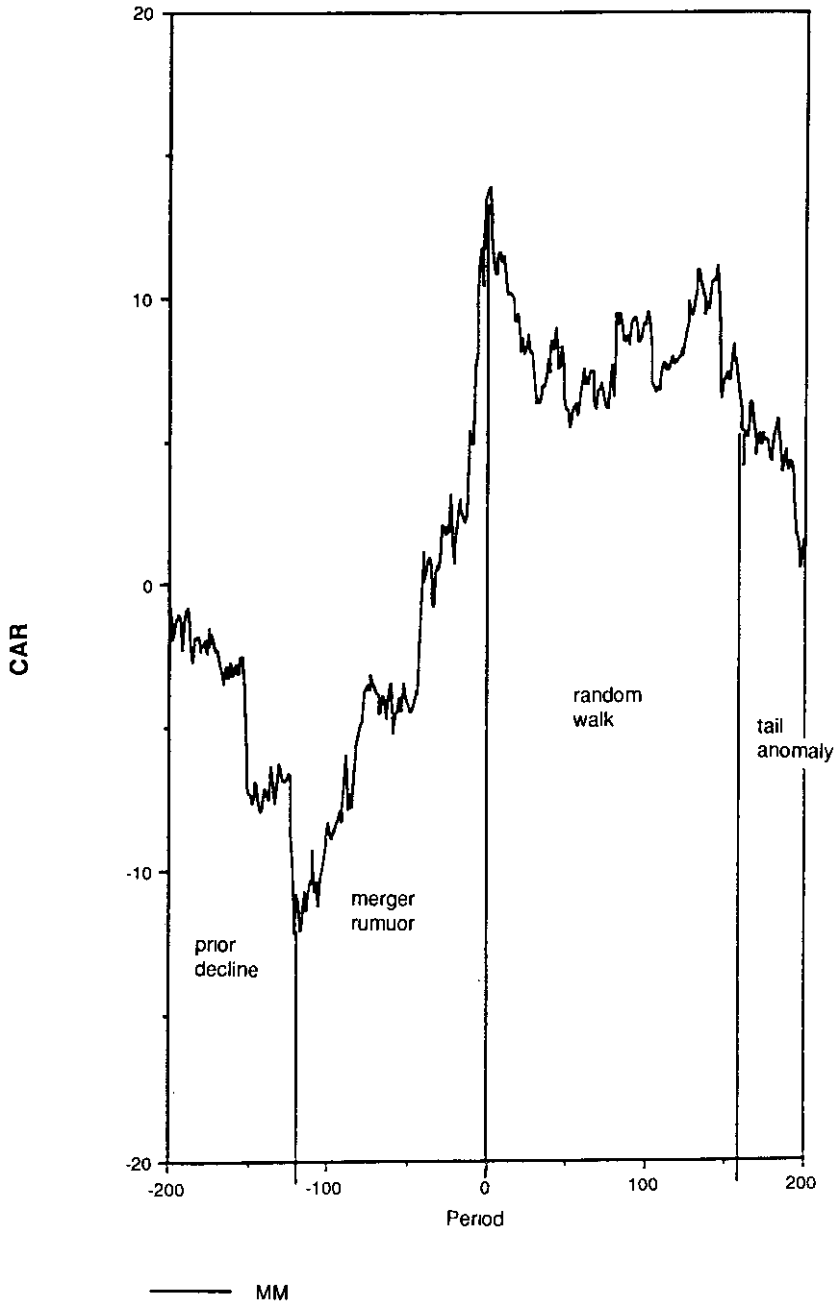

FIGURE 3: Classification of results using market model - Targets

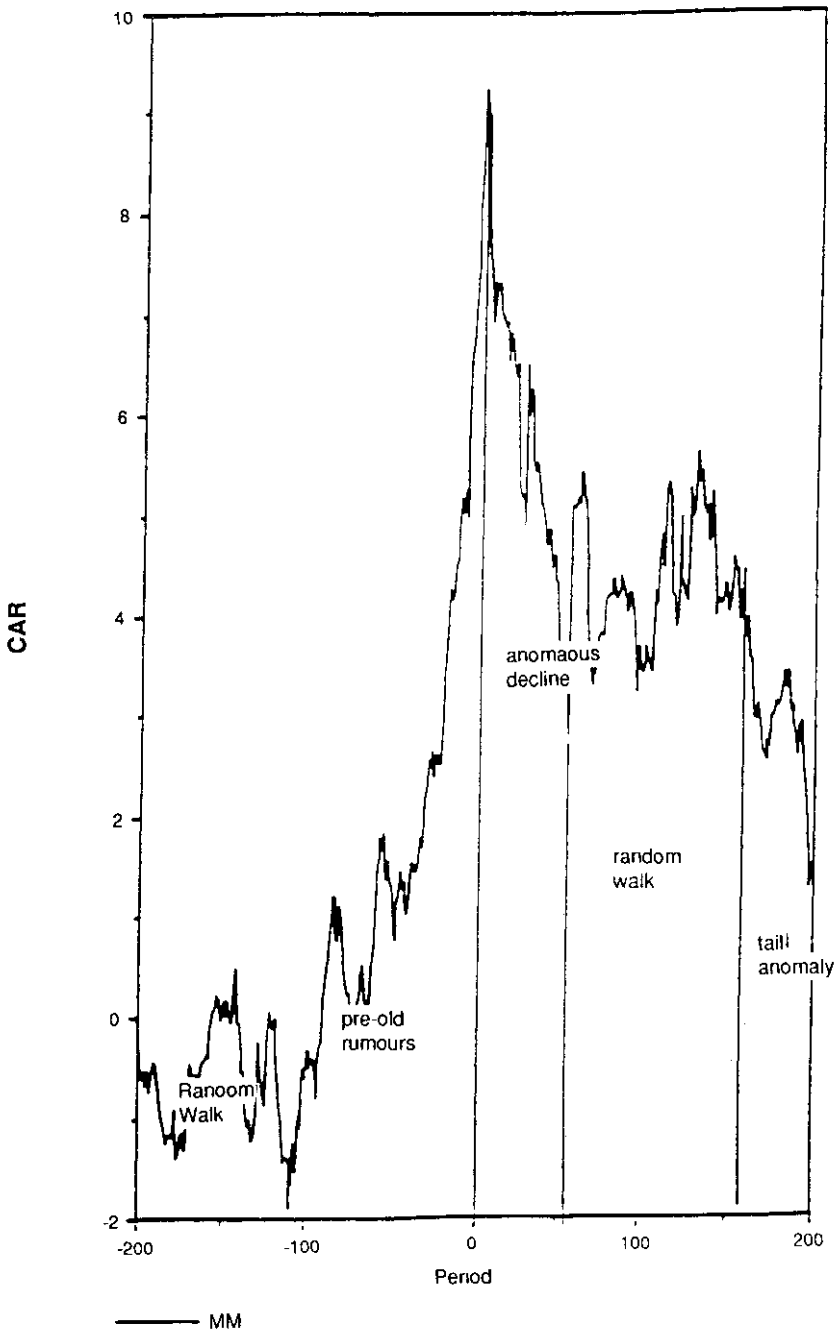

FIGURE 4: Classification of results using market model - Bidders

that equity issue are viewed by investors as negative signals and with the hypothesis that there is a downward sloping demand for a firm's share.

A previous survey by Mat-Nor and Iskandar (1986) indicates that the most obvious pattern on the nature of acquisition in Malaysia is the conglomerate relationship that exist after the acquisition. In fact, by its nature, operational synergy is less evident in a conglomerate type of merger. Mergers undertaken in order to enhance debt capacity, reduce the probability of bankruptcy and diversification of risk are inconsistent with the results of this study Nevertheless, this finding suggests a reexamination of the results of future research to compare the effects on shareholders' returns of conglomerate and non conglomerates.

On average, the shareholders of target firms, especially the old shareholders, are enriched by the regulation. However, the delay in execution and the over estimation of the value of the target will result in a higher premium paid by the bidder. The law and regulation apparently do not yet provide equality of treament for bidders' shareholders, although a longer view of the consequences of acquisitions is still needed. Basically, there are four types of control in a takeover bid in Malaysia:

1. Statutory controls, principally by the provisions of the Companies Act (1965), specifically Section 179;
2. Administrative Controls through the Foreign Investment Committee (FIC), Capital Issue Committee (CIC), the Panel on Takeovers and Mergers, and Related Government Agencies;
3. Self Regulation through the Stock Exchange Listing Manuals;
4. Malaysian Code on Takeover and Merger 1987.

The Section 179, Companies Act 1965 and Malaysian Code on Takeover and Merger 1987 have three bacis objectives as follows:

1. To allow shareholders of the target firm adequate time for consideration;
2. To provide equality of treatment of the shareholders as far as possible (minority shareholders and all shareholders of the same class of the target firms);
3. To provide minimum disclosure to the shareholders.

One interpretation of this finding is that the laws have been successful in protecting shareholders by providing them with more information about the acquirer and by giving them more time to decide whether or not to tender. This result is also consistent with studies by Jarrell and Bradley (1980), and Schipper and Thomson (1981) which suggest that the markets for mergers have changed significantly after 1969 due to additional legal restrictions on acquisitions in the US. Jarrell and Bradley find that gains to the bidder are reduced, while Schipper and Thompson report negative abnormal returns for bidding firms in the post regulation period.

IMPLICATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The results of this study have implications for public policy in Malaysia. The existence of rigorous laws and regulations is able to protect the targets' shareholders, especially the old shareholders. However, the delay in execution and the over estimation of the value of the target will result in a higher premium paid by the bidder. The laws and regulations apparently do not yet provide equality of treatment for bidders' shareholders, although a longer term view of the consequence of acquisition is still needed.

The regulatory agency of the Kuala Lumpur Stock Exchange should pay immediate and closer attention to the problem of insider trading. Although a significant positive abnormal return before the announcement date cannot be considered to be evidence in itself of information leakage, or the presence of insider trading, there is a possibility that it exists. If it really exists, it could damage the operational efficiency of the stock market. In addition, such improper use of information is undesirable and a breach of duty to the firm which provides access to information on the assumption that it is to be used for that firm's benefit and not for the personal benefit of its officers or others. The powers available on the stock exchange should be used and reinforced effectively in order to effectively halt insider trading.

The results of this study appear to indicate that bidders' managers might not act to maximise shareholders' wealth, although further research is needed to confirm this behavior. They might also over estimate the value of the gains which might result from paying too much for the target's assets.

The results of this study also imply that an investor in the target and bidder firm is capable of outforming the market before the acquisition announcement date. During the announcement period for both target and bidder and the post announcement period for the target, it can only earn a normal return. The immediate post acquisition announcement for the bidder on the other hand, indicates that it earns a negative return instead.

Future research might investigate the evidence on insider trading. In order to test a hypothesis if insider trading, it would first be necessary to consider whether or not a certain monopoly position exists or can be created whereby access to private information which can be exploited for above normal profit is available. Second, if a monopoly position does exist, consideration must be given to determine how many of these are present in the market system, that is whether the returns accruing to bidders with pre-merger interest different from those earned by bidders who did not make any such purchases prior to bidding.

With more signs of negative average residuals before the announcement date for targets than after it, there is an implication that takeovers in Malaysia lead to an economically beneficial transfer of productive resources or it could be that the target's poor management which operated poorly previously has

been replaced by the more efficient management of bidders. However, more efficient management of bidders. However, more refined measures of management performance may be needed to address this implication.

Future research might also investigate the evidence on the non-value maximisation behavior of top management. This non maximisation behavior will be reflected in such areas as remuneration levels which can be increased by corporate size as a result of a takeover coupled with a poor post acquisition announcement. It therefore, occurs if there is a significant increase in top management remuneration when firms significantly increase their size having acquired another firm coupled with poor post acquisition performance.

The anomalous decline after the announcement indicates that there is an overreaction to the acquisition announcement which could be due to the bid-ask errors in transaction prices using the daily returns computed, based on the 'closing price' provided by SCAN of the Kuala Lumpur Stock Exchange. This closing price can deviate from the true and will result in a bid-ask effect or bid-ask errors. As also noted by Kaul and Nimalendran (1990) a more detailed investigation is necessary to test the validity of this conjecture and such an investigation is the topic of future research.

Another consideration is the study of the types of merger, specifically the effect of a conglomerate and non conglomerate, and their impact on the share prices behavior of the bidder and target firm which then may explain this behavior.

If later comparisons were to be made with this study and other related studies, then the potential researcher should also note the method, time, and sample used so that a conclusive and correct inference can be drawn.

NOTES

1. See Bowerman and O'Connel (1979), p. 346 on the basic step in Box-Jenkins methodology
2. A statistic of this form is widely used in event studies, e.g., Masulis (1980), Dann (1981), Holthausen (1981), and Leftwich (1981).
3. The test statistic of this form was used by Bradley, Desai and Kim (1988).
4. The calculations are available on request.

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