

The Impact of Mergers and Acquisitions on Acquirer Performance: Evidence from Turkey

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Abstract

The objective of the present study is to investigate the impact of Merger & Acquisition (M&A) deals on the performance of acquirer Turkish companies. A total of 62 companies involved in M&A deals between 2003 and 2007 were included in the sample. Analysis of both stock market and accounting data weakly support the hypothesis that acquirer companies are negatively affected by M&A activities.

Keywords: Mergers; acquisitions; impact; acquirer performance; Turkey.

1. Introduction

In recent years, mergers and acquisitions (M&As) have received a great deal of attention in Turkey. After long years, where total deal value was less than a billion US dollars, M&A activity boomed at the beginning of 2005 and reached its peak in 2007 and 2008. Last five years' M&A volume reached a level of USD 97 billion [5].

Despite this increasing trend, the academic literature on Turkish M&As is limited, especially compared to the large amount of US studies. This paper aims to extend this literature. Specifically, we investigate the changes in the performance of Turkish companies subsequent to the completion of M&A transactions. The research question is appealing not only because literature on Turkish M&As is limited, but also because even UK and US studies yielded inconsistent results. Since previous studies focus on UK and USA acquisitions, this study also serves as a differentiated replication which tests the generalizability of previous findings to the Turkish market. Given the relatively smaller and emerging Turkish market, the results could be different.

The rest of the paper is organized as follows. Section 2 provides an overview of the prior studies on the performance of M&A-involved firms. Section 3 describes our sample selection procedure and methodology used to measure changes in corporate performance. Section 4 presents the main results of our analysis regarding changes in the operating performance of the M&A-involved companies. Section 5 summarizes the results and concludes.

2. Literature Review

There are two main strands in the existing mergers and acquisitions literature: the stock market-based approach and the accounting-based approach.

Stock market studies employ the event study methodology to predict the financial gains and losses resulting from M&As. It is assumed that the stock market is efficient and hence abnormal security returns for both the acquiring and the target companies, controlling for movements in the market in general and the systematic risk of the company, represent the economic impact of the M&A event [7].

Market based studies that have focused on security returns in US and UK clearly conclude that target firms receive economically large and statistically significant wealth gains [29]. However, reported returns to bidder firm shareholders at the time of the M&A event are quite ambiguous – small positive or negative returns or zero abnormal returns [20, 29, 16, 15, 10, 13, 30, 6, 2].

A major problem with the event study approach is that changes in market valuations around the time of takeover could reflect not only the benefits of an efficiently operating market for corporate control, but also other factors such as undervaluation due to investors overlooking the stock or an overvaluation by those who acquire the firm [28]. If stock prices incorporate random valuation errors, then at any particular time a firm can be undervalued or overvalued. In the former case, acquisition may well

occur and the rise in the share price of the target firm reflects not efficiency gains from the merger but merely a market correction [26]. Also, the reliability of event studies are questioned on the grounds that it's the longer term results that matter [4].

Studies based on analysis of accounting data have attempted to assess the economic impact of M&As by testing for changes in the profitability of the involved companies. In this strand of literature, pre-M&A profitability measures are compared to post-M&A profitability measures by parametric tests. Some studies use pre-tax cash flows while some others use net income as measure company profitability. To adjust for size, these measures are divided by assets, sales, equity etc. An adjustment for the industry trend is also made.

Previous accounting-based studies yielded inconsistent results about changes in operating performance following M&As. Some studies report gains [11, 3, 24, 1, 17], some report losses [14, 25, 23, 31] and others show mixed or insignificant results [22, 12, 27, 9, 19, 6].

We are aware of the fact that the accounting-based approach also has problems: Companies can use creative accounting techniques which may imply that their published accounts may not be a true and fair reflection of the companies' financial position [7].

Since both approaches have drawbacks, the present study will analyze both security returns and accounting data and compare the results.

3. Methods

3.1. Data

The company news on the Istanbul Stock Exchange's (ISE) website were screened to identify the sample of M&A deals to be used in this study. The period from 2003 to 2007 was selected to focus on recent acquisitions and to have some post-M&A performance data available for the involved companies. In previous empirical studies, it was commonly suggested to have at least two years of post-acquisition data since the changes in corporate performance resulting from the M&As may not materialize immediately. Also, the deals involving private (non-listed) companies were excluded since financial statements data would not be available for them.

A total of 62 companies involved in M&A deals between 2003 and 2007 were identified. Some companies had more than one M&A deal but in case of multiple M&As by the same company we took the largest deal in order to avoid overlapping event windows. In all of these deals, the sample companies were the acquirer, and the target company can both be foreign or Turkish.

3.2. Hypotheses

The objective of this paper is to investigate whether the performance of Turkish companies is significantly affected by acquisitions. Therefore, we formulate the following two-sided hypotheses.

H₁: There is a significant change in the operating performance of the acquirer companies following the M&A deals.

H₂: There is a significant change in the stock prices of the acquirer companies following the M&A deals.

3.3. Performance Measurement

To assess the impact of the acquisition on the acquire companies' performance we use two approaches: stock market approach and accounting approach.

3.3.1. Stock market approach

The objective of this study is to investigate the impact of M&As on the performance of acquirer Turkish companies. To accomplish this objective, an event study is conducted to measure whether any abnormal returns are earned by security holders around M&A announcements. The core assumption of the event-study methodology is that if information communicated to the market contains any useful and surprising content an abnormal return will occur. At the time of the event, the magnitude of the

abnormal performance indicates the impact of that particular event on the shareholders' wealth, and the significant abnormal return demonstrates that the event has information content.

Following MacKinlay [21], the first step of the analysis was to determine the sample of firms to be included in the analysis and to determine an event window. For the purposes of this study, ISE-listed companies involved in M&A deals between 2003 and 2007 were selected. In order to mitigate the effect of other contemporaneous events on stock prices, any company with an announcement related to earnings, stock split or dividends were excluded from the analysis. The M&A announcement dates were collected from daily bulletins of ISE.

As the second step of the event study, 11-day (5 days prior to the event day and 5 days after the event date), 7-day, 5-day and 3-day symmetric event windows were chosen. These window lengths are appropriate to capture any news that might have leaked shortly before the official announcement was made and also considers any short-term stock price reactions linked to the event after the announcement. In addition, several other window lengths are analyzed to check the results. One disadvantage of using longer windows is that other, unrelated events may be confounded with the event of interest. If other relevant events occurred during the event window, it is hard to isolate the impact of one particular event [18].

The third step was the prediction of a "normal" return during the event window in the absence of the event. The model used in this study to estimate the expected returns is the market model. It is a linear time-series model where dependent variable, security returns, is regressed against percentage changes in a market index. The market model used in this study for security i for the year j during period t can be expressed by the following linear time-series model:

$$R_{i,j,t} = \alpha_{i,j} + \beta_{i,j} R_{m,j,t} + e_{i,j,t}$$

where

$R_{i,j,t}$ = daily return on the security i for year j during time t

$\alpha_{i,j}$, $\beta_{i,j}$ = market model parameters for security i for year j , security-specific intercept and slope coefficients

$R_{m,j,t}$ = return of the market (ISE index) for year j during time t

$e_{i,j,t}$ = error term for security i for year j at period t . It is assumed that $e_{i,j,t}$ fulfills the assumptions of the linear regression model. namely $e_{i,j,t}$ has the mean of zero over the regression period, and has a variance independent over time.

The fourth step was the calculation of the abnormal return within the event window, where the abnormal return is defined as the difference between the actual and predicted returns. Abnormal returns, $e_{i,j,t}$, for firm i , for year j , on day t are estimated as the difference between the actual return on day t and the return expected from the market model. It thus represents the impact of firm specific event (M&A announcements in this study) on shareholder wealth, net of market effects. If M&A announcements have an effect on company performance, the value of $e_{i,j,t}$ should be different from zero. It can be obtained as:

$$e_{i,j,t} = R_{i,j,t} - \alpha_{i,j} - \beta_{i,j} R_{m,j,t}$$

By using this equation, daily residuals for each firm were computed over several event windows. Then, for any day t within the event period the average residuals mean abnormal return (MAR) across sample members was calculated. Average residuals are defined as:

$$MAR_t = \frac{\sum_{i=1}^N e_{i,j,t}}{N_t}$$

where

$e_{i,j,t}$ = abnormal return of security i for year j on day t

N_t = number of securities with abnormal returns on day t

Finally, cumulative abnormal returns over several holding periods from day t_1 to day t_2 were calculated according to the following formula.

$$CAR_{t_1,t_2} = \sum_{t=t_1}^{t_2} MAR_t$$

Under the null hypothesis, that M&A announcements have no impact on corresponding stock prices, cumulative abnormal returns have an expected value of zero. Finally To test the hypothesis, the following t-statistic is used.

$$t(AR_t) = \frac{AR_t}{s(e_{i,j,t})/\sqrt{N_t}}$$

where

$s(e_{i,j,t})$ = the standard deviation of the excess returns on day t in the event period

N_t = number of securities with abnormal returns on day t

3.3.2. Accounting approach

We use the following three profitability ratios to assess changes in corporate performance:

ROA: Return on assets defined as Net Income/Total Assets

ROE: Return on equity defined as Net Income/Total Equity

ROS: Return on sales defined as Net Income/Net Sales

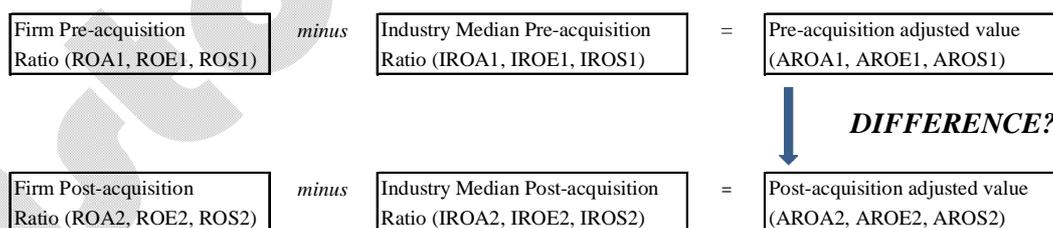
Analyzing the "raw" ratios above can give misleading results because some of the changes in company performance may be due to economic or market fluctuations. To isolate the effect of the acquisitions, the literature suggests an adjustment for the industry trend [e.g. 11]. As a proxy for the industry trends, we determine a peer company for each acquirer firm in our sample. The peer company is identified from the pool of ISE-listed companies operating in the same industry. The firm with the median EBIT/ Total assets ratio *at the end of the year prior to the acquisition* is then selected as our industry median peer. The companies being involved in an M&A deal were not included in the calculation of the industry median in order to get a proper control sample which is sufficiently different from the experimental sample. The list of peer companies is given in appendix 2.

We compute each company's industry-adjusted ratio as the difference between the firm's "raw" ratio and the corresponding statistics for the median firms in each industry. The industry-adjusted returns are a more reliable measure of performance since they control for industry events unrelated to the merger. Computing each performance measure as the difference between the actual return and an industry-specific index also increases the construct validity of the measures [8].

In order to assess the changes in the profitability of the acquirer firms, we employ two following models: the change model and the intercept model.

In the *change model*, the selected financial ratios (ROA, ROE, ROS) for each company of the sample over two years before (year T-1 and T-2) and after (year T+1 and T+2) the acquisition are calculated, and compared by statistical t-tests. The year of the acquisition is omitted from comparisons because it usually includes recognition of a number of atypical events which distort comparisons. Figure 7 below summarizes our methodology.

Figure 1. Methodology.



An assumption underlying the t-tests performed for the change model is that the pre-acquisition performance will continue into the future. While it is not unreasonable, it is unreasonable to assume that the pre-acquisition performance will continue into the post-acquisition period at a constant rate. Therefore, in following Healy et al. [11], this assumption was relaxed and the effect of the acquisition on post-acquisition performance was investigated through a cross-sectional regression of the post-acquisition performance on the pre-acquisition performance for each of the three performance measures. This is called the intercept model.

In the *intercept model*, we estimate changes in company performance with the intercept from the following three regressions.

$$AROA_2 = \alpha + \beta \cdot AROA_1$$

$$AROE_2 = \alpha + \beta \cdot AROE_1$$

$$AROS_2 = \alpha + \beta \cdot AROS_1$$

where

$AROA_1$, $AROE_1$, $AROS_1$ are industry adjusted pre-acquisition profitability ratios.

$AROA_2$, $AROE_2$, $AROS_2$ are industry adjusted post-acquisition profitability ratios.

The intercept α represents the abnormal control adjusted cash flow returns (changes in performance caused by acquisition). The slope coefficient β captures any correlation in profitability ratios between pre and post acquisition years. The results are presented in the section 4.

4. Results and Discussion

4.1. Stock Market Approach

As can be seen from table 1 below, the results of the t-test indicate that the abnormal returns are negative and statistically different from zero for 10-day and 7-day event windows. Also $CAR(-5,-1)$ and $CAR(-3,-1)$ values are significantly negative, indicating pre-event leakage. Therefore, we conclude that returns for stocks of Turkish companies involved in acquisitions exceed average industry returns. The results, however, were not confirmed when shorter event windows were used. Hence, hypothesis 1 is weakly supported by empirical evidence.

Table 1. CAR values for selected event windows.

	T-statistic
CAR (-5,5)	2.331219 **
CAR (-5,-1)	1.643042 *
CAR (1,5)	-0.10943
CAR (-3,3)	1.605319 *
CAR (-3,-1)	1.698545 *
CAR (1,3)	-0.57863
CAR (-2,2)	1.210086
CAR (-2,-1)	1.309466
CAR (1,2)	-0.57849
CAR (-1,1)	1.217937

4.2. Accounting Approach

4.2.1. Change model

As seen on table 2, parametric t-test do not show that post-acquisition ROA and ROS values are significantly lower than pre-acquisition values. Therefore, accounting data, using the change model, supports hypothesis 2. However, the result is not confirmed when ROE measure of company performance is used.

Table 2. Accounting results using the change model.

	Pre-MA	Post-MA	t-statistic	
ROA	4.081389	1.458194	-2.01153	**
ROE	2.755972	1.201014	-0.22573	
ROS	7.053284	4.547156	-1.63511	*

4.2.2. Intercept model

Table 3 reports regression results related to the intercept model. As can be seen, constants are not significantly different from zero. Therefore, we conclude that there is no significant difference between the pre-acquisition and post-performance of Turkish companies which were involved in cross-border acquisitions.

Table 3. Accounting results using the intercept model.

ROE:

	Coefficients	Standard Error	t Stat	
Intercept	2,041641	3,944827	0,517549	
X Variable 1	0,309981	0,106417	2,912893	***

ROA:

	Coefficients	Standard Error	t Stat	
Intercept	-1,49401	1,344889	-1,11088	
X Variable 1	0,677214	0,137493	4,925452	***

ROS:

	Coefficients	Standard Error	t Stat	P-value
Intercept	-2,08494	1,776443	-1,17366	
X Variable 1	0,940284	0,12312	7,637142	***

5. Conclusion

Event study analysis showed that the abnormal returns are negative and statistically different from zero for 10-day and 7-day event windows. Also CAR(-5,-1) and CAR(-3,-1) values are significantly negative, indicating pre-event leakage. Hence, it was concluded that returns for stocks of Turkish companies involved in acquisitions exceed average industry returns. The results, however, were not confirmed when shorter event windows were used.

When accounting data was used, parametric t-test showed that post-acquisition ROA and ROS values are significantly lower than pre-acquisition values. Therefore, accounting data, using the change model, supports the hypothesis that acquirer company performance is affected by M&A activities. However, the result were not confirmed when ROE measure of performance or the intercept model were used.

The results should be considered in light of the following limitations. First, it must be acknowledged that the results of this study have a generalizability problem, since only public companies listed on the ISE were examined. Second, the post acquisition period examined in this study was only two years. This may not seem adequate for gains to materialize following an acquisition, however as explained in the paper, extending the post-acquisition period would cause sample size problems. Third, the accounting measures used in this study were based on net income rather than on pure cash flows. Hence, they might be affected by taxation, depreciation methods etc. Finally, when abnormal stock returns are analyzed, it should be kept in mind that the efficiency of the Istanbul Stock Exchange is questionable since it is a relatively small and emerging market. Future research could extend the literature on Turkish M&As by addressing these limitations.

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