THE EFFECT OF INDUSTRY ON THE VALUE CREATION IN ACQUISITIONS: EVIDENCE FROM TURKEY

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ABSTRACT

Acquisitions are supposed to create value for both the acquirer and the target firm. In this paper, I try to explain the sectoral differences in the profitability of the acquisitions. I analyze 171 out of 898 acquisitions in different industries, in Turkey from 2010 through 2014. I show that the acquisitions in Mining are more profitable compared to other industries with a daily increase of 1.67% in the market value of the acquiring firm. In services and healthcare, acquisitions decrease the value of the acquiring firms with an average decrease of 1.94% and 1.65% in market value, respectively. By calculating the intra-industry effect of acquisitions, I isolate the effect of acquisitions on the market value of the acquirer firm in IT and show that the effect is more significant than the one calculated using the market model.

Keywords: Financial Markets, Market Model, M&A's. **JEL Codes**: C12; G00; G14; G34

SATIN ALMALARIN DEĞER YARATIMINDA SEKTÖREL ETKİLER: TÜRKİYE ÖRNEĞİ

ÖZET

Şirket satın almalarının teorik olarak hem satın alan, hem de hedef firmanın değerini arttırdığı varsayılır. Oysaki bunun tersini gösteren bir çok ampirik çalışma mevcuttur. Bu çalışmada, şirket satın almalarının karlılıklarının sektörler arasındaki farklılıkları açıklanmaya çalışılmıştır. Türkiye'de 2010-2014 yılları arasında gerçeklesen 898 satın almadan, hissesi borsada işlem gören 171 şirketin dahil olduğu işlemler incelenmiş, madencilik sektöründeki satın almaların karlılık oranının, diğer satın almalara göre daha yüksek olduğu tespit edilmiştir. Ayrıca, hizmetler ve sağlık sektörlerinde gerçekleşen satın almaların, satın alan şirketin değerini sırasıyla %1.94 ve %1.65 oranında düşürdüğü tespit edilmiştir. Şirket birleşmelerinin aynı sektördeki rakip firmalar üstündeki etkisi hesaplanarak, firmanın dahil olduğu satın almanın etkisi ayrıştırılmış, IT sektöründeki satın almaların şirket değerini, piyasa modeli kullanılarak hesaplanandan daha fazla etkilediği görülmüştür.

Anahtar Kelimeler: Şirket Satın Almaları; Finansal Piyasalar; Olay Çalışmaları JEL sınıflandırması: C12; G00; G14; G34

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1. INTRODUCTION

Mergers and acquisitions are one of the most researched areas in finance and economics. Many theoretical studies were carried out to explain the economic value of M&A. Theoretically, a successful M&A transaction is supposed to increase the market value of the acquirer as well as the target firm. The value creation effects come from the increased market power of the acquirer (or the merged firm), the synergy created with the transaction, economies of scale or from the diversification of the business activities.

Empirical research supports the positive value creation prediction for the target firm but conflicting results appear for the value creation on the bidder's side. For different geographical markets and different time frames studies show positive, negative or zero value creation, which is useful neither from a business strategy perspective nor from a welfare perspective. The findings of the major studies on the effect M&A's on the bidder's value are summarized in Table 1.

Are M&A activities good for the society? Do they increase the total welfare? What are the factors creating a positive value creation in M&A's? The answer to these questions depends on the effect of the M&A activity on the bidder's market value. This paper aims to explain possible reasons for the discrepancy in results of these studies.

I analyze the acquisitions in Turkey from 2010 through 2014, grouping the transactions based on the area of the operation of the acquirer firm. Making the analysis in the industry level gives the advantage of isolating the effect of the difference in industries. I show that the industry itself plays an important role in the value creation for the acquirer. IT, manufacturing and mining are the only industries in which profitable acquisition occurred during the period of analysis. On the other hand, acquisition activities in services and healthcare decreased the market value of the acquisitions with at least 95% level of significance.

A possible reason for the discrepancy between the results in different industries is the intraindustry effects of the acquisitions. The market value of the firms is not only affected by their own acquisitions but also their rivals'. For instance, an observed 1% decrease in the market

value of a firm after the acquisition may be the composition of a 3% decrease in value as a reaction to another acquisition in the industry and a 4% increase in the value as a reaction to its own acquisition. 3

Therefore, it is crucial to exclude the intra-industry cross effects. In this study, I only calculate the intra industry effects in IT, in which the acquisitions exhibit highest, but still non-significant at 95% level, for the acquirer.

The paper is organized as follows. Section 2 briefly presents the literature on the value creation in M&A's. Section 3 summarizes the market model used in the analysis, describes the sample and presents descriptive statistics. Section 4 presents the results and goes over possible explanations for the results, such as the intra-industry effects. Finally, Section 5 concludes.

2. LITERATURE REVIEW

There are many studies about the effect of M&A on the firm value in specific industries but, there is no research on the cross-sectional analysis in many industries. For example, An empirical analysis of the effect of M&A's on firm value in industry level is by Cummins and Weiss (2004). They analyze the European insurance market. By using a standard market model, they show that the M&A's have a small negative effect on the market value of the acquiring firms in the insurance market. The target firms, on the other hand, benefit substantially from M&A's. The cumulative average abnormal returns are between 12-15%. They categorize M&A's as withinborder and cross-border M&A's; and find that cross-border transactions do not create or destroy value whereas within border transactions decrease the market value of the acquirer. Agrawal, Jaffe and Mandelker (1992) have similar results. They show that the acquiring firms incur substantial losses over the 5-year post merger period.

A contradictory result comes from Akhigbe and Madura (2001). They study the M&A's in the

³ Intra-industry effects also disturb the estimation procedure, which will be explained later, in detail.

U.S. insurance market and find that M&A's create value for both the acquirer and the target firm.

Moeller, Schlingemann and Stulz (2003) propose that the disparities between the effects of acquisitions on the market value of the acquirer may stem from the size effect. They check their proposition on over 10,000 acquisitions and conclude that the acquisitions by small firms create a positive but small value for their shareholders whereas the acquisitions of large firms create substantial losses. In order to explain the reasons for the size effect, they study the characteristics of these acquisitions. They notice that the percentage of private firm acquisitions is larger in the acquisitions by small firms compared to those of larger firms. Therefore, if private firm acquisitions are more profitable, then this may explain the size effect. They show that their proposition holds because larger firms pay more for the acquisitions. Fuller, Netter, and Stegemoller (2002) find the same result by analyzing acquisitions in 1990s. Firms acquiring private firms create more value for their shareholders.

Graham, Lemmon and Wolf (2002) look at the disparities in the results in value creation from another angle. They show that the acquisitions that diversify the operational activities decrease the market value of the firms not because diversification causes a decrease in value but because these target firms have already had valuation discounts. In their event study, they use a 200-day estimation period, excluding the last 51 days prior to the announcement of the acquisition. They use a 3-day event period (1 day before, the announcement day and 1-day after the announcement) to estimate the abnormal returns. They find that the target firms gain 22.51% on average, whereas the acquirer firms lose 0.78% of their market value. The net effect of the acquisitions is slightly positive (3.4%). Their results are consistent with many other studies, such as Andrade, Mitchell, and Stafford (2001). Cummins and Weiss (2004) and Singh and Montgomery (1987) but contradictory to many others such as Anju (1990) and Lubatkin (1987). They find that related mergers are not statistically different in terms of post-merger value creation for the acquirer.

The research on Turkish markets is limited compared to the one on US and EU markets. Akben-Selcuk, and Altiok-Yilmaz (2011) analyze the M&As between 2003 and 2007 in Turkey using both stock market and accounting data. They find that the M&A's destroy the acquirers' market value. On the other hand, Mandaci (2004) analyzes the stock market value of firms undertaking

M&A's between 1998 and 2003. She finds positive abnormal returns for the 2-day period prior the announcement day and concludes that information leakage is present and Istanbul Stock Exchange is not semi-strong efficient.

Hekimoglu and Tanyeri (2011) investigate the effect of M&A's on the market value of target firms in non-financial markets. They find positive but small abnormal returns (8.56%) compared to the ones in EU and US markets.

Table 1 summarizes the findings of different studies on the value creation in M&A's.

	Table 1. De	uules on the	gams from acquisitions					
	CHANGE IN MARKET VALUE							
STUDY	MARKET	DATE	ACQUIRING FIRM	TARGET				
				FIRM				
Akben-Selcuk, and	Turkish Market	2003-2007	Small negative	N/A				
Altiok-Yilmaz								
(2011)								
Anju (1990)	US Market	1962-1979	Positive	N/A				
Cummins and	EU Insurance	1990-2002	Small negative	Large positive				
Weiss (2004)	Market							
Akhigbe and	US Insurance	1985-1995	Small Positive	Large Positive				
Madura (2001)	Market			-				
Moeller,	US Market	1980-2001	Positive (Small firms)	N/A				
Schlingemann and			Negative (Large Firms)					
Stulz (2003)								
Agrawal, Jaffe and	US Market	1955-1987	Large negative	N/A				
Mandelker (1992)								
Lubatkin (1987)	US Market	1948-1975	Insignificant	N/A				
Hekimoglu and	Turkish Non-	1991-2009	N/A	Positive				
Tanyeri (2011)	Financial							
	Markets							
Andrade,	US Market	1973-1998	Small negative	Large positive				
Mitchell, and								
Stafford (2001)								
Mandaci (2004)	Turkish Market	1998-2003	Positive	Positive				
Singh and	US Market	1975-1979	Positive	N/A				
Montgomery								
(1987)								
Fuller, Netter, and	US Market	1990-2000	Positive (private targets)	N/A				
Stegemoller			Negative (public targets)					
(2002)								
Graham, Lemmon	US Market	1978-1995	Negative	Positive				
and Wolf (2002)			-					

 Table 1. Studies on the gains from acquisitions

3. METHODOLOGY AND DATA

3.1 Methodology

I follow an extension to MacKinlay (1997)'s specification of the market model to estimate the expected return on the stocks. The market model assumes that the return on a stock is related to the market return, which is the average rate of return in the market. In the extension used in this paper, I incorporate the industry return as well as the market return into the regression. Assuming that the returns on stocks are joint normally distributed for any stock i, time t and industry returns and the market return are uncorrelated,

$$R_{it} = \alpha_i + \beta_{im}I_{mt} + \beta_{ik}I_{kt} + \epsilon_{it}$$
$$E(\epsilon_{it}) = 0 \ var(\epsilon_i) = \sigma_{\epsilon_i}^2$$
(1)

where R_{it} , I_{mt} and I_{kt} are the returns on stock *i*, the market return and the return on the industry *k* in which *i* operates, respectively. α_i , β_{im} , β_{ik} and $\sigma_{\epsilon_i}^2$ are the parameters of the model and ϵ_{it} is the error term.

The expected return on stock i at time t is

$$ER_{it} = \hat{\alpha}_i + \hat{\beta}_{im}I_{mt} + \hat{\beta}_{ik}I_{kt}$$
(2)

where $\hat{\alpha}_i$, $\hat{\beta}_{im}$ and $\hat{\beta}_{ik}$ are OLS estimates of α_i , β_{im} and β_{ik} . The expected return expresses the return on the stock in case of no disturbing event. Therefore, in order to find the effect of the disturbing event, the acquisition, I compare the actual return on stock with its expected return.

The abnormal return at time t is the difference between the actual return and the expected return.

$$AR_{it} = R_{it} - ER_{it} \tag{3}$$

The OLS estimates, therefore the expected returns, are calculated using the data over an estimation period, which covers a fixed time frame before the event (acquisition). The estimation period excludes a few days prior to the event, in order to exclude the effect of possible information leakage.

The expected returns during the event period are calculated using the OLS estimates in the estimation period. The abnormal returns over the event period are then calculated using these expected returns. Figure 1 illustrates this procedure.





The event window is typically set longer than 1 day since it may take more than a day to see the market reaction in presence of imperfections. Therefore, aggregation through time is necessary to capture the total effect of the acquisition on firm i. In order to estimate the total effect on the industry, I sum over the firms in each industry. The average cumulative abnormal return in industry k is then,

$$\overline{CAR}_k = \frac{1}{N} \sum_{i \in k} \sum_{t=T_1}^{T_2} AR_{it}$$
(4)

where *N* is the number of firms in industry *k*.

Given that the event windows do not overlap for any 2 firms, the abnormal returns and the cumulative abnormal returns will be independent for all i. Then, the average cumulative abnormal return in industry k is normally distributed with mean 0 and variance σ_k with⁴

⁴ Under the null hypothesis H_o : $\overline{CAR}_k = 0$

$$\sigma_k^2 = \frac{1}{N^2} \sum_{i \in k} (T_2 - T_1 + 1) \, \sigma_{\epsilon_i}^2 \tag{5}$$

Since the variance $\sigma_{\epsilon_i}^2$ is unknown, the sample variance over the estimation period is used as an estimator for the population variance.

Once the distributional properties of \overline{CAR}_k are determined, I am ready to test the null hypothesis, $H_o: \overline{CAR}_k = 0$ using the following test statistics

$$t_k = \frac{\overline{CAR}_k}{\sigma_k / \sqrt{n}} \sim N(0, 1) \tag{6}$$

where n is the length of the estimation window.

3.2 Data

The data on acquisitions is obtained from Ernst & Young's annual M&A reports. Out of 898 domestic acquisitions that occurred from 2010 through 2014, the acquirers of 171 are firms whose shares are traded on Borsa Istanbul. If a firm has undertaken more than one acquisition activity during the 5-year period, I only include the first one in the data set to eliminate the effect of the earlier acquisitions on the estimation window. A description of the data is disclosed in Table 2.

Table 2: The distribution of the sample over industries and time

TOTAL	INDUSTRY	YEAR	NUMBER OF ACQ.	TOTAL	INDUSTRY	YEAR	NUMBER OF ACQ.
		2014	6	7	Services	2014	3
		2013	3			2013	2
29	Energy	2012	5			2012	1
		2011	9			2011	1
		2010	6			2010	0
22	Food and Beverage	2014	5			2014	2
		2013	3	6		2013	0
		2012	8		Healthcare	2012	0
		2011	1			2011	2
		2010	5			2010	2

20		2014	5			2014	1
		2013	2		Mining	2013	1
	IT	2012	3	5		2012	1
		2011	5			2011	1
		2010	5			2010	1
		2014	2	4		2014	0
		2013	1			2013	0
17	Manufacturing	2012	8		Automotive	2012	2
		2011	5			2011	2
		2010	1			2010	0
		2014	1			2014	0
		2013	2			2013	1
15	Retail	2012	2	3	Telecommunication	2012	1
		2011	5			2011	0
		2010	5			2010	1
		2014	2		Chemicals	2014	0
	Transportation	2013	0	2		2013	1
11		2012	5			2012	0
		2011	3			2011	1
		2010	1			2010	0
		2014	4		Media	2014	0
		2013	1	1		2013	1
10	Financial Services	2012	5			2012	0
		2011	0			2011	0
		2010	0			2010	0
		2014	1		Construction	2014	0
		2013	2			2013	0
9	Tourism	2012	1	1		2012	0
		2011	2			2011	1
		2010	3			2010	0
	Real Estate	2014	0	1	Entertainment	2014	1
		2013	1			2013	0
8		2012	1			2012	0
		2011	5			2011	0
		2010	1			2010	0

The estimation period is set to be 200 days before the acquisition date, excluding the last 10 days prior the announcement. The event window is 3 days around the announcement date.

Figure 2 illustrates the total number of transactions and the transaction volume by years. It includes all M&A's, privatizations, transfer of operating rights and SDIF activities.



Figure 2: Number of transactions and transaction volume by years

The time trend of the transactions shows that the average transaction volume decreased substantially since 2010. The average transaction volume decreased from 109.5 million USD in 2010 to 55.7 million USD in 2014. Even though the average transaction volume has decreased, the largest 10 deals account for 76% of the total volume. Figure 3 shows the distribution of transactions across industries based on the number of transactions and the transaction volume.





According to Figure 3, the M&A transactions in energy are larger in size compared to the transactions in other industries. The M&As in energy consist 38% of the total transaction volume

whereas they are only 14% of the total number of transactions. The highest number of transactions is in the IT sector, showing the existence of small but numerous deals.

4. **RESULTS**

Most studies on acquisitions focus either on a time interval or on the total market. The results on those studies lack the industrial effects of acquisitions on the firms' market value, such as the synergy created in acquisitions taken place in the same industry. This may be one of the reasons why these studies find either negative or non-significant valuation effects. By grouping the acquisitions based on the operational activity of the acquirer, I aim to capture the positive effect of the synergy created in acquisitions in the same industry.

The effect of acquisitions on the market value of the acquirer firms in different industries is disclosed in Table 3.

The analysis shows mixed results. In services and healthcare industries, the CAR is -1.94 and - 1.65 on average, respectively with at least a 95% level of significance.

On the other hand, the average cumulative abnormal return in IT, manufacturing and mining, are 0.75, 0.67 and 1.67 respectively, which are statistically significant at least at 90% level.

Industry	Number of obs.	Mean	Std. Err.	Std. Dev.	95% Co Inte	95% Confidence Interval		p-value mean=0	p-value mean>0
Services*	15	-1.94	0.73	2.81	-3.50	-0.39	0.01	0.02	0.99
Healthcare*	15	-1.65	0.95	3.69	-3.69	0.40	0.05	0.11	0.95
IT**	33	0.75	0.48	2.75	-0.22	1.72	0.94	0.13	0.06
Manufacturing**	33	0.67	0.50	2.87	-0.34	1.69	0.91	0.19	0.09
Mining**	9	1.67	1.22	3.66	-1.15	4.49	0.90	0.21	0.10
Retail	39	-0.47	0.45	2.80	-1.38	0.44	0.15	0.30	0.85
Energy	60	-0.38	0.36	2.80	-1.10	0.35	0.15	0.30	0.85
Chemicals	6	0.97	1.02	2.49	-1.65	3.58	0.81	0.39	0.19
Tourism	18	0.78	0.97	4.11	-1.26	2.83	0.79	0.43	0.21
Financial services	24	0.42	0.66	3.24	-0.95	1.79	0.73	0.53	0.27
Media	3	1.09	1.50	2.59	-5.34	7.53	0.73	0.54	0.27
Telecommunication	6	-1.06	1.67	4 09	-5 34	3 23	0.28	0.55	0.72
Food and beverage	51	-0.08	0.43	3.11	-0.95	0.80	0.43	0.57	0.57
Transportation	18	-0.27	0.66	2.81	-1.67	1 12	0.34	0.68	0.66
Entertainment	3	0.27	2 33	4.04	-9.12	10.95	0.63	0.73	0.37
Automotive		_0.30	1.00	2 90	-2.60	2.00	0.30	0.77	0.61
Real estate	12	0.04	0.94	3.24	-2.02	2.10	0.52	0.97	0.48

Table 3. Effect of acquisitions on acquirer's market value, test results

* Negative \overline{CAR} , significant at least at %95.

** Positive \overline{CAR} , significant at least at %90.

4.1. Cross-sectional analysis of intra-industry effects

It may be useful to check the correlation between the acquirers' change in market value with other firms' change in their market value during the acquirers' event window. A negative correlation with a positively affected firm value may imply that the affect of the acquisition on the acquirer is larger (thus more significant) than calculated. Similarly, a positive correlation with

a negatively affected firm value implies that the negative effect of the acquisition is larger than the one calculated. I conduct this analysis only for IT industry.

Table 4 shows the rival firms' CARs during the event period of the acquisition. The first row shows the firms who take the acquisition activity, and the first column the firms affected by the acquisitions. ARENA and AKFEN's abnormal returns are missing for some acquisitions because the firms were not publicly traded during the transaction period. The CAR caused by ASELS and ESCOM's acquisitions are displayed in one column since the transactions happened at the same day. \overline{CAR}_{cross} is the rival firms' average cumulative abnormal returns caused by the acquisition.

	CAR ISGSY	CAR AKFEN	CAR ARENA	CAR LOGO	CAR NETAS	CAR TCELL	CAR INDES	CAR RHEAG	CAR ASELS/ ESCOM	CAR VESTL
ISGSY		-1.1577	1.2545	-0.4341	4.3151	5.3264	1.2728	1.6012	9.44417	-0.3187
AKFEN	-0.2242		1.8440	0.6819	1.2676	1.6073	-1.2859	10.2834	N/A	N/A
ARENA	-1.6129	-7.5869		N/A	N/A	N/A	N/A	N/A	N/A	N/A
LOGO	-0.5142	-0.1224	-0.9453		6.3350	1.5646	-0.5875	-2.4556	10.2903	-1.1079
NETAS	-0.1981	-5.1049	1.1756	-0.5168		-1.0864	-0.5117	3.1026	8.9793	-3.0304
TCELL	-1.4711	-0.4551	5.4027	-1.5396	-1.1814		1.2438	0.7748	3.2771	-2.1436
INDES	-1.6312	0.7986	-1.1949	4.6322	0.8283	7.8525		7.0889	14.7866	1.1838
RHEAG	-2.2450	-3.6074	0.6106	4.9987	10.0199	0.1990	-6.6764		-6.6261	-6.9976
ASELS	-3.6667	0.0085	-0.6768	0.2708	2.0274	-0.0776	-0.2472	0.8688		-5.2293
ESCOM	-2.0068	-4.6962	-2.0192	-9.6237	6.1563	0.2564	9.7541	5.1127		-4.7994
VESTL	-12.2564	-5.0248	-0.4300	-1.0746	9.7197	0.0133	-3.3676	1.6754	9.8189	
CAR _{cross}	-2.5825	-2.6948	0.5021	-0.2895	4.3876	1.7395	-0.0451	3.1169	7.1383	-2.8054

Table 4. Intra-industry effects in IT

It is not useful to check the hypothesis that the cross-firm cumulative abnormal return is zero since the CAR caused by different acquisitions is not equal to zero. For instance, a 1% decrease in the market value of the rivals as a response to an acquisition, which decreases the value of the firm by 3%, is actually a positive reaction to the acquisition. Therefore, it is more helpful to check the correlation between the firms' own reactions to the acquisition (CAR of the event) and their rivals' reactions to the same acquisition (cross-CAR). The correlation coefficient between

cross-CAR and the acquirer firm's CAR is 0.7635. The acquisitions affected most of the acquirers the same way as their rivals.

A positive correlation shows that the effect of acquisitions on firm value is actually higher than the one calculated in Table 3. Since each firm is positively affected by its rivals' acquisitions, the estimation window of the firm is no longer an event-free window. The expected returns will be higher than the "event-free expected return". Hence, the abnormal returns will be smaller. Therefore, the abnormal returns will be higher and more significant. ⁵

5. CONCLUSION

I analyze the acquisitions in Turkey from 2010 through 2014, grouping the transactions based on the area of the operation of the acquirer firm. I show that the industry itself plays an important role in the value creation for the acquirer. The analysis shows mixed results in terms of the direction of the relationship. IT, manufacturing and mining are the only industries in which profitable acquisition occurred during the period of analysis. On the other hand, acquisition activities in services and healthcare decreased the market value of the acquisitions with at least 95% level of significance. In services and healthcare industries, the CAR is -1.94 and -1.65 on average, respectively, whereas the average cumulative abnormal return in IT, manufacturing and mining, are 0.75, 0.67 and 1.67 respectively.

In order to explain this discrepancy, I analyze the intra-industry effects in the IT industry and show that the effect of the acquisitions on the acquirers' market value is higher than the one calculated using the market model. In this study, I only examined the IT sector. A more comprehensive research may shed light on the conflicting results about the effect of acquisitions on the market value of the firms.

⁵ A similar analysis for the healthcare sector shows a correlation of 0.1954. Therefore, the negative effect of the acquisition on the firm value in healthcare is not as strong as calculated in this section.

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