

What Types of Acquisitions That Improve Firm Performance in East Asia: Evidence from Electronics and Automobile Firms

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This paper empirically investigates the post-acquisition performance of both acquiring and acquired firms by sampling electronics and automobile firms in East Asia. The following results were derived from the analyses. First, the market-to-book ratio of acquirers and the return on assets (ROA) percentage of acquired firms increase after the acquisitions. This improvement is even more remarkable when the deal is a cross-border acquisition. The results also indicate that post-acquisition performance is boosted when the acquirer and acquired firm belong to close industrial categories. In summary, many acquisitions improve corporate performance and the probability of heightened performance increases when the above requirements are met.

JEL Codes: O21,O25,G34

1. Introduction

According to statistics published by the United Nations Conference on Trade and Development (UNCTAD), global foreign direct investment (FDI) experienced double-digit growth for five consecutive years from 2003. Remarkably, cross-border acquisition accounted for more than half of the total FDI expended. The growth of traditional or green field FDI has accordingly stagnated, showing that FDI trends have undergone a structural change.

Various reasons may explain the recent increase in cross-border acquisitions. The first possible reason is developing convergence in laws on corporate mergers, bankruptcy, and investor protection in both industrialized and emerging countries, which substantially mitigates regulatory risks for foreign investors. Second, the standardization of accounting criteria across countries may have reduced the information asymmetries between investors and the firms they invest in. Third, cross-border acquisitions may also have increased because of the recent development of the market economy in emerging countries. Central governments intending to release the stocks of state-owned enterprises to the capital market share mutual interests with foreign institutional investors looking for rapidly growing firms. This may have encouraged a number of the recent cross-border acquisitions in emerging countries.

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In 2007, Steel Partners Japan Strategic Fund announced its acquisition of Sapporo Holdings LTD., and The Children Investment Fund Foundation, LLC. reported that it was buying J Power, Inc. Unfriendly media described these deals as hostility takeovers. However, the shareholding investment of Renault S.A.S. in Nissan Motor Co. Ltd. and Ford Motor Company in Mazda Motor Corp. has clearly improved the corporate performance of the investing companies. Judging from the recent trend in mergers and acquisitions (M&A), an increase in the number of cross-border acquisitions in other industries is also inevitable. Against this background, this paper aims to find out whether cross-border acquisitions have improved firm performance and to identify the factors that improved corporate performance in the post-acquisition period.

2. Literature Review

In line with this development, a number of studies concerning cross-border acquisitions have been published, including those of Nocke and Yeaple (2007), Giovanni (2005), Head and Ries (2008), and Erel et al. (2012). The theory-based study of Nocke and Yeaple (2007) points out that the degree of production factor mobility across a national border determines whether a firm will choose to partake in greenfield FDI or cross-border acquisition. Specifically, the firm will choose cross-border acquisition to access the foreign market when one of the production factors therein is internationally immobile. The number of empirical studies in this field has increased; one of those studies—Giovanni (2005)—suggests that the degrees of capital market development and financial legal system development are two determinants of cross-border acquisition. In other words, firms in countries where the capital market and financial legal system are more fully developed are more likely to be targeted for international acquisition deals. Head and Ries (2008) empirically compare cross-border acquisition and total foreign direct investment, and they conclude that the determinants of cross-border acquisitions differ from those of foreign direct investment. Chari et al. (2010) use cross-country data to investigate shareholder value gains from international acquisition; they find that acquiring control over a target can bring high abnormal returns, especially for firms from developed countries. The more recent study of Erel et al. (2012) analyzes whether or not an acquirer or target is publicly listed influences the determinants of an acquisition deal; that paper concludes that equity prices are influenced when acquirers are publicly listed, and also that changes in exchange rate are influenced, regardless of stock listing.

The body of literature focusing on U.S. firms is extremely large, but much of it examines deals between domestic acquirers and their acquisitions. While most of the literature studies domestic deals, it has obtained results that may be important to our study. First, the method of payment correlates with post-merger firm value (Anderade et al., 2001). This means that the method of payment chosen by acquirers is a determinant of post-merger corporate performance. Secondly, deals made by high-performance acquirers also achieve good results in the post-merger period (Hasbrouch, 1985; Lang et al., 1989). In other words, the acquirer is also an important determinant of post-merger performance. Recent literature using the cases of U.S. sample firms point out that whether or not acquisitions will add to corporate value maximization depends on the following three factors. First, an acquisition enables the acquirer to obtain new technology and higher productivity, as suggested

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by Mitchell and Mulherin (1996). Second, the acquirer expects the corporate acquisition to improve the managerial discipline of the targeted firm, as noted by Morck et al. (1988) and Lang et al. (1989). Third, shareholders' potential right to eliminate nonperforming managers leads to an increase in corporate value, regardless of eliminations via acquisition; this has also been suggested by other studies.

In literature with an Asian focus, Fukao and Murakami (2003) and Fukao and Amano (2004) analyze incoming cross-border acquisitions in Japan. Their studies compare the total factor productivity (TFP) of domestic firms that were acquired by foreign firms with the TFP of domestic firms that were not acquired and conclude that the TFP of the former is higher. To our knowledge, these are the only two studies of Asian firms that focus on the real economy. Much of the work on M&A in Japan employs event study methodology to verify the effect of the acquisitions (see, e.g., Suzuki, 2002; Inoue and Kato, 2006). Such works address the effect of the acquisitions on equity prices, while Fukao and Murakami (2003) and Fukao and Amano (2004) examine the variables in the real economyⁱ.

To summarize, the literature has examined the consequences of M&A and ascertained the determinants of post-merger performance. However, much of the research focuses on deals between domestic firms and the effect of acquisition on stock prices. This paper does not look into the latter; rather, it examines the consequences of acquisition on the real economy. Its contribution lies in confirming that corporate acquisitions improve corporate performance, which serves as a proxy for a firm's real economic performance. This paper proceeds as follows: in the next section, we explain the background and the hypotheses of this paper and the data and empirical methodologies in the subsequent section. And then, we report the empirical results and present our conclusions in the final section.

3. Background and Hypotheses

There has recently been a dramatic increase in the number of corporate acquisitions in the electronics and automobile industries in East Asia. Especially, the legal environment reforms concerning cross-border acquisitions were regarded as one of reasons of this increase. Deals through which electronics firms in Japan, Korea, or Taiwan acquired other firms in the same region totalled 435 from 1997 to 2007ⁱⁱ. Japanese and Korean firms also made large numbers of acquisitions in the automobile industry, but the corresponding figures for other Asian countries are extremely small. The acquisition statistics show the following four major differences between deals in the electronics and automobile sectors.

First, corporate acquisitions of electronics firms are mainly made by East Asian firms, but those in the automobile industry are made by companies in various regions. Second, the ratio of cross-border acquisition to domestic acquisition is small in the electronics industry, but large in the automobile industryⁱⁱⁱ. Third, electronics firms acquire a high proportion of the target company's shares, but the percentage of average shares owned by acquiring firms in the automobile industry is relatively low. Fourth, many electronics firms in East Asia acquire publicly unlisted companies, whereas the percentage of unlisted companies acquired by automobile firms is very low.

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This study examines whether the recent trend of corporate acquisitions in East Asia has improved corporate performance in the post-acquisition period. We sample data from the electronics and automobile industries because these industries are long-term growth engines in East Asian economies. By examining the data, we attempt to establish that the recent wave of mergers in this region is not simultaneously driven by stock price misvaluation.

Mitchell and Mulherin (1996) argue that the merger wave occurs cyclically in certain industries and support the hypothesis that M&A promote industry reorganization and improve the cost efficiency of the firms. Harford (2005) also espouses the foregoing idea and contends that misvaluation of stock prices is not an important factor in the increase of M&A. Alternatively, bipolar theories are put forward by Shleifer and Vishny (2003), Rhodes-Kropf et al. (2005), and Shahrur (2005). Shleifer and Vishny (2003) and Shahrur (2005) point out that stock market participants frequently overestimate the corporate value of listed firms and this sometimes triggers M&A. We hypothesize that the theories of Mitchell and Mulherin (1996) and Harford (2005) satisfactorily explain the takeover urges of firms in East Asia.

Our first hypothesis is that corporate acquisitions improve the profitability and growth of East Asian acquirers. The capitalization of East Asian stock markets is relatively small compared to that of the U.S. market. While small markets are likely to suffer from mispriced stocks, the number of M&A within East Asian markets has increased because of a need to adjust to structural change in industrial sectors within the region. Therefore, acquirers treat mergers as an avenue for reorganizing firm structure and maximizing profitability.

Our second hypothesis is that cross-border acquisitions improve firm profitability more than domestic ones do. Lang et al. (1989) and Sarvaes (1991) point out that the acquiring party is an important factor in post-acquisition profitability. The literature suggests that high-performing acquirers frequently improve both their own and the acquired company's performance in the post-acquisition period. In addition, Dong et al. (2002), Malmendier and Tante (2002), and Moeller et al. (2004) show that the size of the acquirer is also an important factor in post-acquisition success because a larger acquirer will have more cash in the post-acquisition period. We hold that cross-border acquisitions in East Asia are accomplished by large and strongly performing firms.

Our last hypothesis concerns the relationship between post-acquisition performance and the type of company acquired. In work on U.S. firms, Hanson (1992), Smith and Kim (1994), and Harford (1999) maintain that acquisitions within the electronics industry succeed when the acquired company is unlisted. We support this hypothesis and further argue that acquisitions succeed when the acquired company is unlisted and both parties are members of the automobile industry.

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Table 1: Number of Acquisition Deals in the Asia Pacific Region: All Industries

	I. 1997-2001			II. 2002-2006		
	(i) Deals by Domestic Firms	(ii) Outward CBMA	(iii) Inward CBMA	(i) Deals by Domestic Firms	(ii) Outward CBMA	(iii) Inward CBMA
(A) Japan						
over 10 percent	557	89	75	2,270	148	169
over 50 percent	353	46	39	1,441	104	86
(B) Korea						
over 10 percent	22	9	12	430	57	39
over 50 percent	16	9	3	231	37	28
(C) Taiwan						
over 10 percent	91	20	32	229	29	77
over 50 percent	66	16	16	181	20	50
(D) Hong Kong						
over 10 percent	119	118	107	260	105	245
over 50 percent	67	66	59	134	71	147
(E) Singapore						
over 10 percent	127	151	72	287	272	166
over 50 percent	75	103	55	171	179	108
(F) Malaysia						
over 10 percent	452	397	28	660	278	97
over 50 percent	383	343	17	513	226	59
(G) Thailand						
over 10 percent	21	14	56	144	15	103
over 50 percent	10	4	21	64	11	49
(H) Philippines						
over 10 percent	25	11	21	31	16	37
over 50 percent	19	9	8	22	9	16
(I) Indonesia						
over 10 percent	52	8	19	39	3	79
over 50 percent	50	7	9	30	2	42
(J) Australia						
over 10 percent	502	649	234	1,332	868	500
over 50 percent	403	541	170	1,131	772	404
(K) New Zealand						
over 10 percent	27	45	61	119	77	122
over 50 percent	15	35	40	87	68	93

Source: Thomson Reuters (aggregated by author)

Note 1: "Over 10 percent" and "Over 50 percent" refers to stock acquisition as a proportion of total equity issued.

Note 2: Only complete deals are included in deal numbers.

4. Data

This paper defines acquisitions as deals in which more than ten percent of the total stock issued by the acquiring firms are procured; however, the definition varies

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according to individual works. Many studies employ a benchmark of more than 50 percent in their definitions, while others set a standard of 33 percent. This paper uses the definitions of the International Monetary Fund (IMF) and the United Nations Conference on Trade and Investment (UNCTAD). We focus on electronics and automobile firms in eleven countries in Asia and Oceania, namely, Japan, Korea, Hong Kong, Taiwan, Singapore, Thailand, Malaysia, Philippines, Indonesia, Australia, and New Zealand.

We obtained three types of statistics from the acquiring and acquired firms in the aforementioned countries: (A) the difference between pre- and post-acquisition performance, (B) the differences between performance results for cross-border acquisitions and domestic acquisitions, and (C) the differences between performance results for inter- and intra-industry acquisition. We empirically study East Asian electronics and automobile firms because these industries are the growth engines of the region and have recently experienced many international mergers. Acquisition data was obtained from Thomson Reuters' "M&A League Table" and financial data from "Worldscope," and the two types of data were then ordered by firm. The sample period is 1997 to 2006.

The post-acquisition performance of electronics firms was empirically examined through the following steps. Firstly, we calculated three-year averages based on the financial data, with averages for each year obtained from the data for that year and the two preceding years. Since the original sample period was 1997 to 2006, the new sample period for the data that underwent three-year averaging became 1999 to 2006. Secondly, we matched the averaged financial data and the acquisition data. Since our final step was to compare the three-year performance levels of the pre- and post-acquisition periods, we matched the financial data with acquisition data for 2000 to 2003. Finally, we extracted the matched data for the four years of 2000 to 2003 and compared the pre- and post-acquisition performance of the firms. In other words, the pre-acquisition performance of an acquirer was assessed by its performance in a year between 1997 and 2003, and its post-acquisition performance was assessed by its performance in a year between 2001 and 2006, depending on when the deal was made. Firms that either acquired or were acquired by other companies more than twice were excluded from the samples.

Additionally, we employed the market-to-book ratio (MBR) and return on assets (ROA) percentage as proxies for the firm performance of acquiring and merged firms, respectively, and evaluated pre- and post- acquisition performance based on these variables. Further, we employed the debt-to-equity ratio as a proxy for the creditworthiness of acquired firms. Finally, we used the natural logarithm of total assets as a proxy for firm size and compared pre- and post- acquisition results for this variable in our examination of acquired firms.

5. Empirical Methodology

We emulated Anderade et al. (2001) in order to estimate the following empirical model, which calculates the difference between the pre-acquisition (*PRE_MA*) and post- acquisition (*Post_MA*) performance of M&A acquirers.

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$$\begin{aligned}
 Post_MA = & \phi_0 + \phi_1 PRE_MA + \phi_2 BRDR + \phi_3 SECT \\
 & + \phi_4 CSECT + \phi_5 RATIO + \phi_6 RSIZE + \varepsilon
 \end{aligned}$$

To investigate other external factors that may influence post-acquisition performance, we added the following variables, which are represented by *BRDR*. *BRDR* is set at “1” when the acquiring and merged parties are located in different countries and at “0” when they are in the same country. In addition, the variable “*SECT*” is set at “1” when the parties share a Standard Industrial Classification (SIC) four-digit code and “0” when they do not. Our definitions of the electronics and automobile industries are indicated in the table below. Further, we created a variable as “*CSECT*” to determine the industrial effect of the acquisitions, and set it at “1” when the parties belong to any one of the industries defined in the table below

To reflect the literature, we also calculated “*RATIO*” as the proportion of company shares acquired by the purchasing firm and “*RTSIZ*” the ratio of the purchaser’s size to the acquired firm’s. These were employed as variables that might affect the post-acquisition performance of the purchasing firm. The average proportion of shares bought by electronics firms is higher than that bought by automobile firms. We expected the proportion of shares owned to influence the post-acquisition performance of the acquirers. Finally, we employed a variable that represents the sizes of the acquirer and target company in relation to each other. We expected the post-acquisition performance of the acquirer to correlate with its relative size, thus conforming to arguments put forth by Dong et al. (2002), Malmendier and Tante (2002), and Moeller et al. (2004).

Table 2: Definition of the Sample Industries

Electronics Industry		Automobile Industry	
Definition of the Industry	SIC Code		SIC Code
Electronic Computers	3571	Motor Vehicles & Car Bodies	3711
Computer Storage Devices	3569	Truck & Bus Bodies	3713
Computer Terminals	3575	Motor Vehicle Parts & Accessories	3714
Computer Peripheral Equipment	3577	Truck Trailers	3715
Household Audio & Video (AV) Equipment	3651	Motor Homes	3716
Prerecorded Records & Tapes	3652	Travel Trailers & Campers	3792
Semiconductors & Related Devices	3674	Tanks & Tank Components	3795
Electronic Capacitors	3675		
Electronic Resistors	3676		
Electronic Coils & Transformers	3677		
Electronic Connectors	3678		
Electronic Components	3679		

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Table 3: Descriptive Statistics for Electronic and Automobile Acquirers in East Asian Countries:

		3 Year Averages in pre-M&A		3 Year Averages in post-M&A		Shares Owned and Firm size	
		Pre-ROA	Pre-MBR	Post-ROA	Post-MBR	RATIO	RSIZE
Domestic M&A (N=543)	Mean	0.010	0.729	-0.048	-0.292	0.666	165.209
	s.d.	0.353	4.435	1.532	3.348	0.360	233.570
Cross-border M&A (N=65)	Mean	0.044	0.476	0.072	-0.380	0.579	204.941
	s.d.	0.286	3.499	0.233	2.954	0.344	264.314
Intra-Industry M&A (N=163)	Mean	0.044	0.476	0.072	-0.380	0.579	204.941
	s.d.	0.286	3.499	0.233	2.954	0.344	264.314
Inter-Industry M&A (N=445)	Mean	0.010	0.729	-0.048	-0.292	0.666	165.209
	s.d.	0.353	4.435	1.532	3.348	0.360	233.570

Country/Region of Acquirers		3 Year Averages in pre-M&A		3 Year Averages in post-M&A		Shares Owned and Firm size	
		Pre-ROA	Pre-MBR	Post-ROA	Post-MBR	RATIO	RSIZE
Japan (N=99)	Mean	0.024	1.144	0.012	1.288	0.555	460.000
	s.d.	0.026	1.565	0.079	8.037	0.358	177.391
Korea (N=174)	Mean	0.048	0.850	-0.016	-0.036	0.681	175.598
	s.d.	0.372	4.765	1.543	3.791	0.348	242.744
Taiwan (N=49)	Mean	0.017	0.749	0.030	0.142	0.759	285.786
	s.d.	0.080	1.307	0.080	0.633	0.344	310.331
Hong Kong (N=42)	Mean	0.024	0.617	-0.119	-0.842	0.609	151.742
	s.d.	0.366	1.465	1.002	1.732	0.360	184.341
Singapore (N=59)	Mean	0.094	-0.250	0.067	-0.434	0.567	170.946
	s.d.	0.154	1.294	0.168	0.687	0.318	251.733
Malaysia (N=33)	Mean	0.039	-0.106	-0.061	-0.244	0.779	182.615
	s.d.	0.074	0.613	0.122	0.373	0.300	267.395
Thailand (N=11)	Mean	0.118	0.764	0.032	0.359	0.430	512.000
	s.d.	0.064	0.399	0.069	0.442	0.320	260.313
Philippines (N=3)	Mean	0.046	-1.034	0.340	-16.659	0.996	183.000
	s.d.	0.023	0.486	0.040	5.300	0.007	50.912
Indonesia (N=12)	Mean	0.206	0.114	0.096	-0.962	0.609	175.874
	s.d.	0.091	0.328	0.025	1.053	0.311	242.131
Australia (N=121)	Mean	0.061	0.457	-0.100	0.064	0.825	82.860
	s.d.	0.690	1.920	3.343	2.015	0.294	152.909
New Zealand (N=5)	Mean	-0.083	0.516	-0.048	0.182	0.636	15.667
	s.d.	0.242	0.608	0.336	0.274	0.499	6.028

Source: Thomson Reuters (aggregated by author)

Note: *ROA*: return on assets, *MBR*: market-to-book ratio, *RATIO*: the proportion of company shares acquired by the purchasing firm, *RSIZE*: the ratio of the purchaser's size to the acquired firm's

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Table 4: Descriptive Statistics for Acquired Firms in East Asian Countries

(A) by Type		3 Year Averages in pre-M&A		3 Year Averages in post-M&A		Shares Owned and Firm Size	
		Pre-ROA	Pre-SIZE	Post-ROA	Post-SIZE	RATIO	RSIZE
Domestic M&A(N=69)	Mean	0.111	7.363	0.013	7.517	0.213	78.723
	s.d.	0.328	3.550	0.523	3.502	0.209	266.100
Cross-border M&A(N=59)	Mean	0.044	8.266	0.086	8.115	0.203	111.609
	s.d.	0.225	4.122	0.383	3.742	0.217	440.858
Intra-Industry M&A(N=44)	Mean	0.083	9.072	0.125	9.357	0.144	115.458
	s.d.	0.175	4.101	0.200	3.904	0.186	490.443
Inter-Industry M&A(N=84)	Mean	0.079	6.987	0.008	6.938	0.243	82.721
	s.d.	0.332	3.414	0.547	3.316	0.219	263.045

(B) Country/Region of Targets		3 Year Averages in pre-M&A		3 Year Averages in post-M&A		Shares Owned and Firm Size	
		Pre-ROA	Pre-SIZE	Post-ROA	Post-SIZE	RATIO	RSIZE
Japan (N=27)	Mean	-0.002	11.299	-0.010	11.963	0.131	55.729
	s.d.	0.030	3.692	0.056	2.096	0.119	47.221
Korea (N=17)	Mean	0.009	5.397	0.028	5.569	0.254	48.432
	s.d.	0.244	1.284	0.428	1.233	0.258	83.735
Taiwan (N=6)	Mean	0.002	5.973	0.029	6.572	0.320	51.800
	s.d.	0.011	0.163	0.221	0.334	0.356	39.900
Hong Kong (N=23)	Mean	0.160	6.756	0.061	6.122	0.281	13.609
	s.d.	0.526	1.735	0.793	2.203	0.251	50.901
Singapore (N=14)	Mean	0.066	5.557	0.051	5.719	0.142	83.800
	s.d.	0.200	3.233	0.172	2.866	0.165	66.900
Malaysia (N=6)	Mean	0.091	6.487	-0.017	7.199	0.305	481.110
	s.d.	0.113	1.514	0.067	1.734	0.161	323.141
Thailand (N=7)	Mean	0.121	16.280	0.073	16.469	0.600	528.795
	s.d.	0.058	0.258	0.029	0.998	0.255	587.147
Philippines (N=4)	Mean	-0.030	7.684	-0.012	8.171	0.172	444.914
	s.d.	0.031	1.096	0.020	1.218	0.186	848.416
Indonesia (N=7)	Mean	0.123	8.117	0.253	8.644	0.068	848.152
	s.d.	0.074	0.578	0.119	0.540	0.025	681.152
Australia (N=15)	Mean	0.271	3.418	0.292	3.618	0.140	147.662
	s.d.	0.340	2.786	0.976	3.203	0.148	146.741
New Zealand (N=2)	Mean	0.071	10.421	0.044	9.328	0.226	143.317
	s.d.	0.140	1.480	0.265	2.292	0.249	115.460

Source: Thomson Reuters (aggregated by author)

Note: *ROA*: return on assets, *SIZE*: log of total assets, *RATIO*: the proportion of company shares acquired by the purchasing firm, *RSIZE*: the ratio of the purchaser's size to the acquired firm's

6. Results: The Post-Acquisition Performance of Acquirers

(A) Electronics

Table 6 details the post-acquisition corporate performance of electronics acquirer firms, for which the market-to-book ratio (*MBR*) acts as a proxy. The market-to-book ratio (*MBR*) is chosen as a proxy of future firm growth opportunity. The empirical results suggest that the parameters of the market-to-book ratio (*MBR*) for acquirers were significantly positive for all five equations; in other words, three-year average growth opportunity in the post-acquisition period exceeded that in the pre-acquisition period.

On the other hand, the market-to-book ratio (*MBR*) was not influenced by the location of the acquiring firm. The intersection between the cross-border acquisition dummy (*BRDR*) and pre-acquisition market-to-book ratio (*MBR*) is also insignificant. This suggests that cross-border acquisitions do not influence the post-acquisition

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market-to-book ratio (*MBR*), but the industrial effect (*SECT*) and proportion of shares owned in the acquired company (*RATIO*) have a significant influence on that ratio.

The parameter of the intersection between the industrial sector dummy (*SECT*) and pre-acquisition market-to-book ratio (*MBR*) was significantly positive in model (2). In addition, the parameter of the intersection between the proportion of shares owned (*RATIO*) and the pre-acquisition market-to-book ratio (*MBR*) was also significantly positive. These results suggest that the post-acquisition market-to-book ratio (*MBR*) increases when the acquisition involves firms in close industrial categories. The definition of the close industrial categories is explained in the previous section. It also increases when the percentage of shares owned in the acquired firm rises. These results concur with the work of Morck et al. (1990) and Bhagat et al. (2005), who examine U.S. firms. Our empirical results focusing on East Asian firms are consistent with the previous existing literature.

(B) Automobiles

Table 7 indicates the post-acquisition corporate performance of automobile acquirers. First, the parameters of the market-to-book ratio (*MBR*) for automobile acquirers were also significantly positive for all five equations. Three-year average growth opportunity in the post-acquisition period exceeded that in the pre-acquisition period. Unlike the results for electronics firms, the intersection between the cross-border acquisition dummy (*BRDR*) and pre-acquisition market-to-book ratio (*MBR*) was positively significant.

This is the major difference between the two industries and accords with the fact that cross-border acquisitions in the automobile industry outnumber those in the electronics industry. The intersection between the industrial dummy (*SECT*) and pre-acquisition market-to-book ratio (*MBR*) was also significantly positive, as was its parameter. Therefore, the industrial nature of both the acquirer and acquired firm is an important factor in post-acquisition performance.

The parameter of the intersection between relative firm size (*RSIZE*) and the pre-acquisition market-to-book ratio (*MBR*) was insignificant. In this, the automobile and electronics sectors also differ. This result suggests that the size of an automobile acquirer has little effect on its post-acquisition performance. Interestingly, the differences between the two sectors extend to the parameter of the intersection between the proportion of shares owned (*RATIO*) and the pre-acquisition market-to-book ratio (*MBR*), which was insignificant in the automobile industry. This result is plausible because both Nissan-Renault and Ford-Mazda owned less than 50 percent of the shares issued by the companies they acquired, and it suggests that the ownership ratio is less important in the automobile sector than it is in the electronics sector.

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Table 5: The Pre- and Post-Acquisition Market-to-Book Ratio for Electronic Acquirers

	(1)	(2)	(3)	(4)	(5)
MBR	0.162 *** (7.830)	0.160 *** (6.910)	0.161 *** (7.620)	0.177 *** (4.480)	0.155 *** (5.030)
BRDR	-0.233 (-0.210)				
SECT		-0.097 (-0.050)			
CSECT			-0.562 (-0.960)		
RATIO				0.003 (1.370)	
RSIZE					3.2E-04 ** (2.490)
BRDR*MBR	-0.661 (-0.500)				
SECT*MBR		0.013 *** (3.260)			
CSECT*MBR			0.066 * (1.900)		
RATIO*MBR				2.3E-04 ** (2.450)	
MBR^2	-0.022 (-0.200)	-0.011 (-0.140)	-0.017 (-0.040)	-0.020 (-0.160)	-0.032 (-0.150)
Country1	0.121 *** (3.142)	0.127 *** (3.220)	0.180 *** (3.240)	0.210 *** (3.760)	0.112 ** (2.110)
Country2	0.002 ** (2.222)	0.007 ** (2.180)	0.005 ** (1.980)	0.001 ** (2.210)	0.004 ** (1.900)
Country3	0.786 ** (2.350)	0.789 ** (2.360)	0.840 ** (2.480)	0.713 ** (2.110)	0.994 ** (2.020)
Country4	-0.282 (-0.710)	-0.253 (-0.650)	-0.220 (-0.560)	-0.229 (-0.590)	0.094 (0.170)
Country5	0.356 (0.690)	0.371 (0.720)	0.359 (0.700)	0.377 (0.730)	0.192 (0.220)
Country6	0.512 ** (2.320)	0.515 ** (2.320)	0.541 (1.380)	0.461 (1.180)	0.456 (0.710)
Country7	-0.031 (-0.110)	-0.169 (-0.060)	0.042 (0.140)	0.000 (0.000)	0.126 (0.280)
Country8	0.275 (0.750)	0.847 (0.780)	0.314 (0.860)	0.320 (0.870)	0.331 (0.650)
Country9	-0.322 (-0.680)	-0.391 (-0.570)	-0.274 (-0.440)	-0.191 (-0.394)	-0.455 (-0.220)
Country10	0.041 (0.950)	0.030 (0.880)	0.029 (0.740)	0.044 (0.840)	0.012 (0.120)
Year2001	-0.267 (-0.800)	-0.277 (-0.830)	-0.289 (-0.860)	-0.241 (-0.720)	-0.548 (-1.120)
Year2002	-0.196 (-0.560)	-0.185 (-0.530)	-0.202 (-0.580)	-0.162 (-0.470)	-0.209 (-0.420)
Year2003	-0.268 (-0.710)	-0.270 (-0.710)	-0.285 (-0.760)	-0.227 (-0.600)	-0.212 (-0.380)
Const	-0.632 ** (-2.490)	-0.633 ** (-2.440)	-0.639 ** (-2.500)	-0.872 *** (-2.840)	-0.590 (-1.570)
AdjR-squared		0.158	0.158	0.159	0.161
Observations		494	494	492	494

Note 1: Estimations are made by using the ordinary least squares (OLS) method. The symbols ***, **, and * indicate significance levels of 1 percent, 5 percent, and 10 percent, respectively.

Note 2: The dependent variable is the three-year average of the post-merger market-to-book ratio and the independent variable is the three-year average of the pre-merger three-year average.

Note 3: Country1 to Country10 are country dummy variables and Year2001 to Year2003 are year dummy variables.

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Table 6: The Pre- and Post-acquisition Market-to-book Ratio for Automobile Acquirers

	(1)	(2)	(3)	(4)	(5)					
MBR	0.555 ***	(6.800)	0.501 ***	(5.280)	0.560 ***	(6.880)	0.527 ***	(3.790)	0.316 ***	(2.440)
BRDR	-0.575	(-0.860)								
SECT			0.192 **	(2.310)						
CSECT					-0.077	(-0.170)				
RATIO							0.002	(0.730)		
RSIZE									3.0E-03	(1.080)
BRDR*MBR	0.368 **	(1.980)								
SECT*MBR			0.136 **	(2.120)						
CSECT*MBR					0.087 **	(2.260)				
RATIO*MBR							0.003	(0.230)		
MBR ²	0.071	(0.730)	0.065	(0.750)	0.068	(0.710)	0.074	(0.690)	0.074	(0.710)
Country1	-3.800 ***	(-12.400)	-3.750 ***	(-11.270)	-3.850 ***	(-12.640)	-3.814 ***	(-12.310)	-3.156 ***	(-7.550)
Country2	-1.709 ***	(-5.690)	-1.605 ***	(-4.900)	-1.746 ***	(-5.360)	-1.695 ***	(-5.620)	-1.289 ***	(-3.550)
Country3	-3.221 ***	(-7.370)	-3.185 ***	(-7.240)	-3.278 ***	(-7.630)	-3.318 ***	(-7.690)	-2.722 ***	(-4.050)
Country4	-1.822 **	(-2.450)	-1.718 **	(-2.140)	-1.247 **	(-2.140)	-1.578 **	(-1.950)	-1.582 **	(-2.010)
Country5	-1.150 ***	(-3.680)	-0.719 ***	(-3.480)	-0.827 ***	(-4.140)	-0.928 ***	(-3.570)	-0.818 ***	(-3.440)
Country6	-2.826 ***	(-8.850)	-2.756 ***	(-8.090)	-2.855 ***	(-8.940)	-2.850 ***	(-8.820)	-2.026 ***	(-4.510)
Country7	-4.480 ***	(-12.860)	-4.451 ***	(-12.190)	-4.517 ***	(-12.910)	-4.507 ***	(-12.940)	-3.358 ***	(-6.330)
Country8	-1.148	(-0.280)	-0.958	(-0.480)	-1.249	(-0.850)	-1.110	(-0.950)	-1.254	(-0.980)
Year2001	1.083 ***	(6.070)	1.151 ***	(6.440)	1.106 ***	(6.220)	1.137 ***	(6.250)	1.002 ***	(4.070)
Year2002	0.988 ***	(6.100)	1.030 ***	(6.380)	1.007 ***	(6.240)	1.019 ***	(6.250)	0.830 ***	(3.370)
Year2003	0.672 ***	(3.860)	0.723 ***	(4.230)	0.703 ***	(4.090)	0.704 ***	(4.070)	0.414 *	(1.700)
Const	2.001 ***	(6.160)	1.823 **	(5.050)	2.018 ***	(6.210)	1.787 ***	(4.890)	1.093 **	(2.340)
AdjR-squared		0.763		0.764		0.760		0.760		0.715
Observations		114		114		114		114		103

Note 1: Estimations are made using OLS. The symbols ***, **, and * indicate significance levels of 1 percent, 5 percent, and 10 percent, respectively.

Note 2: The dependent variable is the three-year average of the post-merger market-to-book ratio and one of the independent variables is the three-year average of the three-year average pre-merger market-to-book ratio.

Note 3: Indonesia and New Zealand are excluded from this analysis because each has a very small number of publicly listed companies; therefore, only 8 country dummy variables are included in this table. Year2001 to Year2003 are year dummy variables.

7. Results: the Post-acquisition Performance of Acquired Firms

The number of publicly listed target firms is very small. Therefore, we merged the data for all electronic and automobile firms, added an industrial dummy variable to distinguish between electronics and automobile firms, and analyzed post-acquisition performance based on the profitability of the firms before and after they had been

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bought over. The proxies for profitability were the ROA percentage. We did not employ the market-to-book ratio (*MBR*) in this analysis because the post-acquisition stock prices of acquired firms generally include the acquisition premium; therefore, we thought it wise to avoid using this variable for target firms. Table 8 indicates the results of the analysis. These show a significantly positive change in profitability between the pre- and post-acquisition periods. In other words, corporate acquisition improves the profitability of target firms. Most notably, the parameter of intersection between the cross-border dummy (*BRDR*) and pre-acquisition profitability (*ROA*) was significantly positive; this suggests that the profitability of target firms improves when they are acquired by foreign firms. Another determinant of target firm profitability is the industry to which the acquirer belongs. When the acquirer's SIC code matches that of the acquired, the parameter of intersection between the industry dummy (*SECT*) and pre-acquisition profitability (*ROA*) is insignificant; however, target firm profitability improves when the acquirer and acquired belong to similar industries (*CSECT*).

Table 7: The Pre- and Post-acquisition Return on Assets Percentage for Acquired Electronics and Automobile Firms

	(1)		(2)		(3)		(4)		(5)	
ROA	0.178 ***	(4.120)	0.178 ***	(4.500)	0.176 ***	(4.830)	0.172 ***	(4.770)	0.161 ***	(3.220)
BRDR	0.033	(0.330)								
SECT			0.155	(1.090)						
CSECT					0.105	(0.760)				
RATIO							0.003	(0.830)		
RTSIZ									-2.8E-04	(-0.050)
BRDR*ROA	1.086 ***	(5.940)								
SECT*ROA			0.253	(0.420)						
CSECT*ROA					1.559 ***	(3.570)				
RATIO*ROA							2.7E-03 ***	(3.360)		
ROA ²	0.004	(0.110)	0.002	(0.180)	0.004	(0.260)	9.0E-03	(0.160)	0.005	(0.250)
Country1	-0.351	(-1.540)	-0.320	(-1.160)	-0.314	(-1.140)	-0.335	(-1.170)	-0.502	(-1.150)
Country2	-0.176	(-0.360)	-0.137	(-0.230)	-0.206	(-0.350)	-0.280	(-0.460)	-0.221	(-0.310)
Country3	0.067	(0.270)	0.354	(1.250)	0.388	(1.360)	0.262	(0.900)	0.171	(0.410)
Country4	0.223	(1.120)	0.064	(0.270)	0.006	(0.030)	0.061	(0.260)	-0.360	(-1.020)
Country5	-0.001	(-0.100)	-0.014	(-0.080)	-0.063	(-0.210)	-0.064	(-0.210)	-0.093	(-0.190)
Country6	-0.130	(-0.500)	-0.089	(-0.050)	-0.085	(-0.270)	-0.043	(-0.130)	-0.310	(-0.650)
Country7	0.049	(0.210)	-0.053	(-0.190)	-0.107	(-0.380)	-0.140	(-0.500)	0.122	(0.250)
Country8	-0.105	(-0.500)	0.039	(0.150)	-0.058	(-0.220)	-0.009	(-0.040)	-0.269	(-0.710)
Country9	-0.021	(-0.060)	0.040	(0.100)	-0.059	(-0.140)	-0.075	(-0.180)	-0.064	(-0.730)
Country10	-0.352	(-0.950)	-0.107	(-0.240)	-0.101	(-0.230)	-0.065	(-0.150)	-0.440	(-0.150)
Year2001	-0.103	(-0.570)	-0.667	(-0.300)	-0.030	(-0.130)	-0.036	(-0.160)	-0.195	(-0.620)
Year2002	0.057	(0.320)	-0.020	(-0.090)	0.065	(0.300)	0.004	(0.020)	0.177	(0.590)
Year2003	0.266 ***	(3.410)	0.246 ***	(2.870)	0.261 ***	(3.140)	0.261 ***	(3.880)	0.443 ***	(3.380)
Indst	0.267 *	(1.810)	0.263 **	(2.470)	0.216 **	(2.090)	0.275 ***	(2.490)	0.280 **	(2.040)
Const	0.040	(0.190)	-0.274	(-0.120)	0.051	(0.200)	0.089	(0.350)	0.166	(0.490)
AdjR-squared		0.385		0.109		0.124		0.100		0.132
Observations		128		128		126		128		103

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Note 1: Estimations are made using OLS. The symbols ***, **, and * indicate significance levels of 1 percent, 5 percent, and 10 percent, respectively.

Note 2: The dependent variable is the three-year average of the post-merger market-to-book ratio and one of the dependent variables is the three-year average of the three-year average pre-merger market-to-book ratio.

Note 3: Country1 to Country10 are country dummy variables and Year2001 to Year2003 are year dummy variables.

Note 4: Indst is an industrial dummy variable, which equals "1" when the acquired firm is in the electronics industry and "0" when it is in the automobile industry.

8. Conclusion

This paper shows that both the market-to-book ratio of acquirers and the ROA percentage of acquired firms improved in the post-acquisition period. This means that recent corporate acquisitions have improved the performance of acquired firms in real economic terms in East Asia, too. We believe that they have achieved this by improving managerial cost efficiency and increasing product competitiveness in the corporate sector. In turn, this is done mainly by reorganizing fixed assets and other production bases rather than by increasing human resource mobility, which is difficult to do. We did not examine the differences between the cumulative abnormal returns of stock prices in the pre- and post-acquisition periods, but we may conclude that the merger wave hit in East Asia has promoted the reorganization of the electronics and automobile sectors and induced development.

Our results suggest that mergers are in the interest of both acquiring and acquired firms in this region. They also indicate that different factors influence post-acquisition performance in the electronics and automobile sectors. The location of the acquiring and purchased firms is unimportant in the electronics industry but significant in the automobile industry. In addition, the greater the proportion of shares acquired, the better the post-acquisition performance of electronics firms; automobile acquirers, however, do not always acquire a large proportion of target firm shares. We believe that this is because automobile firms in East Asia, especially in Japan, have created highly developed foreign business operations in this region over a long-term period. This probably accounts for the positive parameter of the intersection between the cross-border dummy and pre-acquisition market-to-book ratio.

The merger wave hit the United States in the late 1980s and arrived in Japan after commercial law was revised in 1999. In the past, media coverage of the cross-border merger phenomenon has been negative, but our results suggest that in general, the mergers have improved the post-acquisition performance of acquired firms and that this has not been achieved by downsizing the target asset. Target firms may have been able to obtain talented managers, additional international and domestic distribution channels, and new research and development opportunities from their parent firms after being merged. This paper proves that acquisition improves the profitability of purchased firms, although it cannot explain why this is the case. Mergers do not always have a negative impact on the firms involved. However, some requirements must be met if target firms are to prosper via acquisition. First, foreign acquirers are preferable because they give target firms a better chance of improving profitability in the post-acquisition period. Second, acquirers should belong to industrial sectors that are related to those of their target firms.

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A contribution of this paper is to show that the profitability of both acquirers and target firms improves in the post-acquisition period. Achieved by sampling East Asian firms, this verdict supports the literature that suggests that an increase in acquisitions improves social welfare. However, this paper does not verify the effect of the acquirers' equity prices on post-acquisition performance in the region. This is a task that awaits future research.

Endnotes

ⁱ Aside from literature on the United States and Japan, some literature also exists on how firms in the United Kingdom were influenced by the Thatcher administration's promotional policy on incoming foreign direct investment (FDI) in the late 1980s (see, e.g., Conyon et al., 2002). Unlike literature on the former, Conyon et al. examine the effects of acquisition on the wage rate and labor productivities. This study does not employ stock price data, but focuses on the real economy by using labor market statistics.

ⁱⁱ This study defines mergers and acquisitions (M&A) as deals in which the acquiring firm buys more than ten percent of the acquired firm's shares. The definition is based on the IMF Balance of Payment Statistics by the International Monetary Fund (IMF) and the World Investment Report by the United Nations Conference on Trade and Development (UNCTAD).

ⁱⁱⁱ For instance, cross-border acquisitions by electronics firms totaled 1.3 percent in Japan, 1.6 percent in Korea, and 4.0 percent in Taiwan. Conversely, cross-border acquisitions in the automobile industry attained 41.8 percent of all acquisitions in Japan and 10.5 percent of acquisitions in Korea. Corresponding statistics for the United States and Germany were 39.7 percent and 52.5 percent, respectively.

References

- Andrade, G & Stafford, E 1999, 'Investigating the economic role of mergers,' Working paper, Harvard University, Cambridge, MA.
- Andrade, G, Mitchell, M & Stafford, E 2001, 'New evidence and perspectives on mergers,' *Journal of Economic Perspectives* 15(2), pp.103-120.
- Bhagat, S, Dong, M, Hirshleifer, D & Noah, R 2005, 'Do tender offers create value? New methods and evidence,' *Journal of Financial Economics* 76(1), pp.61-98.
- Bradley, M, Desai, A, & Kim, EH 1988, 'Synergistic gain from corporate acquisitions and their division between the stockholders of target and acquiring firms,' *Journal of Financial Economics* 21(1), pp.61-98.
- Chari, A, Ouimet, P, & Tesar, L 2010, 'The value of control in emerging markets' *The Review of Financial Studies*, vol. 23, No. 4, pp. 1741-1770, 2010.
- Dong, M, Hirshleifer, D, Richardson S, & Teoh SH 2002, 'Does investor misvaluation drive the takeover market?' Unpublished working paper, The Ohio State University, Columbus, OH.
- Erel, I, Liao, RC & Weisbach, M 2012, 'Determinants of Cross-border Mergers and Acquisitions,' *Journal of Finance*, forthcoming.
- Fukao, K, & Amano, N 2004, *Inward Foreign Direct Investment in Japan*, Nihon Keizai Shimbunsha, Tokyo.

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- Giovanni, J 2005, 'What drives capital flows? The case of cross-border M&A activity and financial deepening,' *Journal of International Economics*, Elsevier, vol. 65(1), pp. 127-149, January.
- Hanson, R 1992, 'Tender offers and free cash flow: an empirical analysis,' *Financial Review* 27, pp.185-209.
- Harford, J 1999, 'Corporate cash reserves and acquisitions,' *The Journal of Finance*, Vol. LIV, No6., pp.1969-1997.
- Harford, J 2005, 'What drives merger waves?' *Journal of Financial Economics*, 77(3), pp.529-560.
- Hasbrouch, J 1985, 'The characteristic of takeover targets. Q and other measures,' *Journal of Banking and Finance* 9(3), pp.351-362.
- Head, K & John, R 2008, 'FDI as an outcome of the market for corporate control: Theory and evidence,' *Journal of International Economics*, Elsevier, vol. 74(1), pp.2-20, January.
- Inoue, K & Kato, H 2006, *M&A and Stock Prices*, Toyo Keizai Shimposha, Tokyo.
- Lang, LH, Stulz, RM & Walking, R 1989, 'Managerial performance, Tobin's Q and the gains from successful tender offers,' *Journal of Financial Economics* 24(1), pp.137-154.
- Malmendier, U & Tate, GA 2002, 'Who makes acquisitions? CEO overconfidence and the market's reaction,' Unpublished working paper, Harvard Business School, Cambridge, MA.
- Moeller, SB, Shlingemann, FP & Stulz, RM 2004, 'Firm size and the gains from acquisitions,' *Journal of Financial Economics* 73, pp.201-228.
- Mitchell, ML & Mulherin, JH 1996, 'The impact of industry shocks on takeover and restructuring activity,' *Journal of Financial Economics* 41(2), pp.193-229.
- Morck, R, Shreifer, A & Vishny, RW 1990, 'Do managerial motives drive bad acquisitions?' *Journal of Finance* 45(1), pp.31-48.
- Nocke, V, & Yeaple, S 2007, 'Cross-border mergers and acquisitions vs. greenfield foreign direct investment: the role of firm heterogeneity,' *Journal of International Economics* 72, pp.336-365.
- Rhodes-Kropf, MD, Robinson, T & Viswanathan, S 2005, 'Valuation waves and merger activity: the empirical evidence,' *Journal of Financial Economics* 77(3), pp.561-604.
- Shleifer, A & Vishny, RW 1986, 'Large shareholders and corporate control,' *Journal of Political Economy* 95(June), pp.461-488.
- Shleifer, A & Vishny, RW 2003, 'Stock market driven acquisitions,' *Journal of Financial Economics* 70(3), pp.295-311.
- Smith, R & Kim, JH 1994, 'The combined effects of free cash flow and financial slack on bidder and target stock returns,' *Journal of Business* 67, pp.281-310.