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A STUDY OF THE FINANCIAL CHARACTERISTICS OF U.S. TARGET COMPANIES ACQUIRED BY U.S. AND FOREIGN BUYERS BEFORE, DURING, AND AFTER THE 2008 FINANCIAL CRISIS

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ABSTRACT

Mergers and acquisitions (M&A) is one of the most popular research topics in finance. The synergistic benefits of and market reaction to mergers have been studied extensively. Most merger studies deal with specific countries. Cross-country mergers and acquisitions have not received sufficient attention. The impact of financial crises on M&A activities has not been studied sufficiently. In this empirical study, we make a contribution on these subjects by comparing the financial characteristics of U.S. target companies acquired by U.S. companies with the financial characteristics of U.S. target companies acquired by foreign companies before, during, and after the 2008 financial crisis. We find that the overall financial characteristics of the two groups of targets were significantly different before the crisis. However, the financial characteristics of the target companies have become quite similar during and after the crisis. Before the crisis, U.S. acquirers preferred smaller size targets with greater liquidity, higher profit margins, and lower debt ratios compared with foreign acquirers. Our MANOVA test statistics indicate that the overall financial characteristics of the two target groups were not significantly different during and after the 2008 crisis. Our univariate test statistics show that U.S. acquirers preferred smaller size targets during the crisis and targets with a greater total assets turnover both during and after the crisis.

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I. PREVIOUS LITERATURE AND MOTIVATION FOR THE STUDY

Mergers and acquisitions (M&A) have been a popular research topic in finance. The M&A literature has traditionally focused more on the acquirers than on the targets. Poor post-merger performance and bad market reaction to mergers are generally explained by reasons such as hubris (Roll, 1986), managerial entrenchment (Jensen 1986; Morck et al., 1988; Shleifer and Vishny, 1989), empire building (Rhoades, 1983; Black, 1989) and bad judgment (Morck et al., 1990). Value creation and destruction in mergers have been evaluated extensively in the context of diversification (Lang and Stulz, 1994; Berger and Ofek, 1995; Servaes, 1996).

The focus of most M&A studies has been limited either to specific industries or to specific countries (see, e.g., Meric et al., 1991; Rose, 1987; Trifts and Scanlon, 1987). Cross-country mergers have not received sufficient attention. Foreign acquisition of U.S. companies has been increasing in recent years. Sherman and Badillo (2010) argue that weak dollar and low company valuations have made U.S. targets cheaper and encouraged foreign buyers after the 2008 financial crisis.

Research papers studying the financial characteristics of U.S. targets acquired by foreign predators are scarce. The impact of financial/economic crisis on domestic and foreign acquisitions has not been studied sufficiently. In this paper, we make a contribution on these subjects by comparing the financial characteristics of U.S. target companies acquired by U.S. companies and foreign predators before, during, and after the 2008 financial crisis.

The remainder of the paper is organized as follows: Part II explains our methodology. In Part III, we provide information about the data used in the study. We present our empirical findings in Part IV. Part V summarizes our findings and concludes the paper.

II. METHODOLOGY

Comparing the financial characteristics of different groups of firms with financial ratios has long been a popular research methodology in finance. Altman (1968), Edmister (1972), and Dambolena and Khoury (1980) predict bankruptcy by comparing the financial ratios of bankrupt and healthy firms. Stevens (1973), Belkaoui (1978), Rege (1984), and Meric et al. (1991) use financial ratios to identify the financial characteristics of companies which become the target of corporate takeovers. Hutchinson et al. (1988) use financial ratios to identify the financial characteristics of companies, which achieve stock market quotation in the U.K.

Multiple Discriminant Analysis (MDA) and Multivariate Analysis of Variance (MANOVA) are the two statistical methods most commonly used in previous studies to compare the financial characteristics of different groups of firms. In this paper, we use the MANOVA method (see: Johnson and Wichern, 2007) to compare the financial characteristics of U.S. target companies that were acquired by foreign companies with the financial characteristics of U.S. target companies that were acquired by U.S. companies before, during, and after the 2008 financial crisis.

III. DATA

Our data collection process consists of three steps. First, we identify the U.S. target companies acquired by U.S. and foreign buyers during the 2005–2011 period. Secondly, we group these target firms into three categories, based on their merger announcement dates. Merger announcements between January 1, 2005 and October 8, 2007 are considered as "Before Crisis" mergers, those between October 9, 2007 and March 9, 2009 are consider as "During Crisis" mergers, and those between March 10, 2009 and December 31, 2011 are considered as "After Crisis" mergers. Lastly, we collect the data from the financial statements of the target U.S. companies.

The mergers and acquisitions data are collected from the Capital IQ database. We first identified the U.S. public firms acquired by either U.S or foreign companies during the period of 2005–2011. We then collected the annual data from the year-end financial statements of our sample firms from the Compustat database for the fiscal year one year prior to the year of merger. In order to mitigate the excessive influence of the outliers, we winsorized our sample at the 1% and 99% levels.

Overall, our sample consists of 321 U.S. target companies. The break-down of the sample based on the merger announcement date is displayed in Table 1. In addition, the summary statistics of the targets acquired by US companies and targets acquired by international companies are presented in Table 2. The financial ratios used in the comparisons as measures of financial characteristics are presented in Table 3.

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IV. EMPIRICAL FINDINGS

Pre-Crisis Period

The MANOVA test statistics for the pre-crisis period are presented in Table 4. The multivariate F statistic is used to test the null hypothesis that the mean ratio/variable vector for the U.S. firms acquired by other U.S. firms is not significantly different from the mean ratio/variable vector for the U.S. firms acquired by foreign predators. The multivariate F statistic in the table indicates that the alternative hypothesis should be accepted at the ten-percent level of significance (i.e., the overall financial characteristics of the two groups of firms are significantly different at the ten-percent level).

Our univariate MANOVA test results indicate that U.S. acquirers preferred targets with more liquidity compared with foreign acquirers during the pre-crisis period. The univariate F statistics show that U.S. firms targeted by other U.S. firms have significantly higher levels of liquidity compared with U.S. firms targeted by foreign predators. The liquid assets ratio is significantly different at the 1-percent level and the current and quick ratios are significantly different at the 5-percent level between the two groups of firms.

The univariate F statistics indicate that U.S. acquiring firms target firms with lower debt ratios and higher profit margin compared with foreign acquirers. The mean total debt ratio of the targets acquired by other U.S. firms is significantly lower than the mean total debt ratio of the targets acquired by foreign companies at the 10-percent level of significance. U.S. acquirers might have thought about utilizing the unused debt capacity of the targets.

The activity, return on assets, earning power, return on equity, growth, and market value ratios of the two groups of target firms are not significantly different. However, profit margin ratios of the U.S. targets acquired by foreign firms are significantly lower than the profit margin ratios of the firms acquired by other U.S. firms. It may be interpreted as foreign acquirers thinking about improving the profit margins of the U.S. targets by using foreign manufacturing technology and cost-cutting measures.

Our univariate MANOVA F statistic indicates that foreign predators prefer larger size targets compared with U.S. acquirers. The test statistics is highly significant at the 1-percent level. It can be interpreted as U.S. acquirers willing to take more chance on small, and possibly riskier, U.S. targets compared with foreign acquirers.

Crisis Period

The MANOVA test statistics for the crisis period are presented in Table 5. The multivariate test statistic in the table indicates that the overall financial characteristics of the two groups of target firms are not significantly different in the crisis period. However, the univariate test statistics show that the two groups of firms are significantly different in terms of total assets turnover and size.

U.S. acquirers appear to have preferred targets with higher total assets turnover during the crisis. The F statistic for the total assets turnover ratio is significant at the 10-percent level. As in the pre-crisis period, foreign acquirers appear to have prepared relatively larger U.S. targets during the crisis period. The test statistic for size is significant at the 5-percent level during the crisis period.

Post-Crisis Period

The MANOVA test statistics for the post-crisis period are presented in Table 6. The multivariate F statistic in the table indicates that, as in the crisis period, the overall financial characteristics of the two groups of target firms are not significantly different in the post-crisis period. The only variable that is significantly different between the two groups of targets at the 1-percent level is total assets turnover. The result indicates that, in the post-crisis period, U.S. acquirers prefer U.S. targets with a significantly higher total assets turnover compared with foreign predators.

V. SUMMARY AND CONCLUSIONS

Cross border mergers and acquisition (M&A) is an understudied subject in finance and little is known about the effects of financial crises on M&A activities. In this paper, we make a contribution to extant literature on these subjects by comparing the financial characteristics of U.S. target companies that were acquired by U.S. companies with the financial characteristics of U.S. target companies that were acquired by foreign companies before, during, and after the 2008 financial crisis. Our MANOVA (multivariate analysis of variance) findings indicate that the overall financial characteristics of the two groups of target firms were significantly different before the crisis. However, the overall financial characteristics of the two groups of target firms were not significantly different during and after the crisis.

Before the crisis, U.S. firms acquired smaller size targets with more liquidity, higher profit margins, and lower debt ratios. However, foreign firms chose to acquire larger U.S. targets with higher debt ratios and lower liquidity and profit margin ratios during this period. During the crisis period, the preference of U.S. acquirer was smaller target firms with high total assets turnover ratios. Foreign firms chose to acquire larger U.S. firms with low total assets turnover ratios in this period. The only significant difference between the two groups of target firms in the post-crisis period was the total assets turnover ratio. U.S. acquirers preferred targets with higher total assets turnover ratios compared with foreign acquirers in this period.

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Table 1: Sample Information and Number of Observations

	Before Crisis	During Crisis	After Crisis	Full Sample
Targets acquired by US Companies	83	51	86	220
Targets acquired by International Companies	45	25	31	101
All Targets	128	76	117	321

This table displays the number of target firms included in our sample.

Table 2: Summary Statistics of the Targets Acquired by U.S. and International Companies

	Targets Acquired by US Companies			Targets Acquired by International Companies		
Variables	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**
Total Assets	1,652.11	360.31	4,552.23	5,355.90	1,151.85	18,162.13
Current Assets	621.04	179.74	1,847.09	1,494.22	371.09	4,811.61
Net Fixed Assets	1,031.07	134.23	3,034.85	3,861.68	555.55	13,477.80
Sales	1,425.75	355.33	3,578.92	4,305.08	553.52	14,111.47
Net Income	88.42	11.42	436.08	278.88	24.94	862.16
Stock Price per Share	19.46	13.14	18.79	24.25	18.87	23.90

This table displays the summary statistics of the sample. The values are in thousands of U.S. dollars.

Table 3: Financial Ratios Used in the Study as Measures of Firm Financial Characteristics

Financial Ratio Name	Financial Ratio Definition
Liquidity	
Current Ratio (CUR)	Current Assets / Current Liabilities
Quick Ratio (QUR)	(Current Assets - Inventories) / Current Liabilities
Liquid Assets Ratio (LAR)	(Cash + Marketable Securities) / Total Assets
Asset Management (Turnover) Ratios	
Accounts Receivable Turnover (ART)	Sales / Accounts Receivable
Inventory Turnover (INT)	Sales / Inventory
Fixed Assets Turnover (FAT)	Sales / Net Fixed Assets
Total Assets Turnover (TAT)	Sales / Total Assets
Financial Leverage	
Total Debt Ratio (TDR)	Total Debt / Total Assets
Profitability	
Net Profit Margin (NPM)	Net Income / Sales
Operating Profit Margin (OPM)	Operating Income / Sales
Return on Assets (ROA)	Net Income / Total Assets
Earning Power Ratio (EPR)	Operating Income / Total Assets
Return on Equity (ROE)	Net Income / Common Equity
Growth	
Capital Expenditures Ratios (CER)	Capital Expenditures / Total Assets
Market Value	
Market-to-Book Ratio (MBK)	Market Value Per Share / Book Value Per Share
Size	
SIZE	Natural Logarithm of Total assets

This table explains the calculation methodology of the ratios used in the study. The ratios are calculated with data for the fiscal year prior to the year of the acquisition.

Table 4: MANOVA Statistics for the Pre-Crisis Period: Firms Targeted by U.S. firms vs. Firms Targeted by Foreign Acquirers

Financial Ratios	Means and Standard Deviations†		Univariate Statistics	
	U.S. Targets	Foreign Targets	F value	P Value
Liquidity				
Current Ratio	3.25	2.22	5.72**	0.03
	(2.70)	(1.35)		
Quick Ratio	2.56	1.62	5.80**	0.02
	(2.47)	(1.25)		
Liquid Assets Ratio	0.23	0.14	6.41***	0.01
	(0.19)	(0.16)		
Asset Management (Turnover) Ratios				
Accounts Rec. Turnover	14.18	26.84	0.78	0.38
	(25.01)	(17.25)		
Inventory Turnover	25.83	26.84	0.01	0.91
	(49.54)	(52.67)		
Fixed Assets Turnover	12.78	10.48	1.10	0.30
	(25.06)	(20.41)		
Total Assets Turnover	1.13	1.06	0.39	0.53
	(0.61)	(0.64)		
Financial Leverage				
Total Debt Ratio	39.6%	46.7%	3.75*	0.06
	(20.4%)	(18.4%)		
Profitability				
Net Profit Margin	4.8%	-8.2%	3.18	0.08
	(12.3%)	(64.5%)		
Operating Profit Margin	7.4%	-5.8%	3.45	0.07
	(13.6%)	(62.2%)		
Return on Assets	3.5%	3.2%	0.04	0.85
	(11.4%)	(11.0%)		
Earning Power Ratio	6.3%	6.0%	0.01	0.92
	(13.0%)	(12.7%)		
Return on Equity	6.0%	4.1%	0.12	0.73
	(26.2%)	(32.0%)		
Growth				
Cap. Expenditure Ratio	4.7%	5.5%	0.69	0.41
	(5.4%)	(4.4%)		
Market Value				
Market-to-Book Ratio	2.80	2.72	0.04	0.84
	(2.40)	(1.81)		
Size				
Size (Ln of Total Assets)	5.85	6.91	11.3***	0.00
	(1.60)	(1.90)		
		Multivariate Statistics:	1.57	0.09

† The figures in parentheses are the standard deviations.
***, **, * indicate that the difference is significant at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 5: MANOVA Statistics during the Crisis: Firms Targeted by U.S. firms vs. Firms Targeted by Foreign Acquirers

Financial Ratios	Means and Standard Deviations†		Univariate Statistics	
	U.S. Targets	Foreign Targets	F value	P Value
	Liquidity			
Current Ratio	2.83	3.18	0.33	0.57
	(2.12)	(3.09)		
Quick Ratio	2.15	2.67	0.86	0.35
	(1.84)	(3.02)		
Liquid Assets Ratio	0.21	0.18	0.20	0.66
	(0.22)	(0.18)		
	Asset Management (Turnover) Ratios			
Accounts Rec. Turnover	9.90	7.26	1.42	0.24
	(10.44)	(5.27)		
Inventory Turnover	28.12	29.92	0.02	0.90
	(58.14)	(64.27)		
Fixed Assets Turnover	12.34	7.96	1.60	0.21
	(16.02)	(9.32)		
Total Assets Turnover	1.10	0.84	3.16*	0.08
	(0.65)	(0.49)		
	Financial Leverage			
Total Debt Ratio	43.2%	44.5%	0.05	0.83
	(22.8%)	(24.8%)		
	Profitability			
Net Profit Margin	3.0%	-11.9%	1.77	0.19
	(17.1%)	(76.7%)		
Operating Profit Margin	5.5%	-12.8%	1.94	0.17
	(18.1%)	(91.1%)		
Return on Assets	2.5%	1.5%	0.10	0.76
	(15.0%)	(10.1%)		
Earning Power Ratio	5.2%	3.2%	0.31	0.58
	(16.0%)	(11.1%)		
Return on Equity	5.4%	3.7%	0.06	0.81
	(32.1%)	(22.8%)		
	Growth			
Cap. Expenditure Ratio	4.6%	3.6%	1.11	0.30
	(4.1%)	(2.9%)		
	Market Value			
Market-to-Book Ratio	3.46	2.49	2.66	0.11
	(2.81)	(2.29)		
	Size			
Size (Ln of Total Assets)	5.90	6.76	4.35**	0.04
	(1.50)	(2.05)		
		Multivariate Statistics:	1.29	0.23

† The figures in parentheses are the standard deviations.
***, **, * indicate that the difference is significant at the 1-percent, 5-percent, and 10-percent levels, respectively.

Table 6: MANOVA Statistics for the Post-Crisis Period: Firms Targeted by U.S. firms vs. Firms Targeted by Foreign Acquirers

Financial Ratios	Means and Standard Deviations† U.S. Targets	Foreign Targets	Univariate Statistics F value	P Value
		Liquidity		
Current Ratio	2.86	2.64	0.31	0.58
	(1.92)	(1.83)		
Quick Ratio	2.26	2.07	0.30	0.58
	(1.65)	(1.64)		
Liquid Assets Ratio	0.23	0.19	0.88	0.35
	(0.21)	(0.19)		
		Asset Management (Turnover) Ratios		
Accounts Rec. Turnover	9.23	6.85	1.11	0.24
	(10.81)	(4.40)		
Inventory Turnover	30.03	16.40	1.08	0.30
	(70.97)	(26.66)		
Fixed Assets Turnover	12.19	6.97	2.38	0.13
	(18.10)	(8.51)		
Total Assets Turnover	1.01	0.70	8.35***	0.01
	(0.58)	(0.30)		
		Financial Leverage		
Total Debt Ratio	43.8%	48.6%	1.35	0.25
	(19.8%)	(19.7%)		
		Profitability		
Net Profit Margin	-8.4%	-7.7%	0.00	0.95
	(60.9%)	(31.5%)		
Operating Profit Margin	-2.5%	2.9%	0.26	0.61
	(57.1%)	(19.4%)		
Return on Assets	-2.4%	-4.3%	0.44	0.51
	(13.2%)	(17.2%)		
Earning Power Ratio	2.0%	2.5%	0.03	0.86
	(11.2%)	(10.1%)		
Return on Equity	-6.3%	-8.4%	0.09	0.76
	(30.6%)	(41.0%)		
		Growth		
Cap. Expenditure Ratio	3.7%	4.1%	0.26	0.61
	(3.8%)	(3.2%)		
		Market Value		
Market-to-Book Ratio	2.24	1.97	0.53	0.47
	(1.87)	(1.36)		
		Size		
Size (Ln of Total Assets)	6.00	6.61	2.08	0.15
	(1.98)	(2.02)		
		Multivariate Statistics:	0.98	0.48

† The figures in parentheses are the standard deviations.
***, **, * indicate that the difference is significant at the 1-percent, 5-percent, and 10-percent levels, respectively.