

An Empirical Study on the Effect of M&A Payment Methods of US Companies

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ABSTRACT

In M&A activities, the effects of different payment methods vary. This paper analyses the abnormal income of the target company in the M&A window and concludes that the M&A event would indeed bring evident income via the event research method. Because of tax differences and information asymmetry, payment methods and responses to the event are also distinct.

Keywords: *Event study, Abnormal return, Merge Announcements*

1. INTRODUCTION

The design and choice of payment methods in corporate M&A activities significantly impact the shareholder returns of the M&A parties, the formation of the M&A price, and the financing strategy of the M&A firm. This paper examines whether different M&A payment methods lead to various effects on listed companies in M&A to rationalise the design of each M&A transaction framework.

Most of the previous research divides M&A methods into cash and stock acquisitions. Still, in addition to these two methods, payment methods combine cash and stock, both of which have different advantages and disadvantages and bring further synergies.^[1] Many scholars have studied the current situation of payment methods for M&A in China, the factors influencing payment method selection, and the corresponding effects. In general, qualitative studies comparing financial perspectives account. But there are fewer analyses on the impact of payment methods after the completion of M&A.^[2]

2. DATA AND METHOD

2.1 DATA

This paper collects data on the successful acquisition of public companies in the US from 2005 to 2019 as a sample. Considering the limited impact of small deals, the paper excludes deals worth less than \$5 million. The sample is divided into four subsamples: stock

acquisitions, cash acquisitions, the combination of cash and stock, and other methods. Other methods have not been adopted widely yet, so they are not statistically significant.

This paper sets the window for merger announcements at the first 61 days and the event window at 310 days from 60 days before to 20 days after the merger announcement. Therefore, the estimation window in this paper is (-310, -61), and the event window contains three sub-windows, namely (-60, -2), (-1, 1) and (2, 20). An event window paused within the set event window due to a significant event, etc., will return the available period closest to the event declaration date. Non-trading dates will be converted to the next trading day.^[3]

As cross-border mergers and acquisitions can significantly impact returns in a globalised economy, the legal environment, country development, etc., can substantially affect the company's value. Different mergers and acquisitions result in various effects on the target company's returns. This paper considers whether it is a domestic merger as a research variable, and if the target acquisition company is a US company, it is regarded as a domestic merger.^[4]

Also, this paper considers the transaction value of the target acquisition firm. As a post-merger, the target firm has varying impacts on equity dilution, acquirer's ability to pay, and investor confidence.^[5] To eliminate the effect of heteroskedasticity, the logarithm of transaction value is used as the variable $\ln(DV)$ in this paper.^[6]

2.2 METHOD

For evaluating M&A performance, this paper primarily uses the event study method based on changes in stock prices. The cumulative average excess return (CAAR) is the evaluation indicator to calculate the excess return on the target company's stock price due to the emergence of the M&A event. It is based on the abnormal stock price movements caused by investors' reactions to the M&A event in the stock market to reflect the short-term performance of the M&A event.^[7]

Fama (1970) proposed the efficient market hypothesis, the theoretical basis for the event study approach to short-term returns. They argued that an efficient market is one in which security prices fully respond to all available information, and any new information can be quickly reflected in security prices in an unbiased manner.^[8] Consequently, security prices are always "accurate", representing the best overall assessment of the economic value of security ownership and providing accurate information for optimal resource allocation. This paper measures the impact of an M&A event on the target company's bottom line.

As the share price represents the company's discounted future profits, the change in share price due to the event, i.e. the excess return, can be considered a measure of the event's impact on the company's profitability.

Estimating Abnormal return (AR): excess earnings are the difference between a firm's actual earnings minus expected earnings. It reflects an estimate of the change in the value of firm *i* at day *t* of the event period caused by the M&A event.

$$AR_{it} = R_{it} - E[R_{it}|X] \tag{1}$$

The average excess return (AAR) and average cumulative excess return (CAAR) within a specific period can be calculated by:

$$AAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it} \tag{2}$$

$$CAAR(T_1, T_2) = \frac{1}{N} \sum_{t=T_1}^{T_2} AAR_t \tag{3}$$

Significance test of abnormal returns: The test investigates whether the abnormal effect in the event window is significantly different from 0.^[9] So:

$$\text{Null hypothesis: } H_0: CAAR(T_1, T_2) = 0$$

$$\text{Alternative hypothesis: } H_1: CAAR(T_1, T_2) \neq 0$$

The test can be calculated by:

$$t = \frac{CAAR(T_1, T_2)}{[\sigma^2(CAAR(T_1, T_2))]^{\frac{1}{2}}} \tag{4}$$

The tests for average excess return and cumulative average excess return are analysed and visualised to explain the empirical results. If CAR or CAAR can pass the significance test, the market has reacted significantly to the M&A event.^[10]

Table 1. CAAR and t values of different payment methods in the event window

payment method	Days	N	CAAR	Patell Test	CDA test	CSEctErrt
total	(-60,-2)	1383	6.43%	15.404	12.462	9.768
	(-1,+1)	1383	22.02%	237.442	189.26	28.999
	(+2,+20)	1382	-0.34%	-0.884	-1.149	-1.839
cash only	(-60,-2)	898	7.96%	15.272	11.606	8.992
	(-1,+1)	898	25.99%	217.697	168.12	24.33
	(+2,+20)	897	-0.60%	-1.434	-1.534	-3.293
stock only	(-60,-2)	168	2.88%	2.2212	2.129	1.611
	(-1,+1)	168	9.18%	38.539	30.107	6.86
	(+2,+20)	168	0.44%	0.486	0.57	0.456
alternative	(-60,-2)	78	4.08%	2.5	2.08	1.93
	(-1,+1)	78	20.96%	64.09	47.44	10.86
	(+2,+20)	78	0.49%	1.1012	0.441	0.581
combination	(-60,-2)	239	3.95%	4.173	3.693	3.445
	(-1,+1)	239	16.46%	80.272	68.212	15.925
	(+2,+20)	239	-0.17%	-0.333	-0.283	-0.488

If a merger is financed with stock, it is divided into stock only. If a merger is financed in cash, it is classified as cash only. If a merger is financed by a combination of cash and stock, it is regarded as combination. If a merger is financed by choice between cash or stock or combination of both, it is classified as alternative.

3. RESULT

As shown in Table 1, 85% of stocks had positive returns on the acquisition announcement date. The average abnormal return value also peaked on that day with a return of 17.71%, which is significant at the 99% confidence interval.

1,383 M&A events occurred between 2005 and 2019, and the cumulative average excess return (CAAR) of 22.02%, was statistically significant within the (-1, 1) event window and significant at the 1% level. Except for a small number of negative CAARs, the CAAR is positive in 85% of the sample group, indicating the target M&A firms also gained through M&A during the short-term time window.

Table 2. Test for differences between subsamples

	Cash only	Stock only	combination	alternative
Cash only		9.8173	6.4114	2.2802
Stock only			-4.3054	-5.0158
combination				2.0554
alternative				

By dividing all M&A events into four sub-samples, research results in Table 2 show significant abnormal gains on the announcement date regardless of the payment scenario. It suggests that the target acquiring firm generates a wealth effect due to the acquisition information, in line with the overall trend.^[11] Dividing into four sub-samples makes abnormal returns significantly higher under the cash payment method and the lowest under the stock payment method. Also, a minor wealth effect is generated two days before the announcement date.

By conducting difference tests between the CAAR of four subsamples, this paper concludes that the variety in payment method significantly affects the CAAR value. The most noticeable difference lies in the cash-only and stock payment, which is the same as reality. Compared to stock acquisitions, cash-paying companies tend to have better cash flows and operating conditions and do not dilute shareholder control of the target company. Hence, such acquisitions are more likely to be signal positively and yield higher return rates. Therefore, a combination of cash and stock payments always produces a much higher yield than a stock-only one. As in Table 1, the CAAR at the announcement date for a cash and stock combination was 16.46%, compared to 9.18% for a stock-only acquisition.

Regression analysis of the two event windows reveals that the market is semi-strongly efficient. The abnormal return between the two windows (-60, -20) and (-1, 1) is not highly correlated, implying no significant relationship between the return generated before the

announcement and after the M&A event. It then suggests that the favourable news of the M&A was not leaked prior to the announcement date.

However, it is worth noting that in the case of cash payments, market excitement appears 17 days before the M&A announcement date, and stock returns move significantly higher compared to other payment methods. It suggests that insider news may be easier to obtain for cash payments in advance than others.

While cash payments present a more positive signal, it cannot be ignored that stock offers have an intuitive advantage in taxation since they can be deducted for stock issues (Siayor and Berger, 2019).^[12] In the event of cash payment, a higher cash premium is required to offset the tax liability so that a stock offer may be more favourable than the cash one.

The above discussed the effect of payment methods on abnormal returns. However, whether the acquisition is domestic and how much the target acquisition company is worth are also variables, so this paper applies multiple regressions to investigate these two variables' importance. The empirical results show a significant negative relationship between the size of the deal and CAR, and abnormal returns within the event window decrease by 0.16% when the deal value increases by 1%. Deal values that are too high may prevent an acquirer from paying; therefore, the CAR of the target company will decrease. In contrast, whether the acquisition is cross-border has a limited impact on abnormal returns since it only relates to globalisation's development.

Table 3. Regression with three phase of economy

CAR_Window2	Coef.	Robust std.err	t	P> t	95% Conf.Interval	
CAR_Window1	-0.14	0.102	-1.37	0.17	-3.34	0.06
_cons	0.23	0.0117	19.71	0.000	0.21	0.025

Table 4. the regression analysis of influencing factors of CAR in the event window

CAR_Window_2	Coef.	Robust std.err	t	P> t	95% Conf.Interval	
LnDV	-0.016	0.005	-3.27	0.001	-0.025	-0.006
cash_only	0.1626	0.018	9.03	0.000	0.127	0.198
combination	0.0777	0.017	4.53	0.000	0.044	0.111
alternative	0.1209	0.023	5.20	0.000	0.075	0.167
domestic	-0.003	0.016	-0.21	0.837	-0.035	0.028
_cons	0.218	0.042	5.20	0.000	0.136	0.300

4. CONCLUSION

According to the theory of information effects and signalling, payment methods can affect the short-term market returns of an M&A. For information asymmetry, both parties within an M&A will have an information advantage over the external parties. The payment instrument selected by the M&A party will signal and convey different information to the market. The cash payment highlights the M&A party's abundant cash flow, good future investment opportunities, and undervaluation of the stock in the market, so investors can react quickly and accordingly and thus show a higher CAAR. While the stock payment reduces the cost, it changes the company's capital structure. It dilutes the equity of the original shareholders and their control over the company. Investors may view stock payment as an indication that the acquirer's share price is overvalued and the company's expected future cash flows will be adversely affected. It suggests that the post-acquisition company is less able to take advantage of investment opportunities with internal funds. Hence, the CAAR performance is weakest under the share-based payment method.^[13]

When negotiating payment methods in an M&A, the optimal framework for the M&A transaction should be arranged to consider the short-term performance changes of the business caused by different payment methods, as well as the feasibility of the payment method, the transformation of the majority shareholder's control, the financial risk and the financing cost. Utilising cash as an M&A payment instrument can lead to improved short-term market performance. However, both parties must first consider the impact of cash payments on production and operations, as it may reduce the cash flow of the acquiring company and, in the long term, affect the solvency of operating activities and investment capacity. Although equity payments can also result in short-term market efficiency gains, they can dilute the original shareholders' equity.

AUTHORS' CONTRIBUTIONS

Most scholars' research on M&A payment mainly focuses on considering payment methods before M&A,

qualitative and case studies from a financial perspective account for the vast majority. However, there are few analyses on the impact of payment methods after M&A, and the evaluation indicators and classification standards of payment methods are not unified. Therefore, to ensure the accuracy of the research, this paper makes a more detailed division of payment methods. This paper focuses on the empirical test of payment methods' effect on selecting research content. Finally, according to the empirical research results, feasible suggestions for M&A events are made. In mergers and acquisitions, it is crucial to consider the changes in the short-term performance of the enterprise that different payment methods may bring about. At the same time, evaluating the feasibility of payment methods, changes in control rights of significant shareholders, financial risks and financing costs, and negotiating the most excellent M&A transaction framework. This paper also provides a basis for future empirical research. Based on the empirical research on the effect of M&A payment, an empirical analysis of the payment method selection factors should be added, such as the asset-liability ratio of M&A companies, the shareholding ratio of significant shareholders and other influences. The payment method selection factors are quantitatively analysed to obtain a more objective and measurable system for payment method selection, which can serve as a reference for listed companies' mergers and acquisitions.

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