Research on Persistence of Frequent Acquirers' Returns and Its Affected Factors

Jinbu Zhai[1], Su Guo[1], Yang Guo[2]

[1]Department of Finance and Taxation, Central University of Finance and Economics, Beijing, China

[2]Department of Mathematics and Statistics, Central University of Finance and Economics, Beijing, China

Email address:

zhaijb@cufe.edu.cn (Jinbu Zhai), guosuguo@126.com (Su Guo), iamguanlong@163.com (Yang Guo)

Abstract: Persistence of acquirer returns is one of the most important considerations when corporations making acquisitions. Therefore, the paper aims to analyze the sustainability of acquisition performance and its affected factors. The first part focuses on analyzing persistence of frequent and occasional acquirers' returns. Regression analysis and mean value test are adopted in this section to verify whether the acquisition performance is persistent in the subsamples mentioned above. It proved that the persistence of frequent acquirers' return is more significant than occasional acquirers by comparing the experimental results of two subsamples. The other part of the paper aims to find out the main influence factors on persistence of frequent acquirer returns. Specifically, Firm characteristics and management structure impact the sustainability of acquisition performance to some extent. But the explanation degree is limited according to OLS regression result. In this case, fixed effect model is introduced into the paper. In addition, LR test proves the fixed effect model is superior to the mixed effect model. It turns out that besides firm characteristics and management structure, the persistence of acquirer returns is determined by some unobservable factors of the specific firm, such as acquisition skill, capability of valuating and integrating the target asset. This conclusion explains the fact that the persistence of frequent acquirers' return is more significant than the occasional acquirers mentioned above.

Keywords: Persistence of Acquirer Returns, Frequent Acquirers, Occasional Acquirers, Fixed Effect Model

1. Introduction

M&A strategy has always been the sought-after development strategy of global enterprises. With the popularity of global enterprise mergers and acquisitions, M&A has gradually become a hot issue in the fields of economics and management. However, contrary to the increasing size and frequency of M&A year by year, the academia failed to give a satisfying answer to these questions such as whether the acquirer benefits from mergers and acquisitions, whether the acquirer returns are sustainable, and what are the factors that affect the persistence of acquirer returns. In addition, learners have different views on whether foreign M&A theories can be applied to developing countries such as China. This paper empirically examines the persistence of acquirer returns by taking Chinese listed companies as the sample. It indicates that the persistence of frequent acquirers' returns is more significant than the occasional acquirers'. And what's more, the persistence of acquirer returns is, indeed, best explained by some unobserved, time-invariant and firm-specific factors.

2. Persistence of Frequent and Occasional Acquirers' Returns

2.1. Definition of Frequent and Occasional Acquirers

This paper follows the idea of Fuller, Nutter, Stegemoller (2002) and define the occasional acquirers are those having completed two or more deals over a three-year window. Similarly, frequent acquirers are those having more than four deals over a three-year window. Since the reform of listing non-tradable shares in China was basically completed in 2009, we set 2009 to 2012 as the three-year window. The

corporations which completed more than four M&A deals during 2009 to 2012 are regard as frequent acquirers. The M&A deals of frequent acquirers are defined as the frequent acquirer subsamples, and so are the occasional acquirers.

2.2. Index Selection for M&A Performance

The paper chooses short-term performance indexes in the research of whether the acquirer returns are sustainable. In line with the definition of frequent acquirers and occasional acquirers mentioned above, corporations may have more than one M&A deals in a year. Therefore, long-term indexes such as financial indexes are not suitable in measuring the performance of a single M&A deal. In this case, the event study is applied in following analysis. Event study is widely used to measure the impact of a certain event through the stock price fluctuation. CAR (Cumulative Abnormal Returns) is the main index of event study and it can accurately reflect the short-term performance of a M&A event. Estimation period is defined as 200 days to 10 days before first notice date and the estimation window is used to estimate the corporation's expected normal return. Similarly, observation window is the period of 5 days before and 5 days after the first notice date. This period is used to calculate the corporation's effective return. CAR is the difference between effective return and expected normal return.

2.3. Sample Selection

The M&A data are sourced from Chinese CSMAR database over the period from January 1, 2009 to December 31, 2015. The selection restrictions are as follows:
a. The acquisition must be approved by regulators and has already completed.
b. The acquirers are the A-share companies listed in Shanghai and Shenzhen Securities Exchange but exclude finance, insurance and ST companies.

These requirements result in a sample of 17663 transactions involving 556 firms. 93 firms of the sample are sort to frequent acquirers and 463 firms are sort to occasional acquirers.

2.4. Econometric Model

a. Calculate the average acquisition performance of a corporation in the last three years (the average CAR of acquisitions in the last three years, denoted as $CAR^{Average}_{-3 \to 0}$)
b. Calculate the average acquisition performance of a corporation in the next five years (the average CAR of acquisitions in coming years, denoted as $CAR^{Average}_{0 \to 1}$, $CAR^{Average}_{0 \to 2}$, $CAR^{Average}_{0 \to 3}$, $CAR^{Average}_{0 \to 4}$, $CAR^{Average}_{0 \to 5}$)
c. Analyze the impacts of historic performance ($CAR^{Average}_{-3 \to 0}$) on the future performance ($CAR^{Average}_{0 \to 1}$, $CAR^{Average}_{0 \to 2}$, $CAR^{Average}_{0 \to 3}$, $CAR^{Average}_{0 \to 4}$, $CAR^{Average}_{0 \to 5}$). It reflects the persistence of acquirer returns. The last three years here refer to 2009 to 2011 while the next five years refer to 2011 to 2015. Single factor analysis method and regression analysis are adopted to deal with the problem.

To be specific, the first step of single factor analysis is sorting frequent acquirers into five groups according to the historic performance ($CAR^{Average}_{-3 \to 0}$). Q_1 and Q_5 represent serial acquirers with the highest and the lowest average CARs. If the frequent acquirers' returns are sustainable, the average CARs of Q_5 will be much higher than that of Q_1. in the next few years. Then mean value test will be used to verify if the difference of average CARs between Q_1 and Q_5 will be consistent, and so does the occasional subsample. Then compare the results of frequent and occasional subsamples.

The model of regression analysis is as follows: $CAR^{Average}_{0 \to +n}=\alpha_0+\alpha_1 CAR^{Average}_{-3 \to 0}+\varepsilon$, (t=1, 2, 3, 4, 5). The regression will get several α_1 by plugging Q_1 and Q_5 of frequent and occasional subsamples into this formula. The numerical value, sign and significance of α_1 will indicate persistence of acquirer returns.

2.5. Empirical Results and Related Analysis

The result of mean value test is shown in the table below.

Table 1. Mean value test of occasional acquirers and frequent acquirers.

Sample grouping	$CAR^{Average}_{0 \to +t}$				
	t=1	t=2	t=3	t=4	t=5
Occasional acquirers					
Q_1	0.007	0.0011	0.0033	0.0039	0.0026
Q_5	0.005	0.0003	0.0008	0.0022	0.0016
Q_1-Q_5	0.002	0.0008	0.0025*	0.0017	0.001
t-statistics	0.028	0.667	1.598	1.07	0.675
Frequent acquirers					
Q_1	0.0021	0.0023	0.0036	0.0054	0.0054
Q_5	-0.001	-0.0022	-0.0028	0.0002	-0.0028
Q_1 -Q_5	0.0031**	0.0045***	0.0064***	0.0052*	0.0082***
t-statistics	2.153	3.358	4.401	1.746	3.907

Symbols***, ** and *denote significance at the 1%, 5%, and 10% level, respectively.

According to the result, the following conclusions can be drawn. The CAR of Q_1 is always significantly higher than Q_5 in the frequent acquirers' subsample. While the CAR in the occasional acquirers' subsample does not show the regularity. That is, the persistence of frequent acquirers' returns is more significant than that of the occasional acquirers.

In order to have a better understanding of persistence of acquirer returns, OLS method is used to regress historic

performance and future performance of Q_1 and Q_5 in frequent acquirers' subsample and occasional acquirers' subsample. Then average CARs of the two subsamples will be plugged into the formula $CAR^{Average}_{0\to+n}=\alpha_0+\alpha_1 CAR^{Average}_{-3\to0}+\varepsilon$, (t=1, 2, 3, 4, 5). The result of OLS regression is shown in the table below.

Table 2. OLS regression of occasional acquirers and frequent acquirers.

	$CAR^{Average}_{0\to+t}$				
	t=1	t=2	t=3	t=4	t=5
Frequent acquirers Q_1					
α_1	-0.779741	2.085136***	1.987371**	2.718544*	2.556894*
P-statistics	(0.4712)	(0.0016)	(0.0205)	(0.0874)	(0.0590)
R^2	0.035154	0.495041	0.309099	0.185101	0.217743
Frequent acquirers Q_5					
α_1	0.394218	0.603179	-0.338195	-0.572091	0.063087
P-statistics	(0.1776)	(0.3219)	(0.6230)	(0.6952)	(0.9406)
R^2	0.110559	0.0613	0.01546	0.009851	0.00358
Occasional acquirers Q_1					
α_1	0.286775***	0.167464	-0.026622	-0.085347	-0.254446
P-statistics	(0.0041)	(0.1531)	(0.8843)	(0.6644)	(0.1580)
R^2	0.102243	0.026328	0.00277	0.002457	0.025722
Occasional acquirers Q_5					
α_1	-0.022264	0.126891	0.097628	0.196532	0.198822
P-statistics	(0.9332)	(0.6450)	(0.7040)	(0.4752)	(0.4486)
R^2	0.00092	0.00277	0.001885	0.006643	0.007576

Symbols***, ** and *denote significance at the 1%, 5%, and 10% level, respectively.

It shows that α_1 of Q_1 group in frequent acquirer sample are positive and significant except when t value 1. The exception can be explained as few deals are conducted within only one year. While α_1 of Q_5 group in frequent acquirer sample does not show the regularity. And neither Q_1 nor Q_5 group shows the regularity in occasional acquirer. This indicates acquirer returns of Q_1 group in frequent acquirer subsample are more sustainable than other groups. In other words, those corporations of good performance in M&A deals tend to behave well in the future acquisitions.

3. Affected Factors of Persistence in Acquirer Returns

3.1. Potential Factors

The potential factors affecting the persistence of acquirer returns include company characteristics and management factors. More specifically, company characteristic factors include acquirers' scale, Tobin's Q ratio, debt-to-asset ratio, free cash flow, the percentage of state shares. Management factors include the size of top management team, CEO leadership, average tenure and average age of managers. These factors are explanatory variables in the following regression.

Abbreviation and computing method of these explanatory variables are shown in table 3.

3.2. Econometric Model

This part adopts the way of measuring accounting earnings persistence. Above all, first-order autoregression is used to measure the sustainability of acquirer returns, as shown in the formula below:

$$CAR^{Average}_{it}=\alpha_i+\lambda_i CAR^{Average}_{it-1}+\mu_{it}$$

More specifically, $CAR^{Average}_{it}$ refers to the average CAR (Cumulative Abnormal Returns) caused by acquisitions of corporate i during the year of t. t values between 2009 and 2015. i represents the corporates of Q1 and Q5 in the frequent acquirer subsample. λ_i is named as the persistence coefficient of acquirer returns. The nearer λ_i approximates to 1, the slower adjustment speed of acquirer returns. In other words, the acquirer return is much more sustainable.

And then, the λ_i obtained in the previous step is the dependent variable in the following regression, while the potential factors introduced in table 3 are explanatory variables. The multiple regression model is as follows:

$$\lambda_i=\beta_1+\beta_2 SCA_{it}+\beta_3 TOB_{it}+\beta_4 DEB_{it}+\beta_5 FCF_{it}+\beta_6 PSS_{it}+\beta_7 MAN_{it}+\beta_8 CEO_{it}+\beta_9 TER_{it}+\beta_{10} AGE_{it}+\mu_i+\varepsilon_{it}$$

In the formula, i stands for observation units, the corporates. t means the specific year. μ_i is the individual effect of the unit i. β_i is the coefficient of all the units. Assume the individual effect μ_i is a constant, then other time-varying factors will be classified as ε_{it}. The model turns into a fixed effects model accordingly. In particular, μ_i means the invariable factors which affect the persistence of acquirer returns, such as the acquisitions experience, capability of valuation, integration ability and so on.

Table 3. Summary of variables.

Type of the variable	Variable name	Code of the variable	computing method of the variable
independent variables	acquirer's scale	SCA	Total assets of acquirer in the fiscal year prior to the acquisition
	Tobin's Q ratio	TOB	Market value of the acquirer's assets divided by book value of its assets for the fiscal year prior to the acquisition
	Leverage	DEB	The sum of debt divided by its total assets in the fiscal year prior to the acquisition
	free cash flow	FCF	Net profit plus interest cost plus non-cash charges minus supplemental working capital and capital expenditure of the acquiring firm in the fiscal year prior to the acquisition
	the percentage of state shares	PSS	The proportion of state-owned shares of the acquirer in the fiscal year prior to the acquisition
	Number of top management team	MAN	The size of the acquiring firm's top management team
	CEO dominance	CEO	CEO salary divided by the average salary of other team members for the fiscal year prior to the acquisition
	average tenure of managers	TER	The average years of which top team members have worked in the acquiring firm prior to the announcement date
	Average age of managers	AGE	The average age of team members in the acquiring firm prior to the announcement date

3.3. Empirical Results and the Related Analysis

The multiple regression of influencing factors is shown in the table below. It reflects the influencing factors of persistence in frequent acquirers' returns.

Table 4. The Result of the multiple regression.

Code of the variable	β_i	p-statistics
C	-0.66669[*]	0.097
SCA	-5.9E-12[***]	0.0017
TOB	0.03753[**]	0.0170
DEB	-0.04072	0.6951
FCF	-6.53E-12[*]	0.0752
PSS	0.424401	0.3011
MAN	0.01106[**]	0.0410
CEO	-0.11443	0.5436
TER	0.012[*]	0.0917
AGE	0.020596[***]	0.0090
Adjusted-R^2	0.276568	
F-statistics	6.012385[***]	

The empirical result shows that, the size, Tobin's Q ratio, free cash flow, the number, average tenure and average age of top team members have evident influences on persistence in acquirer returns. More specifically, there is a negative correlation between the size and the sustainability of acquisition performance. It indicates that smaller companies have stronger sustainability in acquirer returns. The reason is probably that smaller company is flexible while large companies have difficulties in programming and integrating the target asset. Tobin Q ratio is positively related to persistence in acquirer returns. It implies that public confidence and high growth expectations are helpful to the sustainability of acquisition performance. Free cash flow is negatively correlated with the persistence in acquirer returns, probably due to agency problem. Professional managers' income is largely determined by the size of the enterprise. In addition, the expansion of scale can effectively avoid the risk of manager's personal work. Therefore, managers tend to expend the scale of their corporation blindly while ignoring the project profit when there is enough free cash flow. This agency problem would seriously impact the sustainability of acquisition performance. The size

of top management team is positively correlated with the sustainability of acquisition performance. The reason is that a large management team can effectively avoid the managers' hubris in acquisitions. The average tenure of top management team is positively correlated with the sustainability of acquisition performance. The reasons are simple: managers who had a long career in the corporate are more familiar with the business and enterprise culture. What's more, the managers accumulate lots of acquisition experience during the tenure. These advantages have a positive effect on acquisition performance. At last, there is a positive correlation between the average age of top management team and the sustainability of acquisition performance. It indicates that elder managers tend to accumulate adequate experience and skill in acquisition. And the elder managers can deal with various problems encountering in M&A in a better way than the inexperienced managers. The acquisition can be smoothly carried out and lay a good foundation for the future performance.

Besides, the result shows that, even F-statistics of the regression equation is significant, the adjusted R^2 is merely 0.256768. That's to say the explanatory ability of the regression is far from ideal. In this case, the paper introduces fixed effect model. The comparison between mixed effect model and fixed effect model is as the table below.

Table 5. The comparison results of mixed effect model and fixed effect model.

	mixed effect model	fixed effect model
R^2	0.331745	0.770618
Adjusted R^2	0.276568	0.729647
F-statistics	6.012385[***]	18.81242[***]

The comparison shows that adjusted R^2 of the fixed effect model is dramatically increased. That's to say, fixed effect of the corporates is significant. Related test on model selection is shown in the table below.

Table 6. The result of likelihood-ratio test.

fixed effect variable intercept model	statistic value	degrees of freedom	P-statistics
F	57591.783879	(16,93)	0.0000
Chi-square	239.710921	16	0.0000

Null hypothesis of likelihood-ratio test is that the coefficient of fixed effect is equal and mixed effects model will be used. The result of the test shows that P-statistics here is far less than 5%. Hence, the null hypothesis is rejected and the fixed effect model is applied. Then we can infer from the result the persistence in acquirer returns varies from corporate to corporate. The sustainability is influenced by some unobserved, time-invariant, firm-specific factors significantly. These factors may include acquisition skill, acquisition path, capability of valuating and integrating the target asset.

4. Conclusion

Based on the analysis above, we come to the following main conclusions.

It proved that the persistence of frequent acquirers' returns is more significant than that of the occasional acquirers. Besides company characteristic factors and management factors, the sustainability of acquisition performance is influenced by some unobserved, time-invariant, firm-specific factors significantly. These factors may include acquisition skill, acquisition path, capability of valuating and integrating the target asset. This conclusion explains why the persistence of frequent acquirers' returns is significant. Frequent acquirers accumulate lots of relevant experience through recurrent acquisitions and it ensures their sustainability of acquisition performance.

Since the persistence of frequent acquirers' returns is significant, regulators can adopt moderately easy policies on those corporates who had good performance in former acquisitions. This kind of corporates can therefore win more acquisition chances. By accumulating skills, the acquisition performance of frequent acquirers will be improved further more.

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