ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Bachelor Thesis [Financial Economics]

Institutional Involvement in Mergers and Acquisitions: A Study of Investor Types

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Abstract

Studying the relationship between institutional investors and mergers & acquisitions, this paper provides a comprehensive analysis of 9,515 M&A deals by U.S. acquirers. Taking nationality into account, results indicate a significant relationship between foreign institutional ownership and cross-border M&As; domestic institutional ownership shows no such effects. When considering investment horizon, foreign institutions appear to be even more conducive of cross-border deals, for firms largely owned by long-term oriented institutions. Short-term oriented institutional ownership is positively associated with long-run excess returns following M&A completion, robustness notwithstanding. Lastly, foreign institutional ownership seems to have no significant relationship with long-run excess returns for cross-border M&As. Domestic deals, however, show significantly more value added by foreign institutions.

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1. Introduction

The market for mergers and acquisitions remains as active today as ever. After dropping off severely in the second quarter of 2020, both the number of deals and value thereof have recovered to pre-Covid levels, with the former even exceeding its previous highs (GlobalData, 2021). Over the last few decades, total M&A deal value has steadily shifted from domestic to cross-border, where cross-border deals accounted for 47% of global M&A deal value at its peak in 2018 (Statista Research Department, 2022). These cross-border deals have been the subject of much research, mainly on how they differ from their domestic counterparts. Bertrand and Zitouna (2008), an analysis of French target firms, found that cross-border deals seem to increase productive efficiency, while no such relationship could be identified for domestic deals. In addition, when looking at acquirer firms on a global scale, Chakrabarti, Gupta-Mukherjee and Jayaraman (2009) concluded long-run excess returns, following acquisitions abroad. These excess returns were greater for deals where the acquirer- and target nations had more disparate cultures.

Considering such findings, along with the global relative increase in importance of the cross-border deal market, several papers have since endeavored to identify consistent predictors of cross-border M&A deals. Erel, Liao and Weisbach (2012), which analyzed mergers aggregated on a national scale, concluded that countries with more favorable geography relative to one another, and a greater volume in bilateral trade, had an increased likelihood of merger deals being made between them by firms, relative to other countries. Similarly, Görg, Hijzen and Manchin (2008), which looked at M&A deals from 23 OECD countries, found a decrease in cross-border deal activity for countries with higher bilateral trade costs. Finally, Ferreira, Massa and Matos (2010), a paper on the relationship between institutional ownership and cross-border M&A deals, was written. It concluded an increased amount of cross-border deals relative to the total amount of deals, for countries whose stock markets were largely owned by foreign institutions.

These relationships, though, are all identified on a country level. Papers on cross-border predictors for individual M&A deals are a different category altogether. Ferreira, Massa and Matos (2010), though, is part of both categories. Albeit in a relatively small section of the paper, M&A deals were also analyzed on an individual level, where a positive relationship between cross-border probability and foreign institutional ownership of target firms was identified. Ferreira, Massa and Matos (2010) thereby loosely served to inspire the research question of this paper, which is as follows: How are M&A deals involving U.S. firms affected by institutional ownership?

But, while this paper certainly shares some commonalities with Ferreira, Massa and Matos (2010), it should be noted that neither its newness nor its relevance is negatively impacted. As mentioned before,

analysis of individual M&A deals was relatively superficial for Ferreira, Massa and Matos (2010). This paper is entirely dedicated to deriving statistical relationships on the individual M&A deal level, further focusing on deals involving U.S. firms. Moreover, regression analysis is performed on acquirer firms instead of targets, more akin to Andriosopoulos and Yang 2015. An entirely new sample period is used, containing data on M&A deals made between 2015-2020. Different measures for deal performance are also applied, where this paper aims to assess long-run excess returns. Short-term metrics for stock returns were applied by Ferreira, Massa and Matos (2010), and Andriosopoulos and Yang (2015). Most importantly, though, this paper further breaks down institutional ownership and its effects in additional categories, thereby adding to the related literature.

The influences of institutional investors have been extensively researched in the financial- and corporate frameworks. The literature ranges from mutual fund performance effects to the prediction of equity prices (Grinblatt & Titman, 1989; Gompers & Metrick, 2001). Distinctions between different types of investors, though, have only been made to a very limited degree. For the most part, existing financial literature has lumped these entities together for the purposes of analysis. Little regard for the differences between them is shown; the analysis of equity returns by Gompers & Metrick (2001) is one such example. As this paper primarily focuses on foreign institutional ownership, the fact that distinctions will be made – in this case, based on nationality – already becomes readily apparent. Nationality, though, is not the only differentiating aspect covered by this paper. Investment horizon is also considered, as previous research has shown significant distinctions between the influences of short-term- and long-term oriented institutional investors on equity returns and firm governance (Yan & Zhang, 2009; Andriosopoulos and Yang, 2015).

1.1 Constructs

The terms "acquisitions" and "mergers" are often used somewhat interchangeably. For the purposes of analysis, this paper views these as one and the same as well. This does not eliminate the need for a further definition of the constructs, though. According to Reuer, Tong and Wu (2012), acquisitions generally refer to a larger company absorbing a smaller one. The absorbed company either becomes a subsidiary of, or gets combined into, the acquiring firm. It loses its identity, also losing control of its assets and liabilities to the acquiring firm. Mergers, as stated by Reuer, Tong and Wu (2012), are consolidations of companies on an equal footing and similar size. The paper further posits that both mergers and acquisitions essentially lead to the same outcome, whereby two firms are consolidated into a single entity. Finally, the term "cross-border probability" will be used often. "Cross-border" is simply the designation of a specific type of M&A deal, where target- and acquirer firm nationality differ. In this paper, a U.S. acquirer and non-U.S. target is inherently implied by this. The probability term refers to the likelihood of a given M&A deal to be cross-border, rather than domestic.

Institutional ownership is perhaps somewhat of a vague concept. Differing by country, the regulations imposed on institutional investors, and what entities are identified as such, are far from uniform. Therefore, this paper only looks at U.S. stock holdings by 13F institutions. These institutions are required by the U.S. Securities and Exchange Commission to report specified holdings, called Section 13(f) Securities, on a quarterly basis. Included in this list of securities are U.S. exchange-traded stocks, ETFs, and shares of closed-end investment companies. An institutional investor is defined as either an entity trading shares for its own account, or a natural person exercising investment discretion over the account of any other entity or natural person. Institutional investors, both U.S. and non-U.S. based, exercising investment discretion over $100 million or more in Section 13(f) Securities, are categorized as 13F institutions (U.S. Securities and Exchange Commission. n.d.). This paper thereby defines foreign institutional ownership as Section 13(f) Securities holdings by non-U.S. 13F institutions, and domestic institutional ownership as Section 13(f) Securities holdings by U.S. 13F institutions.

When measuring long-run M&A deal performance, this paper uses the buy-and-hold abnormal returns method, or "BHAR" for short. As defined by Chakrabarti, Gupta-Mukherjee and Jayaraman (2009), BHARs are a measure of long-run performance for M&A deals. The stock returns for an acquirer firm after the effective date of acquisition are measured over different periods (usually spanning at least a year), adjusted for the price changes of a benchmark. Note, this method is very different from the more popular cumulative abnormal returns method, or "CAR" for short. CARs measure short-run stock returns of acquirer- and target firms during different periods around M&A announcements.

1.2 Literature review

The theory behind the research question entertained by this paper is derived through-, and supported by, multiple channels in the financial literature. First of all, Ferreira, Massa and Matos (2010) identified certain relationships between institutional ownership of target firms and cross-border M&A deals. Foreign institutional shareholders could potentially be more inclined to support cross-border deals, as they might have a more international view compared to domestic institutions (Ferreira, Massa & Matos, 2010). Transaction costs for cross-border deals are also supposedly reduced, as information advantages of foreign institutions could help diminish information asymmetry between target- and acquirer firms. This would make cross-border deals more attractive for acquirers with high foreign institutional ownership, thereby increasing cross-border probability even further.

Aside from a reduction of information asymmetry by foreign institutions, domestic institutions could potentially be exposed to a level of familiarity bias regarding M&A deals. As posited by Ferreira, Massa and Matos (2010), domestic institutional shareholders might be more supportive of local M&A deals. They could prefer exposure to firms from their home country, as opposed to distant countries with

different cultures. According to Abdioglu, Khurshed and Stathopoulos (2013), though, this familiarity bias could also be extrapolated to foreign institutions. The paper finds that foreign institutions from countries with governance setups similar to those of the U.S., are more inclined to invest in U.S. firms. Potentially, this translates into these foreign institutions preferring exposure to U.S. firms, making them more inclined to support U.S. domestic mergers. Thereby, it stands to reason that information asymmetry might not be the only factor at play here.

Chakrabarti, Gupta-Mukherjee and Jayaraman (2009) finds an increase in cross-border M&A deal performance for firms from more culturally disparate countries. When looking to explain this effect, the paper posits that cross-border mergers could provide unique opportunities. The deal would potentially provide foreign experts with valuable capabilities. This can be combined with the theoretical reduction of information asymmetry. Foreign institutions could potentially be better positioned to aid firms involved in these more valuable cross-border deals, thereby making cross-border deals even more appealing. The relationships identified by Chakrabarti, Gupta-Mukherjee and Jayaraman (2009), however, has been disputed in more recent research. Ahern, Daminelli and Fracassi (2015) comes to the opposite conclusion regarding M&A deal performance. In addition, the paper identifies a direct, negative relationship between cross-border M&A deal volume and cultural distance.

Regardless, even if the findings of Chakrabarti, Gupta-Mukherjee and Jayaraman (2009) are discarded, foreign institutions could still facilitate cross-border mergers. Andriosopoulos and Yang (2015), a paper on institutional ownership and M&A deals in the U.K., is considered for this. It concludes a higher cross-border probability for acquiring firms with a large concentration of foreign institutional. As with Ferreira, Massa and Matos (2010), the paper explains this relationship by a reduction in information asymmetry and transaction costs. With that, the first hypothesis is formulated as follows: Foreign institutional ownership of acquirer firms is positively associated with the probability of cross-border M&A deals.

Andriosopoulos and Yang (2015) finds a significant effect of investment horizons of institutional investors on cumulative abnormal returns from M&A announcements. Ownership by high-turnover institutions seems to reduce CARs between 20- and 2 days prior to M&A announcement significantly. This could be partially explained by a relative information advantage for short-term oriented institutions, in this case leading to potential insider trading prior to M&A announcement (Keown & Pinkerton, 1981). Findings by Yan and Zhang (2009), which analyzes the performance of stocks held by short-term- and long-term oriented institutions, also seem to indicate a relative information advantage for short-term institutions. The information advantage on cross-border M&As for foreign institutions found by Ferreira, Massa and Matos (2010), seems to affect deal performance. Therefore, relating informed investors based on investment horizon, to deal performance, seems plausible. Instead of the CAR

method, this paper uses BHARs to measure long-run performance of deals. This is done so that the influence of potential information advantages and reduced transaction costs on long-term performance can be analyzed. The corresponding hypothesis is stated as follows: Short-term institutional ownership of acquirer firms has a positive impact on long-run excess returns following a completed M&A deal.

Ferreira, Massa and Matos (2010) concluded a positive relationship between foreign institutional ownership and CARs from cross-border M&As. These CARs were measured for short-term holding periods around the M&A announcement date. Chakrabarti, Gupta-Mukherjee and Jayaraman (2009) also analyzed cross-border stock returns, using a different method; buy-and-hold abnormal returns, or "BHAR" for short. As explained in the constructs section, this measurement is used to analyze the long-term performance of M&A deals. This method is very much unlike the CAR method, which is used measure short-term performance. Foreign institutions, as stated by Ferreira, Massa and Matos (2010), reduce transaction costs and build bridges between target- and acquirer firms from different countries. Therefore, they are likely to add value to cross-border mergers, potentially increasing long-run deal performance. The relationship between BHARs and foreign institutional ownership is unexplored in the current financial literature. Thus, the CAR analysis of Ferreira, Massa and Matos (2010) offers the most useful findings for the stating of the last hypothesis: Foreign institutional ownership of acquirer firms has a positive impact on long-run excess returns following a completed cross-border M&A deal.

2. Methodology

The method this paper applies for distinguishing between low-, medium- and high-turnover institutions is different from Andriosopoulos and Yang (2015). Dividing up institutional investors based on absolute turnover rates seems popular. As this data was unavailable on the Refinitiv 13-F filings database, another method was used to calculate and separate turnover rates. Yan and Zhang (2009), a paper on stock returns and short-term institutions, advocates for dividing institutional investors up into terciles; low-, medium- and high-turnover. These are then recalculated every quarter, and institutional investors are redistributed amongst them accordingly. The process of deriving these terciles starts with the following formulas, where the aggregate buys and sells of institution k during quarter t are calculated as follows:

$$Buy_{k,t} = \sum_{i=1}^{N_k} |S_{k,i,t}P_{i,t} - S_{k,i,t-1}P_{i,t-1}| \qquad \text{if } S_{k,i,t} > S_{k,i,t-1} \qquad (1)$$

$$Sell_{k,t} = \sum_{i=1}^{N_k} |S_{k,i,t}P_{i,t} - S_{k,i,t-1}P_{i,t-1}| \qquad \text{if } S_{k,i,t} \leq S_{k,i,t-1}, \qquad (2)$$

where $P_{i,t}$ and $P_{i,t-1}$ are the share prices for stock i at the end of quarter t and quarter $t-1$, and $S_{k,i,t}$ and $S_{k,i,t-1}$ are the number of shares of stock i held by institutional investor k at the end of quarter t and

quarter $t-1$, respectively (Yan & Zhang, 2009). The churn rate for institutional investor k during quarter t is then defined as:

$$CR_{k,t} = \frac{\min(Buy_{k,t}, Sell_{k,t})}{\sum_{i=1}^{N_k} \frac{S_{k,i,t}P_{i,t} + S_{k,i,t-1}P_{i,t-1}}{2}} \tag{3}$$

This is only one interpretation of the churn rate, as other calculations may use the sum of aggregate buys and sells, instead of the lowest value. Yan and Zhang (2009) states the method above is superior though, as it reduces the impact of misleading investor cashflows (Alexander, Cici, & Gibson, 2006). Seeing how this paper aims to measure similar constructs, the minimum value is used as well. Next, the average churn rate over the past four quarters for each institutional investor is calculated as follows:

$$\mu CR_{k,t} = \frac{1}{4}\sum_{j=0}^{3} CR_{k,t-j} \tag{4}$$

Finally, as stated before, every quarter all institutional investors are sorted into terciles, based on their average churn rate. The institutions in the top-, middle- and bottom tercile are classified as short-, medium- and long-term investors, respectively (Yan & Zhang, 2009). This paper then calculates all different forms of institutional ownership in a similar manner. Foreign (domestic) institutional ownership is defined as the ratio between the number of shares held by foreign (domestic) institutions and the total number of shares outstanding. Short-term (medium-term, long-term) institutional ownership is defined as the ratio between the number of shares held by short-term (medium-term, long-term) institutions and the total number of shares outstanding.

As explained in the constructs section, BHARs, or "buy-and-hold abnormal returns" in full, are often used to measure long-run performance of M&A deals (Chakrabarti, Gupta-Mukherjee & Jayaraman, 2009; Barber & Lyon, 1997). This paper uses the BHAR method as well, with a slight alteration. As stock price data is only updated quarterly in the 13F dataset, rather than the monthly interval required for BHAR calculation, quarter-end price data is used. Aside from this, the same methodology is used as Chakrabarti, Gupta-Mukherjee & Jayaraman (2009). For the purpose of calculating this proxy-BHAR variable, this section refers to quarter holding periods. However, subsequent sections will imply a j-month holding period when referring to BHAR j.

The j-quarter holding period BHAR for firm i at quarter t is calculated as follows:

$$BHAR_{i,j,t} = \frac{P_{i,t+j}}{P_{i,t}} - \frac{X_{t+j}}{X_t}, \tag{5}$$

where $P_{i,t+j}$ and $P_{i,t}$ are the share prices of firm i at the end of quarter $t+j$ and t, and X_{t+j} and X_t are the price levels of the S&P500 index at the end of quarter $t+j$ and t, respectively. These BHARs are then matched by t to the end of quarter t in which an M&A deal became effective. It's important to state this, as it is a different method than the one used for the probit models in the results section. That method matches the quarter t in which an M&A deal was announced, to the institutional ownership data at the end of quarter $t-1$. The first method is similar to Chakrabarti, Gupta-Mukherjee & Jayaraman (2009), and the second method applies the same techniques as Ferreira, Massa and Matos (2010).

3. Data

The data on mergers and acquisitions used by this paper was extracted from the Refinitiv DataStream database. For the purposes of analysis, only deals announced after January 1st 2015, and completed or withdrawn before December 31st 2020, are included. Deals not involving a U.S. target or acquirer are excluded. Following the specifications of Ferreira, Massa and Matos (2010), further excluded are privatizations, repurchases, exchange offers, self-tenders, recapitalizations, spinoffs, leveraged buyouts and minority stake purchases. Lastly, only deals where the acquirer firm is seeking majority ownership are included. The sample for hypothesis 1 consists of 9,515 M&A deals, of which 2,866 are cross-border deals. Some descriptive statistics are shown in table 3.1. Due to differences between countries, most regression models in this paper will use standard errors adjusted for country clustering.

Next, the data used for calculating institutional ownership by firm are extracted from the Refinitiv 13-F filings database. The query for the S34 master file on WRDS was used to access this data. All data on 13-F filings between Q4 2013 and Q4 2021 are included, where data from the first- and last four quarters are only used to calculate certain variables. Included in the dataset is a variable indicating the country of origin for each institutional investor. This is the specification used to designate between foreign and domestic institutions. Share price and total shares outstanding are also provided by firm for every quarter, which are used by this paper to calculate market capitalization, churn rate and stock returns. The data include quarterly holding- and financial data for firms, spanning a period of eight years. As shown in figure 3.1, the share of market value held by foreign institutional investors has not changed much over the past few years. However, the presence of foreign institutional shareholders in the average U.S. firm has been steadily increasing. This is one of the reasons this paper uses year fixed effects in its regression models.

Combining M&A data with institutional ownership data is not necessarily trivial. This paper merges the data into three different consolidated datasets, using two methods: 1. The CUSIP numbers of acquirer firms in the M&A data are matched with the CUSIP numbers in the institutional ownership data. Each M&A announced during a given quarter is matched with institutional ownership data for the acquirer

Table 3.1. M&A deal nationality descriptive statistics

Rank	Country	N	% of total
1.	United States	7,449	78.29%
2.	United Kingdom	413	4.34.%
3.	Canada	331	3.48%
4.	Germany	157	1.65%
5.	Australia	135	1.42%

Note. The top 5 highest percentage frequency countries targeted by U.S. acquirers.
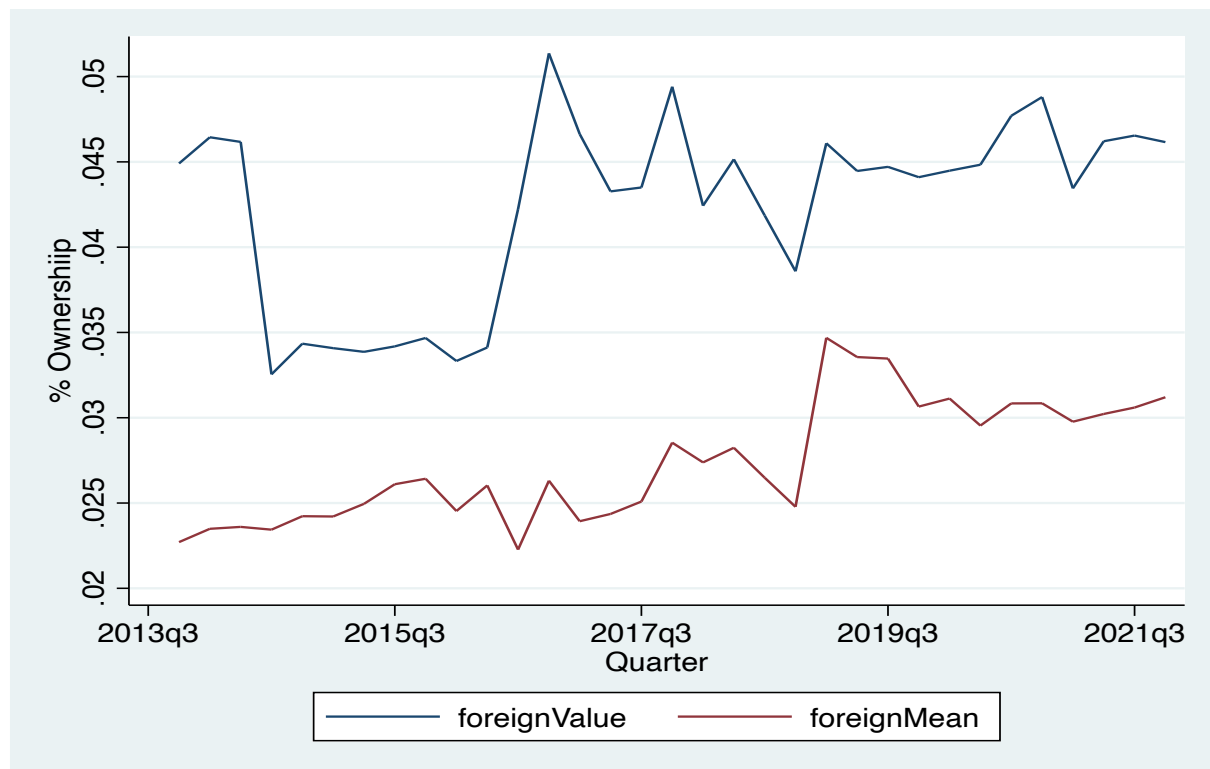
Figure 3.1 Foreign institutional ownership plotted over time between Q4 2013 tot Q4 2021, both average percentage owned, and value-weighted percentage owned

firm from the previous quarter. This method is also applied by Andriosopoulos and Yang (2015). 2. The CUSIP numbers of acquirer firms in the M&A data are matched with the CUSIP numbers in the institutional ownership data. Each M&A becoming effective in a given quarter is matched with institutional ownership data for the acquirer firm from the same quarter. A similar method is applied by Chakrabarti, Gupta-Mukherjee & Jayaraman (2009). The probit regression from section 4.1 uses the dataset acquired through method 1, The linear regressions from section 4.2 and 4.3 use the data acquired through method 2. A special dataset is constructed in section 5 for the purposes of robustness checks. The method applied to derive this dataset is mostly analogous to the second method, but target CUSIP numbers are matched as well. The target firm institutional ownership data is lagged by a quarter, after

which it is matched with the other data. This is done to avoid potential biases in the data, as target ownership variables may be influenced by the acquisition.

Following the process of data collection outlined above, several variables are constructed. *Cross-border* is a dummy variable that equals 1 in case an M&A has a non-U.S. target, and 0 otherwise. *BHAR 12*, *BHAR 24* and *BHAR 36* are the 12-, 24-, and 36-month holding period buy-and-hold abnormal returns for acquiring firms following the effective date of acquisition. *Foreign IO* states the percentage of shares of a company held by non-U.S. institutions. It equals 1.00 if non-U.S. institutions hold shares equal to 100% of the total outstanding shares of a company. *Domestic IO* states the percentage of shares of a company held by U.S. institutions. It equals 1.00 if U.S. institutions hold shares equal to 100% of the total outstanding shares of a company. *Long-term IO* states the percentage of shares of a company held by long-term institutions. It equals 1.00 if long-term institutions hold shares equal to 100% of the total outstanding shares of a company. *Mid-term IO* states the percentage of shares of a company held by medium-term institutions. It equals 1.00 if medium-term institutions hold shares equal to 100% of the total outstanding shares of a company. Lastly, *short-term IO* states the percentage of shares of a company held by short-term institutions. It equals 1.00 if short-term institutions hold shares equal to 100% of the total outstanding shares of a company.

Market cap. is the logarithm base 10 of a company's total market capitalization. *Intra-industry, mid* is a dummy variable, equal to 1 if both acquirer and target in an M&A deal operate in the same mid-level industry, and 0 otherwise. *Intra-industry, macro* is a dummy variable, equal to 1 if both acquirer and target in an M&A deal operate in the same macro-level industry, and 0 otherwise. *Returns, Q* is the previous quarter's percentage change in share price, equal to 1.00 if the share price increased by 100%. *Returns, Y* is the previous four quarter's percentage change in share price, equal to 1.00 if share price increased by 100%. *S&P500, Q* is the previous quarter's percentage change in the price level of the S&P500 index, equal to 1.00 if the price level increased by 100%. *S&P500, Y* is the previous four quarter's percentage change in the price level of the S&P500 index, equal to 1.00 if the price level increased by 100%. Descriptive statistics of the data are shown in tables 3.2 and 3.3.

Perhaps somewhat unintuitively, the institutional ownership variables from table 3.2 have maximum values above 1.00. This would imply an ownership share greater than 100% of shares outstanding by institutions. As explained by Thomson Reuters, this could be due to a several reasons. First, as short positions are not reported on 13-F filings, total shares outstanding might be unreliable in some cases. Stocks with high short interest might therefore exceed 100% of outstanding shares held by institutional investors. Aside from this, Thomson Reuters also notes the possibility for duplicates in the data. This could cause some stocks to erroneously show higher institutional ownership, in some cases exceeding 100% of shares outstanding (Wharton Research Data Services, n.d.).

Table 3.2 Hypothesis 1 data descriptive statistics

Variable	N	Mean	Std. Dev.	Min.	Max.
Cross-border	9,515	0.217	0.412	0	1
Foreign IO	9,515	0.055	0.053	0.000	1.184
Domestic IO	9,515	0.642	0.270	0.000	8.409
Short-term IO	9,515	0.221	0.123	0.000	2.198
Mid-term IO	9,515	0.137	0.099	0.000	2.252
Long-term IO	9.515	0.154	0.118	0.000	3.357
Market cap.	9,506	21.669	2.112	12.039	28.098
Intra-industry, mid	9,515	0.402	0.490	0	1
Intra-industry, macro	9.515	0.642	0.479	0	1
Returns, Q	9,328	0.023	0.315	-1.000	20.127
Returns, Y	8,750	0.104	0.816	-1.000	65.821
S&P500, Q	9,515	0.026	0.065	-0.200	0.200
S&P500, Y	9,515	0.089	0.082	-0.088	0.289

Note. Descriptive statistics for acquirer firm data; number of observations, mean value, standard deviation, minimum value, and maximum value are provided for all relevant variables.

Table 3.3. BHAR descriptive statistics, for hypothesis 2 and 3

	Domestic			Foreign			Mean diff. test	Median diff. test
Variable	N	Mean	Median	N	Mean	Median		
BHAR 12	6,844	-0.087	-0.130	1,913	-0.098	-0.114	(0.563)	(0.001)***
BHAR 24	5,607	-0.212	-0.379	1,615	-0.182	-0.316	(0.224)	(0.001)***
BHAR 36	4,437	-0.402	-0.520	1,272	-0.312	-0.419	(0.000)***	(0.000)***

Note. p-values for univariate tests are in parentheses; the buy-and-hold abnormal returns for 12-, 24- and 36-month holding periods following the effective date of acquisition; descriptive statistics are provided separately for domestic and cross-border (foreign) deals.

As shown in table 3.3, all BHARs report negative means. This implies a lack of excess returns for acquirer firms spanning buy-and-hold timeframes from 12- to 36-months, relative to the market index. In contrast to this, Chakrabarti, Gupta-Mukherjee & Jayaraman (2009) finds strictly positive BHARs for cross-border deals, for holding periods between 12- and 36-months. Why this metric yields such different results for this sample is uncertain. Still, these negative mean BHARs are a noteworthy finding.

In the two rightmost columns of table 3.3, both means and medians of all BHARs are tested for differences between domestic- and cross-border M&As. This is done to determine whether long run performances of cross-border deals differ from their domestic counterpart. As Chakrabarti, Gupta-Mukherjee & Jayaraman (2009) concluded, median BHARs differ significantly from mean BHARs,

which have an upward bias due to large gains by winners. Therefore, median values are also considered. For testing the difference in means, a t-test assuming unequal variances is applied, while the difference in medians is tested with a Mann-Whitney test. The results show significantly higher median BHARs for cross-border deals, consistent over 12- to 36-month holding periods. The differences in mean values are mostly insignificant. Only the BHAR for a 36-month holding period reports a significant difference. Median values paint a different picture though, as BHARs for all holding periods have medians differing between domestic- and cross-border deals. In the results sections, these findings will be expanded upon, applying regression methods to identify the key drivers behind cross-border M&A long-run stock returns.

Table 3.4 shows results for a correlogram of all institutional ownership variables in the acquirer data sample. Domestic- and total institutional ownership are extremely correlated, which is to be expected. As was shown in table 3.2, average foreign institutional ownership is but a fraction of domestic institutional ownership. The latter thereby constitutes the majority of total ownership, necessarily implying a high correlation coefficient. Furthermore, domestic institutional ownership also reports relatively high correlation coefficients with long-, medium- and short-term institutional ownership. Domestic institutional ownership is not one of the main variables of interest, though, so its correlation with other ownership variables will be relatively harmless.

Table 3.4. Correlation matrix for all institutional ownership variables

Variable	1.	2.	3.	4.	5.	6.
1. Total IO	1.000					
2. Foreign IO	0.510	1,000				
3. Domestic IO	0.986	0.358	1.000			
4. Long-term IO	0.557	0.371	0.532	1.000		
5. Mid-term IO	0.597	0.327	0.584	0.281	1.000	
6. Short-term IO	0.774	0.380	0.766	0.341	0.341	1.000

Note. The correlation coefficients for all institutional ownership variables in the dataset for hypothesis 1.

4. Results

In this section, results obtained through regression models will be shown, to answer the stated hypotheses.

4.1 Cross-border M&A analysis

To analyze the hypothesized relationship between foreign institutional ownership and the probability for an M&A deal by an acquiring U.S. firm to have a foreign target, a probit regression is used:

$$\text{Prob}(Cross - border)_{i,t} = \alpha + \beta(Institutional\ ownership)_{i,t} + \lambda_t + \varepsilon_{i,t}, \qquad (6)$$

where $Cross - border$ is a dummy variable that equals 1 if the M&A deal is cross-border, $Institutional\ ownership$ is the percentage of shares held by institutions, and α, β, λ_t and $\varepsilon_{i,t}$ are the estimated constant, slope coefficient, year fixed effects, and residuals, respectively, for U.S. acquirer firm *i* at time *t*. The robust standard errors are adjusted for target country clustering, as recommended by Andriosopoulos and Yang (2015).

Table 4.1 contains results from the probit regression. The model in column (1) is first shown without other explanatory variables, only foreign institutional ownership. Foreign institutional ownership seems to positively affect the cross-border probability. This effect is significant at the 1% significance level. In column (2), both market capitalization and intra-industry M&A deals are controlled for. These variables seem to significantly affect cross-border probability, where market capitalization has a positive sign, and intra-industry M&A deals has a negative sign. Controlling for domestic institutional ownership barely changes the relationship between foreign institutional ownership and cross-border probability. This is shown in column (3). Results for a Wald test are shown in table 4.2. Its null hypothesis equates the coefficients for foreign institutional ownership and domestic institutional ownership. The test is

Table 4.1 Probit regression results for the probability of an M&A deal by a U.S. acquirer to have a foreign target, first hypothesis

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Foreign IO	2.982***	1.276***	1.229***	1.099***	1.033***	2.475***
	(0.590)	(0.370)	(0.389)	(0.391)	(0.380)	(0.706)
Domestic IO			0.033	-0.116	-0.047	-0.095
			(0.057)	(0.098)	(0.134)	(0.128)
Short-term IO				0.026	-0.079	-0.522*
				(0.205)	(0.206)	(0.278)
Mid-term IO				0.730***	0.733***	0.461
				(0.238)	(0.246)	(0.290)
Long-term IO				-0.037	0.136	0.200
				(0.166)	(0.200)	(0.289)
Market cap.		0.104***	0.103***	0.105***	0.105***	0.100***
		(0.019)	(0.018)	(0.018)	(0.019)	(0.018)
Intra-industry, mid		-0.022	-0.023	-0.028	-0.030	-0.032
		(0.044)	(0.044)	(0.045)	(0.048)	(0.049)
Intra-industry, macro		-0.115***	-0.115***	-0.108***	-0.110***	-0.107***
		(0.036)	(0.037)	(0.036)	(0.034)	(0.033)
Returns, Q					-0.072*	0.028
					(0.040)	(0.085)
Returns, Y					-0.043	-0.058
					(0.033)	(0.036)
S&P500, Q					0.118	0.054
					(0.242)	(0.237)
S&P500, Y					-0.213	-0.194
					(0.214)	(0.212)
Foreign IO * Short-term IO						-8.541***
						(2.167)
Foreign IO * Mid-term IO						4.979**
						(2.072)
Foreign IO * Long-term IO						-0.360
						(1.419)
Constant	-0.875	-2.973	-2.980	-2.999	-3.006	-2.952
	(0.582)	(0.523)	(0.529)	(0.527)	(0.546)	(0.552)
Observations	9,515	9,506	9,506	9,506	8,736	8,736

Note. Robust standard errors adjusted for target country clustering are in parentheses; the dependent variable is a dummy variable equal to 1 in the case of a cross-border M&A deal, and independent variables are acquirer-specific; * $p < 0.10$, ** $p < 0.5$, *** $p < 0.01$.

Table 4.2 Wald test results for the probit regression model from table 4.1, for the respective columns

Wald test	(3)	(4)
Foreign IO = Domestic IO	8.52***	8.60***
	(0.00)	(0.00)

*Note. P-values are in parentheses; *** $p < 0.01$.*

strongly rejected at the 1% significance level. This implies a significant difference between the effects of foreign- and domestic institutional ownership on cross-border probability.

Following Andriosopoulos and Yang (2015), column (4), (5) and (6) control for all ownership variables. This includes long-, medium- and short-term institutional ownership. Foreign institutional ownership maintains its significance, albeit reporting a slightly lowered coefficient. A Wald test is run, for which the results are shown in table 4.2 column (4). Its null hypothesis, equating the coefficients from foreign institutional ownership and domestic institutional ownership, is strongly rejected at the 1% significance level. Column (5) of table 4.1 shows results for a model specification controlling for financial variables, but these additions seem virtually inconsequential. All in all, it seems extra-industry M&As from larger firms with higher medium-term and foreign institutional ownership have an increased cross-border probability.

Interaction effects with foreign institutional ownership were concluded by Ferreira, Massa and Matos (2010). This relationship, however, applied to ownership of target firms. Nonetheless, these effects may also be present for acquirer firms. Therefore, this paper controls for these interaction terms in column (6). Andriosopoulos and Yang (2015) never took these interactions into account, so acquirer effects are unexplored as of yet. Foreign institutional ownership attains a higher slope coefficient in this model, as shown in column (6). The interaction effect with medium-term institutional ownership is positive and significant. The reverse holds true for the significant and negative interaction effect with short-term ownership. These results are mostly analogous to Ferreira, Massa and Matos (2010). That paper concludes a stronger effect from foreign institutional ownership on cross-border probability, for target firms with illiquid shares. Here, this is represented by the negative interaction term with high short-term institutional ownership (relatively liquid shares). But also, by the positive interaction term with high medium-term institutional ownership (relatively illiquid shares).

4.2 BHAR analysis

To analyze the hypothesized relationship between short-term institutional ownership and the long-run excess returns for acquiring U.S. firms, the following linear regression model is used:

$$(BHAR)_{i,t+k} = \alpha + \beta(Institutional\ ownership)_{i,t} + \lambda_t + \varepsilon_{i,t}, \tag{7}$$

where *BHAR* is a variable stating the buy-and-hold abnormal returns for a holding period of *k months* after an M&A, *Institutional ownership* is the percentage of shares held by institutions, and α, β, λ_t and $\varepsilon_{i,t}$, are the estimated constant, slope coefficient, year fixed effects, and residuals, respectively, for U.S. acquirer firm *i* at time *t*. The robust standard errors are adjusted for target country clustering, as recommended by Chakrabarti, Gupta-Mukherjee and Jayaraman (2009).

Table 4.3 contains the results from varying specifications of this linear regression. In column (1), a holding period of 12 months is analyzed. The model starts off controlling just for institutional ownership variables, cross-border M&As, and their interaction effects. Interestingly, all explanatory variables report significant effects on the 12-month BHARs. For short-term institutional ownership, the model shows a positive sign, and the effect is significant at the 1% significance level. When controlling for financial variables, neither its significance nor sign is impacted. Therefore, the second hypothesis seems to be supported by the results for 12-month BHARs.

All in all, the results from column (2) imply higher 12-month holding period excess returns for smaller acquirer firms involved in domestic intra-industry M&A deals, with a greater presence of foreign- and short-term institutional shareholders. Domestic- and long-term institutional ownership decrease these 12-month excess returns, along with higher stock returns from the previous four quarters. Increased stock returns for a 12-month holding period, for stocks with high short-term institutional ownership, were also concluded by Yan and Zhang (2009). However, the paper only looked at simple returns on a time-series level. This paper analyzes excess returns on a cross-sectional M&A level. There might be some overlap between these results, though. The findings of Yan and Zhang (2009) would likely imply innately higher stock returns for firms with a greater presence of short-term institutional shareholders. This would be unrelated to M&As, which would introduce bias to the results of table 4.3. These concerns are addressed in sections 5, where robustness checks are applied.

Column (3) and (4) show results for the regression model applied to 24-month holding period BHARs. Short-term institutional ownership reports a lowered effect significance but keeps its positive sign. Column (5) and (6) show a complete lack of significance for short-term institutional ownership, when predicting 36-month BHARs. Foreign institutional ownership has remained significant across all model variations. Its positive sign implies higher BHARs for increased levels of foreign institutional ownership. This finding was unexpected and will be discussed more in-depth in section 6.

Table 4.3 Linear regression results for the buy-and-hold abnormal returns after effective acquisition for U.S. acquirer firms, for 12-, 24- and 36-month holding periods, second hypothesis

Variable	BHAR 12		BHAR 24		BHAR 36	
	(1)	(2)	(3)	(4)	(5)	(6)
Short-term IO	0.179***	0.120***	0.270**	0.237**	0.255	0.218
	(0.032)	(0.030)	(0.128)	(0.118)	(0.248)	(0.225)
Mid-term IO	0.245***	-0.024	0.219***	0.033	0.014	0.201
	(0.024)	(0.080)	(0.051)	(0.056)	(0.091)	(0.121)
Long-term IO	-0.247***	-0.183***	-0.055	0.051	-0.029	-0.204*
	(0.035)	(0.028)	(0.097)	(0.065)	(0.157)	(0.107)
Foreign IO	0.539***	0.879***	0.322***	0.387***	1.307***	0.625***
	(0.015)	(0.097)	(0.027)	(0.074)	(0.059)	(0.175)
Domestic IO	-0.340***	-0.216***	-0.295***	-0.151***	-0.030	-0.144
	(0.020)	(0.036)	(0.034)	(0.048)	(0.080)	(0.096)
Cross-border	-0.158***	-0.147***	-0.072	-0.109**	0.150	-0.091
	(0.060)	(0.035)	(0.060)	(0.045)	(0.126)	(0.073)
Cross-border *	-0.331**	-0.350**	-0.090	0.217	-0.361	0.041
Foreign IO	(0.165)	(0.166)	(0.435)	(0.327)	(0.543)	(0.540)
Cross-border *	0.240***	0.238***	0.147*	0.140**	-0.112	0.153*
Domestic IO	(0.070)	(0.035)	(0.078)	(0.067)	(0.146)	(0.084)
Market cap.		-0.012**		0.013***		0.040***
		(0.005)		(0.004)		(0.007)
Intra-industry, mid		-0.004		0.000		0.008
		(0.004)		(0.005)		(0.009)
Intra-industry, macro		0.010***		0.002		0.013
		(0.003)		(0.005)		(0.008)
Returns, Q		-0.034		-0.002		0.001
		(0.025)		(0.005)		(0.010)
Returns, Y		-0.024***		0.004		0.011***
		(0.002)		(0.003)		(0.003)
S&P500, Q		0.705***		0.937***		1.218***
		(0.081)		(0.049)		(0.138)
S&P500, Y		-0.458***		-0.189***		-0.550***
		(0.083)		(0.033)		(0.121)
Constant	0.095	0.317	0.022	-0.319	-0.494	-0.935
	(0.095)	(0.106)	(0.007)	(0.075)	(0.038)	(0.138)
Observations	8,757	8,260	7,222	6,800	5,619	5,299

Note. Robust standard errors adjusted for target country clustering are in parentheses; the dependent variable is the buy-and-hold abnormal return, for 12-, 24- and 36-month holding periods, and independent variables are acquirer-specific; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Somewhat noteworthy is the negative sign of cross-border deals in table 4.3 for shorter holding periods. Previously applied univariate tests would have implied greater excess returns for cross-border deals. These two results are reconcilable, though. The regression results imply a decrease in significance of the negative effect of cross-border deals as holding period increases. This is analogous to the increase in significance of higher mean- and median-values with holding period, for cross-border deals, implied by the univariate tests. Furthermore, no added value by foreign institutions to cross-border M&As is shown by the interaction effects. This effect, or lack thereof, will be further broken down in the following section, where the third hypothesis will be tested.

4.3 Cross-border BHAR analysis

Results from section 4.2 indicated significant differences in 12- and 24-month holding period BHARs for cross-border deals. Interaction effects with foreign- and domestic institutional ownership were also concluded. Univariate tests indicated significant differences as well. To further explore the hypothesized relationship between foreign institutional ownership and the long-run excess returns for acquiring U.S. firms in cross-border M&As, a linear regression model is used:

$$(Cross-border\ BHAR)_{i,t+k} = \alpha + \beta(Institutional\ ownership)_{i,t} + \lambda_t + \varepsilon_{i,t}, \qquad (8)$$

where $Cross-border\ BHAR$ is a variable stating the buy-and-hold abnormal returns for a holding period of k months after a cross-border M&A, $Institutional\ ownership$ is the percentage of shares held by institutions, and α, β, λ_t and $\varepsilon_{i,t}$ are the estimated constant, slope coefficient, year fixed effects, and residuals, respectively, for U.S. acquirer firm i at time t. The robust standard errors are adjusted for target country clustering, as recommended by Chakrabarti, Gupta-Mukherjee and Jayaraman (2009).

Table 4.4 contains the results from these linear regressions. In column (1), where a holding period of 12 months is analyzed, the model starts off controlling just for institutional ownership variables. Foreign institutional ownership reports a positive sign, but its coefficient is not significantly different from zero. Domestic institutional ownership seems to significantly decrease cross-border BHARs, while short- and medium-term institutional ownership variables show a significantly positive relationship. Column (2) controls for financial- and deal metrics, but institutional ownership coefficients don't seem to change much. A noteworthy finding, though, is the positive sign for the market capitalization variable, which significantly affects 12-month holding period BHARs. This contrasts with the results from the previous section, where market capitalization reported a significant and negative coefficient for 12-month BHARs. In column (3), interaction effects between institutional ownership variables are included. Though Ferreira, Massa and Matos (2010) never included these interaction terms in their CAR analysis,

Table 4.4 Linear regression results for the buy-and-hold abnormal returns after effective cross-border acquisition for U.S. acquirer firms, for 12- and 24-month holding periods, third hypothesis

Variable	BHAR 12			BHAR 24		
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign IO	0.207	0.176	0.372	0.374	0.397	1.061
	(0.168)	(0.140)	(0.326)	(0.466)	(0.383)	(0.680)
Domestic IO	-0.185**	-0.121**	-0.103**	-0.259	-0.178	-0.157
	(0.076)	(0.053)	(0.051)	(0.168)	(0.155)	(0.156)
Short-term IO	0.310***	0.299***	0.384***	0.750***	0.701***	0.786***
	(0.088)	(0.084)	(0.116)	(0.250)	(0.221)	(0.270)
Mid-term IO	0.317***	0.355***	0.410***	0.200***	0.233***	0.753***
	(0.071)	(0.070)	(0.113)	(0.241)	(0.161)	(0.232)
Long-term IO	-0.092	-0.056	-0.157*	-0.420	-0.188	-0.588***
	(0.082)	(0.064)	(0.080)	(0.283)	(0.145)	(0.217)
Market cap.		0.009**	0.010***		0.027***	0.026***
		(0.004)	(0.004)		(0.007)	(0.007)
Intra-industry, mid		-0.015	-0.015		-0.006	-0.003
		(0.018)	(0.018)		(0.024)	(0.023)
Intra-industry, macro		0.012	0.014		-0.002	0.000
		(0.015)	(0.015)		(0.022)	(0.022)
Returns, Q		0.084	0.080		-0.040	-0.048
		(0.113)	(0.112)		(0.054)	(0.054)
Returns, Y		-0.015	-0.014		0.062**	0.067**
		(0.014)	(0.014)		(0.026)	(0.026)
S&P500, Q		0.372***	0.373***		1.025***	1.000***
		(0.078)	(0.081)		(0.236)	(0.249)
S&P500, Y		-0.090	-0.086		-0.182	-0.221
		(0.055)	(0.057)		(0.145)	(0.145)
Foreign IO * Short-term IO			-1.355*			-2.001
			(0.787)			(3.034)
Foreign IO * Mid-term IO			-0.767			-9.170***
			(0.887)			(2.836)
Foreign IO * Long-term IO			1.021**			6.820**
			(0.464)			(2.848)
Constant	-0.051	0.294	-0.331	-0.044	-0.712	-0.719
	(0.065)	(0.095)	(0.089)	(0.057)	(0.151)	(0.158)
Observations	1,913	1,837	1,837	1,615	1,553	1,553

Note. Robust standard errors adjusted for target country clustering are in parentheses; the dependent variable is the buy-and-hold abnormal return, for 12- and 24-month holding periods, and independent variables are acquirer-specific; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

one could still argue they might affect cross-border BHARs. These effects would be similar to those shown for cross-border probability in table 4.1.

From the results, it appears there is indeed an interaction. Foreign institutional ownership seems to have an increased effect on cross-border BHARs for acquirer firms with less liquid shares. Although foreign institutional ownership itself remains insignificant, there do seem to be some channels through which it influences BHARs of cross-border deals. The same techniques are applied in column (4), (5) and (6), for a 24-month holding period. Results are almost identical, adding to the robustness of these findings. The interaction effect with foreign institutional ownership switches from long- to medium-term, though, but this finding is still consistent with the underlying theory. All in all, these results likely still indicate rejection of the third hypothesis.

5. Robustness checks

Results from the regression model applied in section 4.2 seemed to indicate increased long-run excess returns. These were most visible over 12- and 24-month holding periods following the effective date of acquisition, for acquirer firms with a greater presence of short-term institutions. This could lead to accepting the proposed narrative of short-term institutions possessing information advantages and reducing M&A deal transaction costs. As mentioned before, however, Yan and Zhang (2009) also found evidence for a positive relationship between short-term institutional ownership and 12-month holding period stock returns for firms in general. This effect was unrelated to M&As. Therefore, the issue this paper faces, is that the measured effects in section 4.2 might be completely unrelated to the actual M&A deals. If the results are indeed robust, one might expect target firm institutional ownership to have the same impact. After all, short-term institutions supposedly reduce M&A transaction costs by information advantages. This mutual benefit for target and acquirer should then also be brought about by not only institutions invested in the acquirer, but also by those invested in the target. And, if there were a significant relationship between short-term institutional ownership of target firms and BHARs of acquirers, a connection with M&A deals is necessarily implied. After all, this would almost certainly be the only channel through which the two otherwise unrelated variables could interact.

To test whether there is a relationship between target institutional ownership and acquirer BHARs, a special data sample is constructed. It includes data on both target- and acquirer institutional ownership. This sample of 465 U.S. domestic mergers is then used for regression analysis of the 12- and 24-month holding period BHARs. These are the periods wherefor short-term ownership would supposedly increase excess returns, after all. The applied linear regression model is stated as follows:

$$(BHAR)_{i,t+k} = \alpha + \beta_1 (Institutional\ ownership)_{j,t-3} +$$
$$\beta_2 (Institutional\ ownership)_{i,t} + \lambda_t + \varepsilon_{i,j,t}, \qquad (9)$$

where *BHAR* is a variable stating the buy-and-hold abnormal returns for a holding period of *k* months after an M&A, *Institutional ownership* is the percentage of shares held by institutions, and α, β_1, β_2, λ_t and $\varepsilon_{i,t,}$ are the estimated constant, target ownership slope coefficients, acquirer ownership slope coefficients, year fixed effects, and residuals, respectively, for acquirer firm *i* and target firm *j* at time *t*. Robust standard errors are no longer adjusted for country clustering, as all deals are domestic.

Results from the regression model are reported in table 5. In column (1) and (2), the same regression specifications from section 4.2 are applied, with the exception being the replacement of acquirer ownership variables with target variables. All relationships between target ownership variables and 12-month holding period BHARs are insignificant. Column (3) adds all acquirer ownership variables as well, along with target financial variables. Short-term ownership of acquirer firms is still insignificant, while foreign institutional ownership has a positive relationship with 12-month holdings period BHARs, significant at the 1% significance level.

Column (4), (5) and (6) apply the same methods for 24-month holding period BHARs, as done for 12-month holding period BHARs by column (1), (2) and (3), respectively. Short-term institutional ownership, both for target- and acquirer firms, seems insignificant still. Acquirer foreign institutional ownership reports a significant and positive relationship with 24-month holding period BHARs. Long-term institutional ownership of the target firm also has a positive coefficient, significant at the 1% significance level. This implies increased deal performance for M&As where shares of the target firm are less liquid. This is a rather exceptional finding, as previous literature would suggest an increase in acquirer performance for more liquid targets (Massa & Xo, 2013). One explanation for this might be lower amounts of shares being sold by low-turnover institutions. When stocks of acquirer and target are merged, high-turnover institutions are more likely to sell their shares thereby dropping share prices. On the other hand, low-turnover institutions are more likely to hold their shares. This is inherently implied by their definitions.

Foreign institutional ownership of acquirer firms has remained a significant predictor of BHARs for almost all regression models, and these robustness checks confirm it once again. This interesting finding, and why it doesn't apply to cross-border deals will be discussed in the next section. All in all, though, short-term institutional ownership seems entirely ineffective after the application of robustness checks. This is indicative of the possibility that the findings from section 4.2 are not necessarily new, but more akin to Yan and Zhang (2009).

Table 5 Linear regression results for the buy-and-hold abnormal returns after effective acquisition for U.S. acquirer firms, for 12- and 24-month holding periods

Variable	BHAR 12			BHAR 24		
	(1)	(2)	(3)	(4)	(5)	(6)
Short-term IO target	-0.204	-0.273	-0.282	0.670	0.050	0.125
	(0.340)	(0.303)	(0.353)	(0.619)	(0.329)	(0.331)
Mid-term IO target	0.152	0.221	-0.160	0.370	-0.206	-0.158
	(0.24)	(0.221)	(0.256)	(0.636)	(0.357)	(0.348)
Long-term IO target	-0.217	-0.300	-0.180	1.050***	0.944***	1.100***
	(0.424)	(0.400)	(0.441)	(0.097)	(0.327)	(0.346)
Foreign IO target	0.120	0.463	0.307	0.214	0.311	0.148
	(0.483)	(0.470)	(0.549)	(0.653)	(0.615)	(0.657)
Domestic IO target	-0.044	-0.024	0.163	-0.269	-0.245	-0.327*
	(0.127)	(0.141)	(0.036)	(0.170)	(0.174)	(0.188)
Short-term IO acquirer			-0.090			-0.067
			(0.324)			(0.391)
Mid-term IO acquirer			-0.085			-0.138
			(0.268)			(0.448)
Long-term IO acquirer			-0.619*			-0.262
			(0.003)			(0.383)
Foreign IO acquirer			1.220***			2.275***
			(0.328)			(0.959)
Domestic IO acquirer			-0.316			-0.053
			(0.380)			(0.299)
Market cap. acquirer		-0.023	-0.025		0.016	-0.007
		(0.023)	(0.020)		(0.016)	(0.022)
Market cap. target			-0.020			-0.001
			(0.021)			(0.019)
Intra-industry, mid		-0.027	-0.029		-0.006	0.000
		(0.045)	(0.047)		(0.056)	(0.059)
Intra-industry, macro		0.063	-0.059		-0.065	-0.031
		(0.055)	(0.057)		(0.084)	(0.084)
Returns, Q acquirer		0.488	0.526		0.364**	0.392
		(0.484)	(0.498)		(0.178)	(0.181)
Returns, Y acquirer		-0.110	-0.099		-0.044	-0.040
		(0.152)	(0.145)		(0.082)	(0.082)
Returns, Q target			-0.089			0.028
			(0.107)			(0.049)

Continued

Table 5 (Continued)

Variable	BHAR 12			BHAR 24		
	(1)	(2)	(3)	(4)	(5)	(6)
Returns, Y target			-0.300*			0.007
			(0.017)			(0.030)
S&P500, Q		0.639**	0.481		0.887	0.656
		(0.321)	(0.334)		(0.596)	(0.552)
S&P500, Y		0.283	-0.177		-0.141	-0.085
		(0.425)	(0.425)		(0.385)	(0.387)
Constant	-0.026	0.442	0.100	-0.072	0.257	0.165
	(0.071)	(0.499)	(0.810)	(0.139)	(0.337)	(0.429)
Observations	445	432	412	370	357	340

Note. Robust standard errors are in parentheses; the dependent variable is the buy-and-hold abnormal return, for 12- and 24-month holding periods; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

6. Conclusions

Results from section 4.1 are clear and in accordance with previous literature. A greater presence of foreign institutions consistently increases cross-border probability, across multiple variations of the probit regressions. As hypothesized, firms with an increased presence of foreign institutional shareholders seem to be more oriented towards cross-border M&As. This is indicative of significant information advantages and reduced transaction costs for cross-border deals, brought about by international expertise foreign institutions. Findings are similar to Andriosopoulos and Yang (2015), and consistent with the first hypothesis. Furthermore, the effects of foreign- and domestic institutional ownership seem to be entirely separate. While foreign institutional ownership significantly increases cross-border probability across all model specifications, domestic institutional is entirely insignificant. All in all, the first hypothesis seems to be accepted.

Distinguishing between institutional investors based on investment horizon yields interesting results. Starting with the regression results from section 4.1, investment horizon variables seem to have significant interaction effects with foreign institutional ownership of acquirers. This was also identified by Ferreira, Massa and Matos (2010 for target firms. In section 4.2, investment horizon is the main variable of interest, and there is some evidence in the corresponding results for the second hypothesis. Short-term institutional ownership positively and significantly affects BHARs, at least for a 12-month holding period. When combining the findings from all columns, one might conclude a reduction of positive effects from short-term institutional ownership as holding period increases. This implies a dissipation of their information advantage and deal facilitation capabilities in the long-term. However, as shown by the robustness checks in section 5, the measured effect for target firm short-term ownership

was insignificant. Thereby, these findings should be interpreted with caution. Even if this were the case, though, the original findings from section 4.2 would still be in correspondence with Yan and Zhang (2009). And the narrative of information advantages for short-term institutional is strengthened either way.

Finally, this paper looks at potential value effects added by foreign institutional investors to cross-border deals. As concluded by univariate tests, there seems to be a difference in the long-run performances of cross-border and domestic deals. The median deal BHAR was indicative of higher long-run stock returns for cross-border deals compared to domestic deals. However, the regression model from section 4.2 seems to indicate the contrary. Cross-border deals were less profitable for shorter holding period BHARs compared to domestic deals. This effect seemed to dissipate as BHAR holding period increases though, thereby possibly reconciling the results for univariate tests with the regression results. The interaction effects from table 4.3 provide preliminary results relating to the third hypothesis. Rejection of the hypothesis is already suggested by these results. 12-month holding period BHARs for cross-border deals were negatively influenced by foreign institutional ownership. Therefore, the short-term price increases found for cross-border deals with higher levels of foreign institutional ownership, as concluded by Ferreira, Massa and Matos (2010), are likely uncorrelated to the long-run excess returns for acquirer firms.

The third hypothesis of this paper was also analyzed with its own regression model in section 4.3. It appears there is strong evidence against said hypothesis, due to a consistent lack of significant coefficients for foreign institutional ownership. Most interestingly, foreign institutional ownership somehow did increase 12-, 24- and 36-month holding period BHARs for all deals, as shown in section 4.2. This finding was also consistently observed in the robustness checks. Foreign institutions therefore likely increase long-run performance of M&A deals in general but are unable to do so for cross-border deals. This finding could be explained by the role of foreign institutional investors as unbiased outsiders for firms involved in domestic deals. As external monitors of domestic deals, they could aid in the reduction of managerial entrenchment and lowered internal performance expectations, and promote long-term investments (Gillan and Starks, 2003; Ferreira and Matos, 2008). Such a role would not necessarily be implied for cross-border deals, where their local biases might become involved. This rationale would also be reconcilable with the underlying idea of information advantages for the first hypothesis. Foreign institutions could be effective in reducing information asymmetry and transaction costs in cross-border deals, and even increase short-term CARs. But long-term BHARs might be negatively affected by local biases.

7. Recommendations

As was alluded to in the introduction, the answer to the research question of this paper could have several implications. Take, for instance, the increased probability of cross-border M&A deals found to be associated with foreign institutional investors. This might be especially interesting for firms looking to expand outside of their domestic market. After all, if these firms were to attract foreign investors, those investors could bring about reduced information asymmetry and transaction costs for acquisitions abroad. For investors as well, the findings of this paper could play into diversification concerns. Those investors who would prefer to limit/ increase their potential exposure to markets abroad, could focus primarily on reducing/ increasing their held shares of stocks with high foreign institutional ownership levels. This would control the chances of changing exposure to foreign markets.

The findings from section 4.2, relating to long-run excess returns for M&A deals, are much more applicable in practice, though. First, average BHARs are negative across all holding periods. Buy-and-hold investing strategies focused on purchasing acquirer firms after the completion of acquisitions are therefore likely ineffective. The strategy could already be outperformed by simply investing in the S&P500. Furthermore, the evidence this paper finds for information advantages of short-term investors, are certainly useful in adding to the literature on trading frequency. High-turnover institutional investors don't trade just because their hands are burning. Rather, they seem to have an informational edge in the market which they wish to fully take advantage of. This paper shows this by indicating increased BHARs for short-term institutional investors.

These higher BHARs could be due to the mechanisms outlaid by Yan and Zhang (2009). Or alternatively, short-term investors' ability to reduce transaction costs for firms involved in M&As. The implications relating to information advantages, though, remain the same. Lastly, the role of foreign institutions as effective external monitors of domestic deals identified by this paper, might be useful for investors and policymakers alike. Countries looking to minimize some of the negative effects associated with domestic M&As, might set required levels of foreign institutional ownership for acquirer firms. And investors looking to exploit value created by M&As, should invest predominantly in acquirer firms of domestic targets, with a large presence of foreign institutional investors.

In terms of future research, this paper has encountered and raised some questions yet to be answered. First, distinguishing between active and passive institutional investors, alongside long- and short-term investors, could certainly lead to interesting results. If this had been feasible for the data used by this paper, it certainly would have been addressed. Active institutional investors are said to have more resources to at their disposal to monitor their holdings (Ye, 2012). Therefore, they might be able to

influence firm governance decisions regarding M&A deals. They could advocate for their desired deals more effectively, possibly affecting cross-border deals and deal performance.

More interestingly, though, there are potential research questions associated with the findings of this paper. One such finding is the dissipation of short-term ownership effects on BHARs as holding period increased. Future research could potentially try to replicate these finding on a greater timeframe with time-series data. This paper only looked at 12-, 24- and 36 months holding periods in a cross-sectional dataset, after all. When performing said analysis, the M&A component should be dropped, to avoid potential biases in the results. This would allow for a true measure of high-turnover institutional investor performance spanning multiple timeframes. It could also be compared to benchmark returns, as is done by the BHAR method. BHARs wouldn't apply to this research setting though, as they inherently imply the analysis of M&A deals. Instead, one could control for Fama and French factors, or any other method deemed suitable. The results of this research could have interesting implications, potentially providing more insight into the nature of information advantages enjoyed by high-turnover institutions.

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