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Entry mode choice: Drivers of partial vs full acquisitions in international M&A

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Abstract

The main goal of this thesis is to assess and identify the main drivers of entry mode choice in international M&A. Three main direct factors (Cultural distance; acquirer R&D intensity and industry relatedness) and one indirect (Previous Acquisition Experience as a moderator of the effect of cultural distance in full acquisition probability) were derived. By using a sample of 496 US-based deals from 1995 to 2018, findings suggest that cultural distance between the acquirer and target firms and R&D intensity of the acquirer are relevant to the decision between opting for a full acquisition or a partial one. Nevertheless, it was not possible to achieve significance regarding the industry relatedness effect and the moderator effect of previous experience.

Key Words: M&A; Entry mode choice; Full Acquisition; Partial Acquisition; Cultural Distance; R&D intensity; Acquisition Experience.

I. Introduction

In the modern world, internationalization is seen as a critic component of firms' growth opportunities. Moreover, firms can achieve internationalization through different approaches, including exports, licensing and Foreign Direct Investments (henceforth FDIs) or Mergers and Acquisitions (hence M&A) (Barkema and Vermeulen, 1998). Regarding the latter, M&A is indeed a key part of companies' growth strategies. Undeniably, as market openness and competition increases, more and more attrition is put to the firms organic growth strategies, leading to an increased focus on non-organic growth methods. According to Financial Times, in the first nine months of 2018, a record has been set for global M&A activity, surpassing the

previous peak of pre-financial crisis, with deals summing up to almost $3.3 trillion, which represents a 39 per cent increase from 2017 (Financial Times, 2018. Source: Thomson Reuters).

One of the key aspects of an M&A deal is the entry mode choice. Studies regarding this subject have shown that entry modes, once established, are difficult to change or correct, suggesting long-term consequences for the firm (Pedersen, Petersen and Benito, 2002). In fact, companies have numerous means at their disposal to enter a new market. Enterprises can form joint ventures with local partners by splitting ownership of new entities with them (greenfield joint ventures) or taking over partial equity of existing firms from them (acquisition joint ventures) (Chen and Hennart, 2004). Firms also face a choice regarding how much stake of the target company should they buy, as they need to opt for a partial or full acquisition.

This thesis focus on the latter strategic decision, aiming to identify the key aspects that lead to the choice of a full versus a partial acquisition, taking as sample foreign acquisitions of United States (hence US) based companies in designated sectors. Therefore, I analyzed existing literature on M&A entry mode choice, with increased focus in Cultural Distance and Research and Development (henceforth R&D) topics, although not overlooking other key aspects proven before to be decisive in this decision-making process, such as previous experience and firm size. Moreover, my Research Question was formulated as if Cultural Distance of the home/target countries and R&D Intensity of the home firm influence the entry mode choice, with entry mode choice defined as a binomial variable with two states: Full Acquisition (over 50% stake) and Partial Acquisition (less than 50% stake). Research on same industry acquisitions and experience as a moderating effect of cultural distance was also conducted.

Although a research around the choice of Greenfield/Acquisitions and Acquisitions/Joint Ventures may also seem interesting, there was no such available data to it, which confined my research to purely full acquisition against partial acquisition.

The remainder of this thesis is structured as follows. Section II yields a literature review on the drivers of entry mode choice. In Section III a description of the model and methodology is made, emphasizing on sample specificities and variable construction. Afterwards, Section IV provides discussions and conclusions overview.

II. Literature Review

Regarding the subject of M&A, literature about the entry mode choice is vast, although somewhat contradictory. Moreover, besides de choice of a Greenfield investment or an acquisition over an existing company, firms must choose the amount of acquiring stake that maximizes their potential profits, based on their assets, capabilities and growth strategy. Although there are many theories that explain why a company opts for a greenfield joint-venture as opposed to a wholly owned greenfield investment, such as lower transaction costs (Hennart, 1988) or risk sharing (Harrigan, 1988) so that it can extract the benefits of having a local partner, these do not explain why firms in their process of internationalization still concur in partial acquisitions of existing companies.

Cultural Distance

One of the key topics regarding the entry mode choice is the cultural difference of the target and home countries, and its possibility to create major obstacles in order to achieve integration benefits (Stahl and Voigt, 2008). Differences in national cultures have been shown to result in different organizational and administrative practices and employee expectations (Kogut and Singh, 1988). As disparity between administrative and cultural practices, personal characteristics of the target and parent firms increases, so do post-acquisition costs increase (Jemison and Sitkin, 1986). Specifically, this occurs since executives find a more difficult environment to operate, as they are not comfortable and familiar with the approaches and

modus-operandi of the target firm, which will ultimately delay and create attrition to the transfer of management techniques and acquiring firm's values (Richman and Copen, 1972). This can easily be mitigated by acquiring firms by leaving management positions to the local existing managers of the acquired firm, although this iteration leads to a lower degree of control.

Literature on degree of control for international investments is vast, although it differs across analyzed markets, controlling for target and/or home markets, and how control is defined. Hennart and Larimo (1998), by performing a study on how national origin affects the entry mode choice of companies entering the US conclude that higher cultural distance leads to higher propensity to enter US through joint ventures, and subsequently, less control. Gatignon and Anderson (1988) find similar results for foreign investments of US firms, although they classified cultural distance according to clusters of countries and control was measured not only with the acquiring stake, but also with the effective number of partners adjudicated in the subsidiary board.

Although conflicting literature arises arguing that for higher levels of cultural difference, companies tend to impose higher control levels (Anand and Delios, 1997; Padmanabhan and Cho, 1996), these two studies were performed around companies based in Japan, as opposed to the studies mentioned before. Nevertheless, and in coherence with my sample of analysis, I derived the following hypothesis:

Hypothesis 1: As cultural difference increases, investing companies should be less likely to choose full over partial acquisitions. In other words, as cultural difference increases, the probability of a full acquisition to be undertaken should decrease.

R&D intensity of the acquiring firm

R&D is the creative work undertaken in order to increase the stock of knowledge and the use of this knowledge to devise new applications (OECD (2012), Main Science and Technology Indicators, OECD Publishing). In specific sectors, R&D spending and R&D intensity are critic determinants of performance (Franko, 1989; Kotabe, Srinivasan, and Aulakh, 2002), which can lead into an important competitive advantage over foreign companies (Hennart and Park, 1993).

Once more, literature regarding the analysis of R&D intensity effects on entry mode and control choice is vast. According to Hennart and Park (1993), R&D-intensive investors are more likely to undertake a greenfield investment over an acquisition, since it is then possible for the investing company to better shape a management and labor force into its own culture and values. Moreover, Greenfields are a less risk option to maintain a higher control of the subsidiary. Oppositely, acquisitions are more desirable when investors wish to incorporate complementary inputs and/or technology they currently do not possess. It can also happen that investors are not confident that they have the necessary skills to run a subsidiary. In that case, by undergoing an acquisition, investors are also acquiring local management that already has the knowledge to operate in the local market. Several other studies regarding R&D intensity influence in the Greenfield/Acquisition choice show the same results, such as Andersson et al (1992) for Swedish firms; Brouthers and Brouthers (2001), based on 3 European countries and US firms; Kogut and Singh (1988) for firms entering the US and Cho and Padmanabhan (1995) in the case of Japanese firms.

Using the same comparison as in the previous section, in which companies opt for a greenfield investment in order to retain more control, the following hypothesis was derived:

Hypothesis 2: R&D intensity of the investing company should influence positively the probability of a full acquisition.

Related industries

Adding to these, a key component of the entry mode decision making process is the similarity between buyer's and target's industries. In fact, transaction cost literature shows that acquiring firms prefer to conduct joint ventures over acquisitions when their target's industry is less connected to their own, as their valuation might be less accurate, leading to increased transaction costs (Balakrishnan and Koza, 1993). Furthermore, when the desired assets of the target are not merged with other undesired assets, buyers will be encouraged towards acquisitions, leading to lower transaction costs. Logically, this will occur more when buyers are targeting firms in their own industry, as relatedness of assets and operations eases the acquisition and valuation of the target firm (Hennart, 1988). Chen and Hennart (2004) also found empirical evidence regarding this topic, as Japanese investors entering related industries are more propense to choose full over partial acquisitions.

Hypothesis 3: If the target company is from a related industry of the acquiring one, the probability for a full acquisition should increase.

Experience

One of the major learning sources in organizations is experience (Penrose, 1959). Indeed, managers and workers possessing vast experience in a diverse set of environments present higher levels of productivity compared with workers without such experience (Walsh, 1995)

Research also suggests that entry mode choice is influenced by the experience a company has regarding to acquisitions, either at as broad multinational acquisition experience or as local acquisition experience in the targeting market (Shimizu, Hitt, Vaidyanath and Pisano, 2004). Moreover, Barkema and Vermeulen (1998) defend that multinational diversity boosts the propensity for a firm to opt for a greenfield investment over an acquisition, as multinational

exposure develops higher technological capabilities and lowers innovation risk (Kogut, 1985). This leads to increasing levels of R&D, which in turn boosts the acquiring firm confidence and capacity to properly run and manage a foreign subsidiary (seen in section "R&D intensity of the acquiring firm"), regardless of their intrinsic characteristics, such as cultural distance to the buyer side.

Specifically, as a firm tends to expand abroad and gain a vast set of capabilities, the risks of culture clash and inaccurate valuation of the target tend to diminish, since the company and its workers are better prepared/ possess the experience capabilities to mitigate these risks. Hence, I derived the following hypothesis:

Hypothesis 4: If the target has previous experience in international acquisitions, the effect of *Hypothesis 1* should be moderated. In other words, previous experience moderates the negative effect of cultural distance on propensity to fully acquire.

A visual representation of the overall model can be seen below in *figure 1*. Red arrows indicate a negative effect on the probability of full acquisition, as green arrows represent a positive effect on said probability.

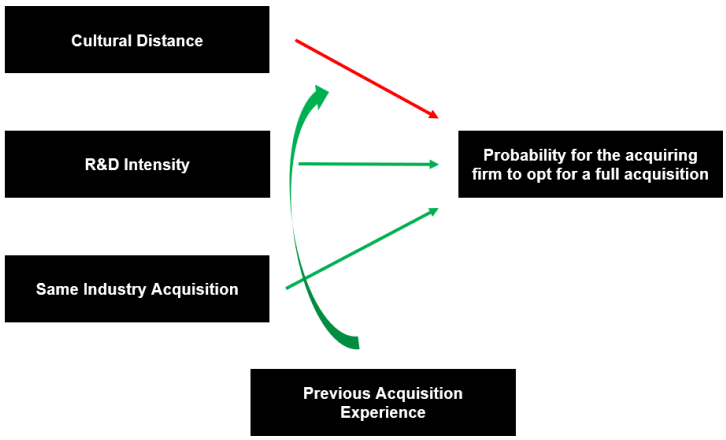

Figure 1: Visual representation of the model

III. Methodology

Sample

A sample of completed M&A deals was obtained via Thomson Reuters Eikon database. The sample is composed by completed deal entries of publicly listed companies based in the US, from the period of 1995 to November 2018. Deals with an acquiring stake smaller than 5%, reported deal size smaller than $5 Million or undisclosed stake/size were not considered. Moreover, for the year in which the transaction occurred, data on buyers' number of employees, R&D expense and Sales had to be disclosed. This information was collected through Bloomberg. Since this research only cares for the initial acquisition stake, as its focus is solely on entry mode choice, further and additional acquisitions of the same firm by the same acquiring company were removed. Afterwards, entries were grouped by industry groups according to Bloomberg. For these, industries with less than 30 deals for the time span were not considered. Also, Food&Beverage; Machinery; Oil&Gas and Auto Parts&Equipments industries were not considered, in order to, first maintain industries with a desirable variance in R&D intensity, as in the case of Pharmaceuticals, and then, strict the analysis to similar industries. Thus, research was performed in the following industry groups: Computers; Electronics; Internet; Pharmaceuticals; Software and Telecommunications. These restrictions were made in order to reduce noise in the sample and due to information availability. Final sample is composed of 497 entries, of which 438 are full acquisitions and 59 are partial acquisitions.

Due to easiness of readability, as different variables were put together through different procedures, the process of compiling information for the control variables will be explained in the section "Control Variables" below.

Dependent Variable

The decision between full vs partial acquisitions is captured by a dummy variable that equals one if the home firm proceeded to a full acquisition or zero if they have opted for a partial one. In order to come up with a cut-off value, literature was consulted. Albeit most researches use a 80% cutoff point (Gomes-Casseres, 1990; Hennart and Reddy, 1997), some researches adapt this cutoff point to better correspond to their main goals. Furthermore, when analyzing hostage effects theory, Chen and Hennart (2004) decided to increase the cutoff percentage to 95%, so that local sellers could not provide a sufficient hostage effect. Following this argument, and since control is being analyzed as solely the acquiring percentage, this research uses a cutoff of 50%, as a stake above 50% gives full control to the acquiring company. Nevertheless, during the testing phase, various cutoff points were considered (50%; 80%; 95%), and all of them presented robust results. The final binomial logistic model is as follows:

$$P(Y_i = 1) = 1 / [1 + \exp(-\alpha - X_i \beta)]$$

Where $P(Y_i = 1)$ estimates the probability of full acquisition for the ith observation, α is the intercept, X_i the vector of independent variables and β the vector of estimated parameters.

Equation 1: Logistic model regression

Independent variables

Cultural Distance

According to Kogut and Singh (1988) differences in culture among countries affect the awareness of managers and their capabilities to clearly identify the transaction costs, as their uncertainty regarding alternative entry modes increases. As in previous researches, this study uses the same approach of Kogut and Singh (1988), Hofstede's 6-dimension model of national culture. Based on the indices from said model, an index was formed based on the deviations of

each cultural aspect of the target country from US' own cultural scores. The model can be represented as follows:

$$CD_j = \sqrt{\sum (S_{i,j} - S_{i,US})^2}$$

Where CD: Cultural Distance; j: country; i: *i*th index of Hofstede model; S: Score

Equation 2: Cultural Distance model

Acquirer's R&D intensity

The R&D intensity of the acquirer was computed as the ratio between the reported R&D expenditure for the year in which the deal occurred and the reported Sales revenue for said year. These values were obtained through a Bloomberg terminal.

$$R\&Dintensity = \frac{R\&D\ expense}{Sales}$$

Equation 3: R&D intensity

Similar industry acquisition

Acquiring and acquired companies were grouped by industry following the criteria of Bloomberg's "Industry Group". Data was extracted via Bloomberg platform. This was made into a binomial variable that can take the value of "1" if the acquisition was made within the same industry group, or "0" otherwise.

Previous Acquisition Experience

Acquisition Experience was measured as the number of previous acquisitions a firm had made before the concurrent deal, in that country, for a timespan of 5 years. Data on firms' acquisitions was collected and grouped, for each acquiring firm, by target country, target subregion, target region and simple international acquisition experience. Previous acquisition experience in

target's country was selected as the independent variable since cultural distance is also defined for the same geographical measure. Moreover, after analysis on each criterion, country acquisition experience was the one with the best fitness to the model.

Control variables

So that non-desired effects were not captured by these variables, a set of control variables that have been proved in literature to influence control decisions were added to the model.

Acquiring firm's size influence on entry mode choice has been shown to be significant in various researches, with the argument that larger firms prefer and are more capable of choosing for full control (Gatignon and Anderson, 1998; Agarwal and Ramaswami, 1992; Brouthers and Brouthers, 2001). Following Gatignon and Anderson's (1998) approach, this thesis used the total number of employees of the acquiring firm as the measure for the size of the firm. Data was collected through the Bloomberg platform.

Regarding international acquisition experience, literature mostly believes that firms with greater experience prefer full control entry modes, as it has been argued that experience in international entry reduces the risk and cost of entry (Erramilli, 1991; Agarwal and Ramaswami, 1992). Firms achieve these reductions in risk and cost by developing systems for dealing with new market entries. This effect was measured as the number of previous acquisitions in the target's country in the five-year time span before the deal occurred.

At country level, three more control variables were added. First, bilateral trade between the acquiring and target's countries was used as a proxy for the openness and mutual experience of both economies, as acquiring companies perceive less risks and are more confident to invest in markets for which they are more exposed. The variable was composed as the sum of exports and imports. Data was extracted from the US Census Bureau website, for the relevant years and

countries. Secondly, geographical distance was also included in the model. Distance was calculated with the help of the latitude and longitude coordinates of each countries capitals, compared to the US'. Thirdly, GDP per capita of the target country was added to the model, with data being acquired from the World Bank – World Development Indicators.

Lastly, dummy variables were included to prevent for industry and time effects. The industry dummy variables were created according to the Bloomberg industry group criteria. Moreover, Telecommunications industry was used as the omitted dummy. Regarding time dummy variables, there were several years in the final sample that presented only full acquisition deals (2001; 2011-2013; 2016-2018).

Moreover, since the dependent variable is a binomial variable, the regressions will be performed under a logistic model. It is then important to clarify the predicted coefficients interpretations. Under the model designed in *Equation 1*, the coefficients don't represent the probability increase of opting for a full acquisition. In order to reach to said probability, it is needed to first derive the odds for a full acquisition, for each independent variable. This can be done by taking the exponential of the coefficient.

$$Odds = e^{coefficient}$$

Equation 4: From coefficients to Odds

Afterwards, *Equation 5* can be utilized to derive the probabilities for each variable.

$$Probability = \frac{Odds}{1 + Odds}$$

Equation 5: From Odds to Probabilities

Results

Results can be seen in Table 1 below. Descriptive statistics are shown in Table 2. Each Hypothesis was tested in a different model (Models 1 through 4 with Model 5 as the aggregate model) one at a time.

In Hypothesis 1 it is predicted that cultural distance has an effect, with said effect having a negative impact on the probability of a firm opting for a full acquisition. As seen in Model 1, Cultural Distance has a negative statistically significant coefficient (p-value < 0,01). This coefficient means that for each unit increase in cultural difference, the odds of opting for a full acquisition decrease in exp(-0,0182)=0,98 times, (2% decrease in the odds). Odds can then be transformed into probabilities by simply using *Equation 5*. Conclusions are in line with previous studies (Kogut and Singh, 1988; Hennart and Larimo, 1998; Brouthers and Brouthers, 2001), with results supporting the first hypothesis.

Hypothesis 2 anticipates a positive effect of acquirer's R&D intensity level on the probability of choosing to fully acquire. Analyzing said hypothesis in Model 2, R&D intensity is shown to have a positive effect. Moreover, this effect is also statistically significant (p-value < 0,05). This coefficient can be read as the additional odds increase (exp(2,6996) =14,87 times) of opting for a full acquisition for each unit increase of R&D intensity level. This conclusion seems to be coherent with previous research (Kogut and Singh, 1988; Andersson et al, 1992; Brouthers and Brouthers, 2001). Therefore, there exists statistical evidence to support Hypothesis 2.

Hypothesis 3 was tested in Model 3. It predicts that if the target and the acquirer are from the same industry, all other factors constant, a full acquisition is more probable to occur. Although the variable presents a positive coefficient, as expected, it is not statistically significant at a 95% confidence level (p-value = 0,0878). Hence, there is no statistical evidence to support Hypothesis 3.

Hypothesis 4 predicted a moderating effect of experience on the negative effect that cultural distance has on the probability of a firm performing a full acquisition. It can be seen in Model 4 that, although the coefficient for the interaction between cultural distance and past acquisition experience is positive, and thus moderator of the negative effect of cultural distance, it is not statistically significant (p-value = 0,3164).

Table 1: Drivers of partial vs full acquisition

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
C	**3,4974**	**1,7188**	**1,8440**	**3,4816**	**1,6099**
	0,0044	*0,1164*	*0,0873*	*0,0041*	*0,0093*
Cultural Distance	**-0,0182**			**-0,0195**	**-0,0105**
	0,0084			*0,0059*	*0,0043*
R&D Intensity		**2,6996**			**1,6367**
		0,0411			*0,0200*
Same Industry			***0,6681***		***0,2858***
			0,0878		*0,1399*
Acquisition Experience	**1,2825**	**1,3879**	**1,3741**	**-0,6275**	**-0,1462**
	0,2339	*0,1479*	*0,1533*	*0,6858*	*0,8453*
Acquisition Experience * Cultural Distance				**0,0375**	**0,0143**
				0,3164	*0,4123*
Acquirer Size	**9,63E-06**	**-8,45E-06**	**-8,29E-06**	**-1,00E-05**	**-4,74E-06**
	0,0026	*0,0059*	*0,0067*	*0,0033*	*0,0028*
GDP per Capita	**2,03E-05**	**3,37E-05**	**3,62E-05**	**2,17E-05**	**1,21E-05**
	0,0699	*0,0026*	*0,0007*	*0,0577*	*0,0393*
Bilateral Trade	**7,81E-07**	**9,52E-07**	**9,41E-07**	**6,97E-07**	**3,18E-07**
	0,6674	*0,582*	*0,5801*	*0,693*	*0,7054*
Distance	**-4,00E-05**	**-4,11E-05**	**-4,14E-05**	**-3,40E-05**	**-1,44E-06**
	0,5281	*0,4426*	*0,4352*	*0,5942*	*0,9653*
Industry dummy	----------	----------	----------	----------	----------
	-	-	-	-	-
Time dummy	----------	----------	----------	----------	----------
	-	-	-	-	-
# observations	496	496	496	496	496
McFadden R-squared	0,25980	0,25102	0,24675	0,26321	0,28437

Estimated coefficients are in bold. P-values are presented below the coefficients, in italic.

Table 2: Descriptive statistics and Correlations of Independent Variables

Variable	Mean	S.D.	Cultural distance	R&D intensity	Same industry	Acquisition experience	Acquirer size	Bilateral trade	GDP per capita	Distance
Cultural distance	50,747	28,5182	**1**							
R&D intensity	0,2823	2,0621	0,02307443	**1**						
Same industry	0,4052	0,4914	-0,0387066	-0,0426247	**1**					
Acquisition experience	0,09879	0,3368	-0,0834256	-0,0239774	-0,0836846	**1**				
Acquirer size	24325,7	52433,78	0,11906706	-0,0422315	-0,10956836	0,05890089	**1**			
Bilateral trade	119714,7	154240,3	-0,304851	-0,0255683	0,04347817	0,00611869	-0,0605808	**1**		
GDP per capita	37802,64	15443,51	-0,4308628	0,03087694	0,02345442	-0,0292514	-0,1899016	0,10864848	**1**	
Distance	7128,329	3883,393	0,26055386	-0,0039727	-0,041217	-0,0216785	0,09257638	-0,6248335	-0,2670192	**1**

IV. Discussion and Conclusions

This study attempted to assess the main drivers that lead companies to choose for full against partial acquisitions in international M&A deals. Possible explanatory effects were derived, after an extent literature review. Across the existing literature, three main effects seemed to stand out. Firstly, the desire for less control entry modes as cultural differences increase. Secondly, that companies with higher levels of R&D intensity tend to feel more confident regarding to the management of the subsidiary, translating in the desire for more control. Thirdly, when acquiring in their own industry, firms opt for greater control stakes, as they already have the business "know-how".

The dependent variable for measuring the entry mode choice was chosen as a binary variable between partial and full acquisition, with the cutoff being 95% acquired stake. Moreover, and due to the nature of the dependent variable, the analysis was performed under various logistic models, investigating the effects of culture, R&D intensity, industry relatedness and previous acquisition experience on the choice to fully acquire. These interactions were investigating for a set of almost 500 US based firms' international deals.

Of these, the effects of cultural distance and R&D intensity proved to be statistically significant, corroborating Hypothesis 1 and 2 of this research, as opposed to the effects of industry relatedness and previous acquisition experience, for which there was a lack of statistical significance. Therefore, hypothesis 3 and 4 were refuted. Regarding industry relatedness, it can be that, as companies nowadays tend to diversify more, it gets more difficult to properly address and state that company X should be put under the label of said industry. Possible further research could be done by using a more complex index to better compare companies under the same industries.

Despite some of the positive results of this study, there are several limitations that must be considered, although these limitations also provide possibilities of further research. Firstly, this research only considers the decision of partial vs full acquisition, disregarding other entry modes such as greenfield investments and/or joint-ventures. This is because there was no free available data on greenfield investments or joint-ventures. Secondly, there is a strong bias in the sample towards full acquisitions. When collecting data, trying to end up with a homogenous sample was one of the main aspects considered. Nevertheless, when adding deals from other industries (more unrelated to the ones chosen and with a smaller number of deals) the overall percentage wouldn't change significantly. Thirdly, it would be interesting, giving that a proper sample size exists, to compare the intensities in R&D of the buyer and acquired firms. As the sample was already controlled for publicly listed firms from the buyer side, adding the same condition to the target side would drastically reduce its numbers. Moreover, for some of the older acquisitions, lack of available information would produce the same effect.

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