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**THE IMPACT OF BREXIT ANNOUNCEMENT ON
INWARD AND OUTWARD CROSS-BORDER
ACQUISITIONS IN THE UK**

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Warm regards

Loc Thai Vinh Nguyen

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Abstract

The dynamics of merger and acquisition activities have been developing in last decades, especially when it comes to transactions across borders in European countries. Recently, the announcement of the departure from the European Union of the United Kingdom where most M&A activities take place creates such an economic chaos to such line of business. I analyse the sample of 29,184 mergers between 2010 and 2018, including domestic deals and find that Brexit negatively affects cross-border M&A activities in the UK. In particular, Brexit reduces significantly the willingness of UK firms in seeking for a foreign target while it shows insignificant impact on the likelihood of UK firms being targeted in the international context. The suggested determinants for cross-border M&As which are the fluctuation of foreign exchange rates, market-to-book ratios, firm size and experience exhibit different features from each side of the deal. When UK firms are acquirers, together with Brexit, market-to-book ratios, M&A experience, firm size and appreciation of GBP are good candidates in predicting the investment behaviour. On the other hand, when UK firms are targets, exchange rate effect and return on assets are main influencers because of the negative and worsening impact of Brexit on such variables.

Keywords: Brexit, the United Kingdom (UK), cross-border Mergers and Acquisitions (M&As), exchange rate effect, firm's characteristics.

1/ Introduction

Due to the rapid progress of globalisation, especially the establishments of Unions across countries such as European Unions, cross-border mergers and acquisitions (M&As) have become a phenomenon as a means for exploiting potential opportunities outside of home country. Historical data shows the cyclicity of M&As activities which interestingly are reactions of businesses to global integration across the world. In late 1800s, the first wave, also known as horizontal integration, was initiated by an expansion of manufacturing sector. After the hit on market, there was an arising wave, also known as vertical wave, going on from 1919 to 1929 with the goal of enhancing the efficiency of the businesses in banking and public utilities sectors rather and focusing on business scale. The market was shifting towards oil era from 1965 to 1969, when the third M&As wave was recognised before it welcomed the new established institutional investors, private equity firms, coming around in the M&As competitions. Last but not least, the mega deal period, taking place in the last decade of twentieth century, have initiated a foundation for international orientation. In the world investment report (UNCTAD, 2000), it is globally accounted that cross-border M&As in the late twentieth century made up 26% of the value of acquisitions around the world. In addition, this borderless business activities had grown steadily up to 2% of global GDP in 2000 after only two decades. Undoubtedly, the footprint of cross-border M&As transactions have laid significant impact in all over the world that need to be investigated thoroughly. Therefore, this research will focus chiefly on international mergers and acquisitions that particularly took place within the United Kingdom (UK) territory.

To distinguish the outcomes of this paper from pervious study on M&A investment behaviours, I place the effect of the most well-known event recently in Europe which is Brexit¹ occurring in 23rd June, 2016. As being a heart of European economy where most business activities deploy, the UK undoubtedly have a significant impact on foreign trades in Europe as well as in the global scale generally. Thus, the departure of the UK from the European Union (EU) has raised many concerns for investors and companies in the sense that if there would be an newly negotiated trading terms coming in and would they still be able to receive appealing benefits when conducting businesses with an EU constituent. From this motive, I concentrate on the effect of Brexit on the cross-border M&A activities involving UK firms to examine whether

¹ *The withdrawal of the UK from the EU. The announcement is realised on 23rd June, 2016 as the result of a referendum in which more than a half of votes support leaving the EU.*

Brexit is, in fact, an influencer in M&A investment behaviours. My finding is that the departure of the UK from EU has a significant negative impact on international M&A trades. With the occurrence of Brexit, UK investors² are less active in seeking for M&A opportunities outside of the UK. Given the negative impact of Brexit on the exchange rates, I argue foreign companies appear more expensive and thus, less attractive to domestic investors. However, this influence only reduces the magnitude rather than the significant level of this variable on cross-border investment behaviours of UK investors. Apart from this macroeconomic factor, firm's characteristics are also included in this equation to examine the bilateral impacts with Brexit on this probability. The results are surprisingly contrary to my argumentation. In other words, Brexit does not undermine but rather enhances the effect of such variables, suggesting that valuation, firm size and M&A experience play vital roles in probability of bidding for a foreign target. On the other side of an acquisition, Brexit seems not significantly influential to the probability of UK firms being targeted by international bidders. This suggests that the cloudiness of future negotiation, which results in the uncertainty of the economy, holds back the influx of cash flow into British market. The interesting comparison between Brexit deals during the negotiation period and after it is implemented is left for future study once the UK "actually exit" the EU. At this stage, my study concentrates on the market reaction as well as observable financial figures prior to and after the announcement date of Brexit. With the same factors, the outcomes are consistent with my expectation that the leaving of the UK destructively impacts the explanatory powers of such determinants in cross-border M&As from the sell side. This is well captured by the negative and statistically significant coefficient of return on assets (ROA) variable. I argue that it might be the result of underperformance of domestic firms caused by Brexit effect that makes them a less appealing target. While this literature provides an additional understanding of international M&As, it does not deep dive into a number of other elements such as geography, cultures or other country-specifics. Additionally, public UK firms do not represent of global M&As in general, since there are many unable-to-observe transactions with the involvement of private firms whose data is inaccessible and thus, are excluded from the analysis.

Next, in **Section 2**, theoretical background is provided to support my motive and the choices of variables. Also in this section, hypotheses are also presented. After that, **Section 3** contains the

² *In this paper, managers, who are considered as strategic buyers and investors, who benefit from buying and selling a target firm back to the market are used interchangeably since I do not distinguish types of buyers from each other in M&A context.*

information such as how the data is collected and what methodology is applied for this paper. **Section 4** demonstrates the findings of the regression analysis, followed by robustness testing from **Section 5**. Finally, **Section 6** sums up the main ideas and results of this study.

2/ Theoretical background

This chapter provides an overview of cross-border investments and M&A transactions, based on previous research on related topics to build up insights. I divide this section into three main subsections, namely: Political event study (**Section 2.1**), Cross-border M&As (**Section 2.2**) and Hypothesis development (**Section 2.3**). The first subsection is meant to explain the question: Why studying Brexit is critically important in nowadays M&A business. The second one emphasises strictly on M&A activities in which all possible factors that are documented from previous studies are recalled to establish a starting point for formalising the topic as well as picking key elements for regression models. Lastly, the final section contains the summary of key points that directly motivate me to come up with research questions for this study on cross-border M&A in the UK. At this point, hypotheses also are provided.

2.1/ Political event study

Considering Brexit is a political event, I reference a study conducted by Douglas Nigh (1986) on the particular field about the correspondence of politics and foreign direct investment (FDI) towards manufacturing industries in the United States. His results suggested that the political events affects strongly management decision in cross-border investment, especially when there is a disruption of the cooperation among internals (domestic) and externals (international). Huyn and Kim (2010) in the investigation on role of institutions towards cross-border M&As proposed that the stability of an institution (country), reflected in regulation and policy, is dramatically influential to the inward M&A flow into the host nation. That to say, the instability of future negotiation for Brexit deals contains hidden dangers for businesses that might pose an obstacle, ceasing the cash flow into the UK. Indeed, there is a lot of evidence indicating the significance of politics on FDI, such as Aharoni (1966) in which political changes disrupt the global market integration, or Bass et al. (1977) in which stability of governments in host countries play a vital role in cost of decision making of management. Not only Ahroni (1996) documented the market reactions to political events, Kobrin et al. (1981) and La Palombara and Blank (1977) found that investors are very sensitive to the regulatory changes as they would badly influence their profits and long-term goals of companies. In particular, Wan and Wong (2009) with a case study on the impact of political barriers (as a result from the heightened scrutiny from US government) on acquiring a US oil company documented a significant drop in the stock prices of domestic firms and a reduction in takeover premium that eventually

prevents foreigners from attempting to acquire a US oil and gas company. They also concluded that the political opposition had clearly discouraged cross-border M&A in the area where the barrier is imposed. The effect is even more pronounced if there are conflicts of interest among acquirers' countries and host countries in sense that they reduces the cooperativity and creates misalignments of interest. These assessments may be prone to biased, unsophisticated and generally pointed rather than based on concrete evidence and investment-specific aspects. The line of argumentation related to economic discontinuity can be regarded Brexit event. As the UK is about to leave the EU, it is foreseeable that numerous economic barriers as well as trading terms would be re-negotiated and re-established to cope with the changes. Hence, there is a possibility that these deals would end up unfavourably for foreign investors that is terribly harmful for international businesses with UK, thus, trigger a worse-than-actual perception in investors and potentially misguide capital flows. At this point, I expect a result that cross-border M&As would occur less intensively in the UK, especially from sell side (Targets).

On the other hand, from econometric perspective, there is no conclusive evidence to support the relationship of FDI with politics, according to Bennett and Green (1972) or Kobrin (1976) whereby business risk raising from political turbulence is immaterial. FDI are widely categorized, including Greenfield FDI which requires a huge initial investments to penetrate a new geographical market, hence, exhibits high risks from entry barrier, or mergers and acquisitions which simply allows foreign investors to enter the new market through existing firms in the host nation. In spite of the fact that regulators prefer greenfield FDI (Blomstrom and Kokko, 2003) and issues favourable condition to promote this type of investment, cross-border M&As shows its attractiveness over greenfield investment, especially in developed countries (Ashraf et al., 2016 and Raff et al., 2006).

2.2/ Cross-border M&As in the UK

2.2.1/ An entry mode for businesses

In 1997, Andersen conducted his study on the means for market penetration in which M&As is one of multiple options that investors can think of. The choice of entry mode, however, should be taken into consideration carefully as different market environments have distinctive features that international firms need to cope with. Literature carried out by Hennart and Reddy (1997) has shown that Japanese investors are more reluctant to choose M&As as a way to get into the US market because they want to mitigate the downside risk after the mergers, such as

integration. By joining the partnership with domestic firms, they are also able to reduce the cost of information and management. In addition, Brouthers in 2002 published a study indicating the cultural and institutional factors should be incorporated in transaction cost model when choosing an entry mode most fit for particular organization. To those companies that their means is predictable by extended transaction cost model, the performance in non-financial and financial terms is distinguishably high. Likewise, Nitsch et al. (1996) also proposed the necessity of income-producing stream in investment firms that affects their choices of entry. If firms lack of resources, the establishment of a new entity on foreign soil would lead to a failure, thus, it leaves two options for investors, namely joint ventures and M&As. The former exhibit more gains by reducing management cost and taking advantage of local knowledge to maximize the profit meanwhile the later creates values through potential synergy channel which may backfire if it is overestimated by optimistic managers. This downside of M&As is quite pronounced as the risk initiated in post-merger is less likely to be accounted for. Nevertheless, Hofstede et al. (1980) posed various obstacles for internationalizing a business, such as nature of host economy, regulation or cultural structures that managers need to take into consideration. Additionally, there is a lot of hidden risks captured by previous studies, including liability of foreignness (Zaheer, 1995) or double-layered acculturation (Barkeman et al., 1996). These involve cost of asymmetric information and uncertainty in international markets that strongly prevent acquiring firms from adapting and absorbing knowledge from local market and target firm (Zaheer, 1995; Kogut and Singh, 1988). Therefore, when employing cross-border M&A strategy, firms need to account for multiple factors, such as country, industry and firm specifics of both sides of the transaction. Regarding country and industry levels, market capital, workforces and nature resources should be factored, besides institutional variables (i.e regulations, politics and culture).

2.2.2/ Drivers of cross-border M&As

In 2000, Hitt and his research team emphasised the importance of M&A strategy in which reaching out to other geographical markets creates not only various opportunistic investments but also comes along with threats and challenges in sense of information transparency and availability. Although cross-border M&As become more and more popular nowadays, there is still a lot of arguments and doubts towards the success of firms on being internationally oriented. In the Economist posted in 1999, KPMG conducted and announced publicly a research on this area that the success rate for value creation was just falling around 17% in comparison

with 53% chance that firm's value is expectedly destroyed. This is consistent with the finding from Datta et al. (1995) that foreign investments are less likely to create value compared to domestic ones. In contrast, many studies are opposed to this view, such as Caves and Richard (1971), Markides and Ittner (1994), Morck et al. (1992) and Harris and Ravenscraft (1991). In the study of Markides and Ittner (1994) on the US international acquisitions, the findings are somewhat surprising when it indicates that across national M&As do create value for their shareholders, meanwhile there is a sharp contrast to domestic M&As.

Although there are lots of arguments going on among economist, the world still has witnessed the significant growth in M&A activities last decades As aforementioned, the influx of global capital poured into this business accounted for 2% of worldwide GDP. That to say, investigating this paradoxical change and key drivers of such is full of excitement for practitioners. The recent study implemented by Ahern, Daminelli and Fracassi in 2015 points out that the unique of culture, including, hierarchy, individualism, and trust plays a significant role in M&A activities and gains from synergies of combined firms, even when the financial stakes are largely identified. Also, by using "gravity model", Frankel and Romer (1999) found that firms in countries that are close to each other tend to trade more effectively, thus, impacts positively on income. Similarly, Rose (2000) also backed up this argument with the evidence of the cost acceleration when firms are located distantly. From these perspectives, distinctive cultures and geographic distance diminish the probability of firms engaging a merger with others across borders. Besides, Rossi and Volpin (2004) also emphasized the importance of governance that the number of cross-border M&A transactions remarkably decreases from the countries whose laws and accounting regulations are well established to countries with such poorly setup, meaning that if shareholders are under more protection, they tend to invest more in the host country. Following this statement, Bris and Cabolis (2008), and Bris, Brisley, and Cabolis (2008) provided financial indicators that M&As would yield higher premium for acquiring firms and better Tobin's Q for target's industry if buyers are well protected in their own play field.

On top of that, another driver needs to be mentioned when it comes to borderless M&A deals is valuation. Since the world is in no place close to a fully integration of global market, different factors embedded in the nature of individual market environments leads to a massive variance of firm valuation, hence, creates deviation from firms' value or arbitrage opportunities. This arbitrage incurring in international manner is considered a result of the misvaluation of stock

in parent's country that stimulates the capital flows to undervalued area (Baker et al., 2009). Eventually, this may motivate managers or investors, who come from highly misvalued industries or countries to seek for M&A opportunities. Indeed, Chari, Ouimet and Tesar (2009) documented superior stock returns of acquirers from developed market in acquisition of firms in emerging market after the announcement date, in comparison with targets coming from the same market as acquirers. From this finding, they proposed that there is a bounded rationality coming from targets that they can only rely on their bounded knowledge and information to best value their firms but clearly are unable to estimate the synergies stemming from combining firms at which acquirers are better. Therefore, the low offer price can be seen as self-undervaluation from targets that create a huge premium for experienced investors from developed market to snap up. Having market value deviating largely from its fundamental value are measured in a very famous behavioural literature conducted by Shleifer and Vishny (2003) in which stock-market-based inputs are taken into account to in addition to the relative valuation of acquirers and targets. As a result, they realised the disproportionation in stock-based deals among high valuation markets or industries compared to that in relatively undervalued environments. Also, they provide another possible explanation for the outstanding performance of acquirer's stock returns by pointing out a sign of bidders' stock prices, especially in stock-financing M&As, being manipulated through misreporting or insider selling. Moreover, when testing the long-run growth rates, they hypothesize that stock acquisition tend to be negative meanwhile cash acquisition is expected to be positive. This line of argumentation is supported by Rhodes-Kropf and Viswanathan (2004) in which they break down market-to-book ratio into short-term and long-term value in combination with time series error to capture the inter-correlation of firms within the same industries. Thanks to first two variables, they are able to measure how overpriced or underpriced a firm is in short and long run. The results are entirely in line with suggestions from Shleifer and Vishny (2003) that firms with high market-to-book ratio (overvalued firms) tend to acquire firms with relative lower market-to-book ratio (undervalued firms). They also suggest a rational behaviour that as managers are aware of their firms being overvalued, they attempt to actively seek for a firm that has higher growth rate but lower market-to-book ratio to secure the temporary misvaluation in the long run.

On the other hand, the difference in growth opportunity measure does not necessarily come the other side of the transaction, but could possibly happen in the same side with different context. Moeller and Schlingemann (2004) documented a feature in which there is a huge discrepancy in market-to-book ratios of acquirers who take part in an international M&A deal in comparison

with domestic acquirers. What interesting to see from their findings is the massive cash flow in such situations, meaning that acquirers prefer using cash as a form of financing the deals to stocks. One can argue that this is inconsistent with what Rhoades-Kropf and Viswanathan (2004) had suggested that the more overpriced an acquirer is, the more likely they would use equity in the transaction. However, there are still many factors that intervene management decision in the international context, such as foreign exchange rates. Relying on so-called misvaluation theory, Lin and Shen (2014), who studied on the impact of exchange rate movements on value-creating channel for shareholders in cross-border M&As, hypothesize that the appreciation of acquires' national currency incentivize managers to bid for another firms in countries whose currency is relatively weaker. Erel, Liao and Weisbach (2012) also state that cross-border M&As is an effective tool to exploit the arbitrage opportunity that results in the expected returns for acquirers. They applied method, which was used by Baker et al. (2009) that the market-to-book ratio is broken down into two components to examine separately the wealth effect and misvaluation effect of stock market. They found that the former constituent is more pronounced when take into account private entities. In the same line of thought, Baker and his research team (2009) claim that the depreciation of host currency is not necessarily a bad situation for the dynamics of M&As. Since the currency is losing its power, one unit commodity in international market produced by depreciated-currency firms becomes cheaper relatively to that of rivals that eventually gains more market share for domestic firms and enhance its market position in their play field. Thus, they may become an arising star to foreign investors to bid for. Nevertheless, there are many previous papers, such as Cushman (1985), Froot and Stein (1991), Blonigen (1997) and Giovanni (2003) model the degree of cash influx into the market whose currency is depreciated.

When deciding on bidding for a target, especially outside of their home country, managers also consider other financials of firms. On the study on key characteristics of targeted and acquiring banks, Beitel et al. (2013), Focarelli and Pozzolo (2001) take into account profit efficiency, such as return on assets, return on equities to define the success of M&As in banking sector. As a result, acquirers outperform targets in such financial indicators. Prior to that literature, Pilloff and Santomero (1998) hypothesized that participants in both domestic and cross-border M&As outperform non-participants in the profitability, especially in post-mergers when their performance is improved. Banerjee and Cooperman (2000) also back this hypothesis by evidencing the higher probability of success in takeovers when bidders appear more profitable than targets. Another aspect that might be also a determinant of cross-border M&As is firm size

since it has a high correlation transaction cost (Palepu,1986). He shows that there is a drop in probability of acquisition as well as number of potential bidders when size of targets increases and vice versa. In the other words, smaller value of total assets likely to accelerate the likelihood of firms being targeted. Also, there are many literatures have proved that size does matter in an acquisition since the small firms are capable of capturing value creation effectively by avoiding scale effects. Beitel et al. (2013) and Zollo and Leshchinskii (2000) also showcased that larger bidders perform poorly relative to smaller ones in M&As and the smaller targets are likely to be more successful in the deals.

The final matter in this puzzle that this paper aims to explain is level of experience. In 1997, DeYong had investigated in US banking sector and found that if firms have engaged in M&As before, they are likely to do it again, meaning that experience induces managers seeking for M&A opportunities. Bunch and DeLong (2004) also proposed that firms which have previous cross-border M&A experience become an ideal partner to conduct business with because they have learnt how to tackle law and regulation issues in a new environment. Similarly, Andersson and Svensson (1994) reasoned that firms with international experience improves the capability of handle risks, thus, tend to conduct investments across borders, such as market penetration. This strong correlation is consistent with findings from Harzing (2002).

2.3/ Hypothesis development

Through the courses of existing literatures, from a rising concern of political issues in M&A industry to multiple explanations of why M&A is a good mode of entry and what key elements drive this type of business in last decades, I am motivated to investigate the effect of the most-well-known event recently which is the departure of the UK from EU (Brexit). Therefore, the research questions of this paper are:

1/ How did Brexit influence cross-border M&As activities within UK market? And

2/ What are possible explanations for the shift in investment behaviour?

The first question is initiated based on the importance of political event on FDI generally (Douglass Nigh, 1986; Aharoni, 1966) since it poses a threat and potential discontinuity of economic flow in the related-party's country (Kobrin et al., 1981; La Palombara and Blank, 1977) by the uncertainty of future negotiation on trading deals. As a consequence, the influx of

cash flow is expected to flee away from the host countries due to a hidden danger once the event have taken place. From that perspective, I hypothesize on the case of Brexit as follow:

1/ In overall, Brexit is expected to discourage cross-border M&A activities which involve UK firm in either side of the transaction. Specifically, it reduces the likelihood of UK firms being targeted by foreigners as well as the probability of UK firms seeking for M&A opportunities across the borders.

The casualty leading to such prediction can be derived from existing literatures as discussed above, including Cushman (1985), Froot and Stein (1991); Blonigen (1997); Giovanni (2003); Erel, Liao and Weisbach (2012); and Lin and Shen (2014) in which they proposed a substantial influence of movement of the exchange rates on the market capital flow in and out of the host country. As the UK is going to leave the EU, their currency is predictably affected strongly by reaction of market to regulatory chaos, hence, it inspires me to come up with another hypothesis:

2/ "Exchange rate effect": Brexit mitigates the influence of exchange rate effect and demotivates UK firms in participating cross-border M&As.

Apart from macroeconomic factor as exchange rate, firm's characteristics also play a role model in determining whether firms tend to be acquirers or targets in a borderless M&A transaction. In this paper, I focus on analysing three main variables that are suggested by pervious empirical study on cross-border M&As which are mentioned in pervious sections. Firstly, market-to-book ratio which is considered as a powerful tool in explaining M&A investment behaviour is examined. I follow Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Moeller and Schlingemann (2004) and Erel, Liao and Weisbach (2012) that acquirers tend to be more overpriced relative to targets, especially in the short-term period so that they try to transplant their overvalued part to whom has more potential growth in the long run. Hence, market-to-book ratio is a good explanatory proxy for this study. On the other hand, by using profitability indicator or profit efficiency measure such as return on assets (ROA), Pilloff and Santomero (1998), Banerjee and Cooperman (2000), Focarelli and Pozzolo (2001) found a distinctive feature among related parties in cross-border M&As. Nevertheless, the investigation on which drives cross-border M&As from Bunch and Delong (2004) and Erel, Liao and Weisbach (2012) had yielded the same result that acquirers tend to obtain a better financial illustrators than targets. The third firm-specific measure that can be an useful predictor of the

likelihood of firms being a target or an acquirer is firm size. Zollo and Leshchinskii (2000) and Beitel et al. (2013) argued that the bigger a firm is, the higher chance they successfully acquire a target which is relatively smaller in size. Last but not least, experience does matter in an aboard takeover (DeYong,1997; Bunch and Delong, 2004). This idea was early introduced by Andersson and Svensson (1994) that firms improve significantly their learning curve through conducting businesses across countries and become more capable of solving complex issues embedded in global market. As a result, they are more open to international M&A opportunities. Harzing (2002) in his study for management decision of choosing entry modes also captured the strong relation between the degree of foreign experience and M&A activities. By referencing such literatures, I formalise the last hypothesis:

3/ “Role of firm’s characteristics”: firm’s characteristics such as return on assets (ROA), market-to-book ratios (MTB), size (total assets) and M&A experience are explanatory factors for cross-border M&As in the UK. However, with the interference of Brexit, such determinants become less powerful in predicting the probability of UK firms being acquirers or targets in international context. In this case, Brexit is expected to be a dominant determinant.

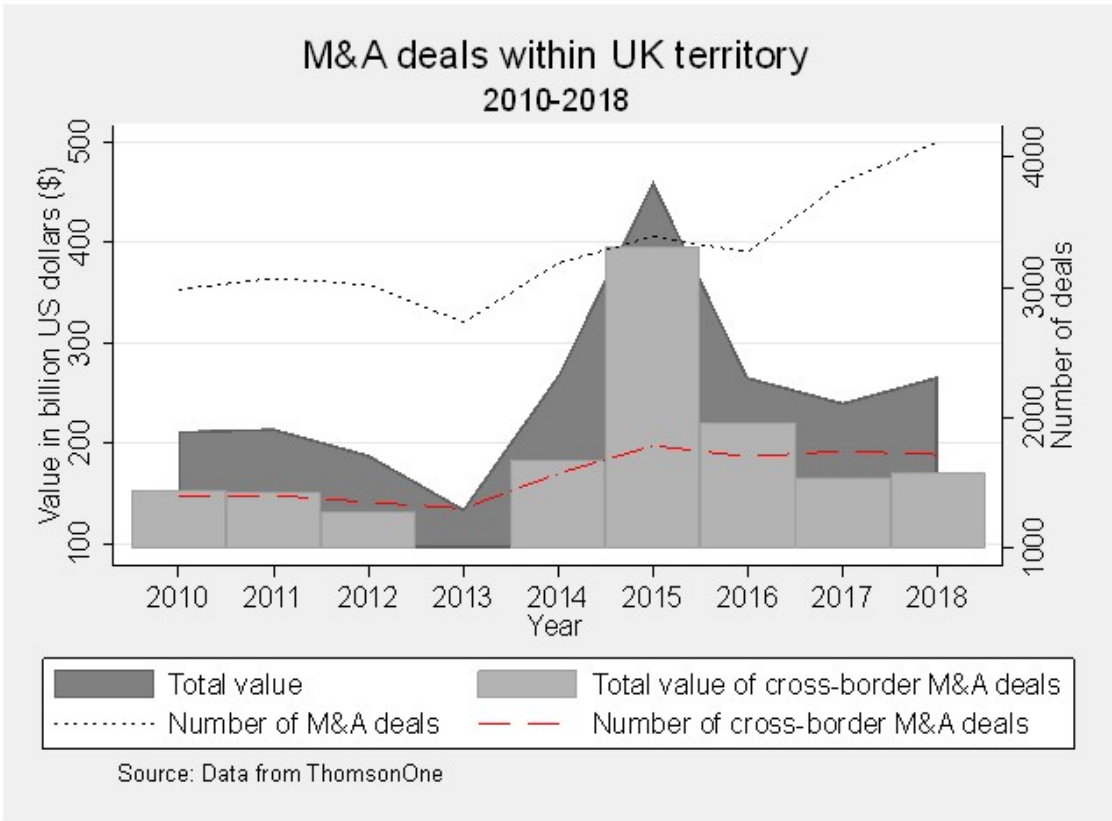
In summary, by assessing the rightness of the first hypothesis, I am simultaneously able to tackle the first question of this paper. The second and the third hypothesis should be suggested answers for the last question. In the following sections, I firstly describe how the data is collected and provide the methodology for this research (**Section 3**). **Section 4** and **5** contain the results of regression analyses and its robustness test respectively.

3/ Data and methodology

3.1/ Data

This research based on the list of all observable M&A transactions taken place in the United Kingdom that is collected from ThomsonOne database. Additionally, the announcement date of deals is obtained and only completed deals between 2010 and 2018 in accordance to the deal status announced in the database are examined. The number of M&As amounts up to 29,184 deals, including intra-national and international trades. In order to identify the economic magnitude of the sample, I exclude the omitted transactions whose values are not available and end up with the total amount of approximately 2.25 trillion US dollar or roughly 2.87 trillion GBP³. **Graph 1** illustrates the data on the number of M&A deals that had occurred in a nine-year period, starting from 2010.

Graph 1: Number of M&A transactions and its values in the UK from 2010 to 2018



³ I used the exchange rate GBP/USD as 1.2736 as of 31/12/2018, collected from Datastream

Generally, the graph contains the information such as number of mergers and acquisitions regardless geographical differences, total value, as well as those with cross-border constraint. It can be seen from the graph that the number of M&A deals in the UK had increased over the period of nine years, coming alongside with economic significance. The record for economic value is set in 2015 when more than 400 billion USD was poured into the M&A transactions and this mainly comes from cross-border trades even though they only made up approximately a half of the number of total deals. Interestingly, in 2016 when the Brexit event took place, the graph indicates the gradual growth of M&A deals domestically meanwhile cross-border activities go side-way in the following years showing the reluctant investment behaviour of UK and foreign investors. By this remarkable change, it is essentially important to implement an investigation towards the impact of this occasional event on acquisition activities.

Regarding the number of foreign countries who had M&A businesses with the UK in the last nearly decade, my data sample can be fairly considered as geographically diversified whereby the list contains up to 154 nations. **Table 8** in the **Appendix** again shows the large proportion of cross-border M&As in the UK in which US investors involved in 4,227 deals that stands for one-third of the sample. This is followed by German investors who only conducted 852 deals (6.27%) with the UK from 2010 to 2018. In addition, the other three in the top five proportions in total number of cross-border deals belong to France (781 deals, about 5.75%), Netherlands (539 deals, about 3.97%) and Canada (506 deals, about 3.73%). From this point, I collect data on foreign exchange rates in respect with UK currency (GBP). However, due to the unavailability of some exchange rate information in WM/Reuters via Datastream, I am only able provide such information of 104 countries in the analysis and use the natural logarithm framework to compute the 4-week returns as I reason that investors might depend on roughly one-month movement of exchange rate to make decisions. This variable can be found as `for_Acq` and `for_Tar` variables in **Table 1** which represent the returns of exchange rate of acquirer's and target's nation respectively.

On the other hand, the full sample of this paper contains every firm, regardless public status, that get involved in M&A transactions in the UK from 2010 to 2018. However, when it comes to detail analysis which requires firm-specific data, I only take into account firms whose public status is public because of two reasons. Firstly, listed firms provide a wide range of financial data that is available to collect as inputs for the analysis. Secondly, due to the fact that there are many other types of ownerships found in ThomsonOne, namely Private, Subsidiaries, Joint

Venture, Investors, Governments or Mutual Funds, it is difficult and extremely time-consuming or even impossible to identify their public status. Therefore, in such case, I exclude firms without indication of status as public out of the investigation sample.

In order to explain the effects of Brexit event on firm’s characteristics that leads to either discouragement or encouragement in cross-border M&A investment behaviour, I also gather some firm-specific data which is supposedly vulnerable to the news. The dataset includes market-to-book ratios return on assets (ROA) which represents one of key elements of acquirers in M&A transactions (Liu and Qiu, 2013). Nonetheless, the price-to-book ratio is suggested a powerful explanatory indicator in term of transferring value to shareholders in acquiring firms from target firms thanks to the arbitrage opportunity that acquirers tend to be more overvalued relative to targeted firms (Shleifer et al. 2013). The choice of using this financial illustrator is also in line with several previous literatures such as Lang et al. 1994, Erel et al. 2012. Furthermore, size of firms (Assets_T, Assets_A) which is measured by taking logarithmic form of total assets, is also taken into this analysis. This follows Palepu in 1986 that he had found the association of this measure with transaction costs in M&As that the bigger size of the potential bidders is, the more likely they attend a bidding contest for a firm.

Last but not least, I use ThomsonOne to collect the primary 4-digit Standard Industry Classification (SIC) of participants and incorporate them in the model with industry dummies variable (following the 48 Fama-French industries) to control fixed effect for industries.

In summary for this section, by using the aforementioned firm characteristics, the regression might enable us somehow to explain the M&A activities in sense that bidders may be attracted by financial figures of targets or because of being temporarily overvalued, they are motivated to seek for another firms that are relatively undervalued.

Table 1: *Descriptions of Variables of sample*

Acronym	Description	Source
Dependent variables		
CBAcq	Cross-border M&A transaction where UK firms are acquirers	ThomsonOne

CBTar	Cross-border M&A transaction where UK firms are targets	ThomsonOne
CB	Cross-border transaction corresponding to UK market	ThomsonOne
Control variables		
Brexit	Dummy variable has value of 1 when M&As occur after Brexit event (23 Jun 2016)	Based on announcement date of deals in ThomsonOne to create
Target	Dummy variable has value of 1 when UK firms are targeted and 0 otherwise	
Acquirer	Dummy variable has value of 1 when UK firms are acquirers and 0 otherwise	
Firms' characteristics		
MTB_Acq	Market-to-book ratio of acquiring firms. Calculated by formula: $\text{Log}(\text{Market capitalization} / (\text{Total assets} - \text{Total liabilities}))$, following F&F 1992	WM/Reuters from Datastream
MTB_Tar	Market-to-book ratio of targeted firms. Calculated by formula: $\text{Log}(\text{Market capitalization} / (\text{Total assets} - \text{Total liabilities}))$, following F&F 1992	WM/Reuters from Datastream
ROA_Acq	Return on assets of acquiring firms	WM/Reuters from Datastream
ROA_Tar	Return on assets of targeted firms	
Assets_Acq	Natural logarithm of total assets of acquirers	WM/Reuters from Datastream
Assets_Tar	Natural logarithm of total assets of targets	
Listed_Acq	Acquirers' public status (1 if public, 0 if not)	ThomsonOne
Listed_Tar	Targets' public status (1 if public, 0 if not)	ThomsonOne
Both_listed	Both acquirer and target are public	ThomsonOne

Measure of experience		
Count_Acq	Number of deals that an acquirer conducted	ThomsonOne
Count_Tar	Number of deals that a target conducted	ThomsonOne
Market characteristics		
for_Acq	4-month returns of exchange rates of acquirers' nation against GBP	WM/Reuters from Datastream
for_Tar	4-month returns of exchange rates of targets' nation against GBP	WM/Reuters from Datastream
deltaAT	foracq- fortar	
deltaTA	fortar - foracq	
ForexAT	The variable has a value of one if deltaAT is greater than one standard deviation above the sample average	
ForexTA	The variable has a value of one if deltaTA is greater than one standard deviation above the sample average	
ffi_Acq	Dummy variable reflecting the classification of 48 Fama French (1997) industries for acquirers.	ThomsonOne, Fama and French (1997) industry portfolio
ffi_Tar	Dummy variable reflecting the classification of 48 Fama French (1997) industries for targets.	ThomsonOne, Fama and French (1997) industry portfolio

3.2/ Methodology

3.2.1/ Dependent variables

This research focuses mainly on the effect of Brexit event on M&A behaviours towards foreign markets and vice versa, in order to answer the question that whether investors reacted positively or negatively to the news. The influx of cash flows in and out are represented by the number of cross-border M&A transactions throughout the period of nine years. If firms in UK become less appealing to investors after the announcement, should the merger activities conducted by foreigners be less likely to occur. Adversely, UK firms might attract international investors or tend to engage in more M&A transactions across the border after the historical event. From that

perspective, this research uses M&A data from ThomsonOne from 2010 to 2019 to explain the probability of UK firms being either acquirer or target before and after the event happens. These two dependent variables are denoted as CBAcq and CBTar respectively in the **Table 1**.

3.2.2/ Independent variables

Since the focus of interest is surrounding the Brexit event occurred on 26th June, 2016, the binary variable name Brexit is created and assigned to 1 if the M&A transactions happen after this announcement date and 0 if before. For the experience measure which is denoted as Count_Acq and Count_Tar, I assume that firms which implement more acquisitions during the investigation period are considered more experienced, thus more likely to expand their interest geographically. This idea is suggested by DeYoung (1997) who studied a sample of 348 M&A deals specifically in banking sector in the US from 1987 to 1988 that there is a positive correlation of acquirers' experience which is measured by investigating how frequently potential bidders engage in M&A transactions. This designation was applied in many other studies on key elements that lead to the success of M&A deals, including Zollo et al. (2000), Beitel et al. (2004).

To describe the nature of public status of a whole population, variables such as Listed_Acq, Listed_Tar, Both_listed which represent the public status are statistically described in the **Table 1** to indicate the feature of M&A participants in the UK.

Regarding the financial aspects, I use market-to-book ratio to examine the overvaluation/undervaluation of a firm, following Fama & Fench (1992). I expect it is main driver of cross-border M&A transaction, which is aligned with findings from study on determinants for cross-border transactions conducted by Erel and Liao in 2012. Before that, Moeller and Schlingemann (2004) had found a huge discrepancy in market-to-book ratio among firms engaging international business and those conducted domestically. Moreover, I take 3a natural logarithm of return on assets (ROA) to measure company performance of both targeted and acquiring firms with the expectation that companies have high relative profitable indicators tend to acquire the ones with lower indicators, following the Beitel et al., 2004. This profit efficiency was proposed by Pilloff and Santomero in 1998 that acquirers outperform the targets in this relative profitable terms. Later on, in 2000, Banerjee and Cooperman conducted the research on banking sectors in the United States found the significant correlation between this measure and the probability of successful M&A deals in banking sector. Hence, ROA is considered a

good proxy for M&A activities at this state. Even though this indicator can be prone to bias (Meeks et al. 1981), I reason that a firm may have an incentive to merge with another firm to hide bad performance away from public that to some extent demonstrates the M&A investment behaviour.

Lastly, I follow the previous literature on currency appreciation in the cross-border M&A done by Lin and Shen (2014) to investigate the appreciation/ depreciation effect of exchange rates on cross-border M&A transactions. Firstly, I collect the exchange rates of target's nation and acquirer's nation in respect with British pound (GBP) from Datastream database. Then the exchange rate returns are generally calculated by taking the nature logarithm of prices in 4-week horizon. After that, difference between the return on exchange rate of acquirers and targets are obtained (denoted as ΔTA and ΔAT) in order to compare with one standard deviation of this sample. The binary variable, which is named $ForexAT$ or $ForexTA$, has the value of 1 if the return is above the sample's standard deviation and 0 if otherwise. By following this way, I can determine if the deals are more likely to be executed if the national currency of acquiring firms is more appreciated relative to that of the targeted firms. The reason of taking into account the effect of exchange rate movement is that if targeted firms become relatively less expensive than acquirers' firm value due to the depreciation of their national currency, it is believed that bidders are prone to make use of their inflated currency by transferring the temporary effect of misvaluation to less misvalued entity (targets) to secure their market position in the long run (Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). Another possible explanation was proposed by Erel, Liao and Weisbach in 2012 is that the depreciation of domestic currency against foreign ones would enhance the competitive position in international market in sense that it enables depreciated-currency firms to be more aggressive in pricing and producing strategies, thus, gains a larger market share for targeted firms that they become a good candidate to acquire.

4/ Results and Findings

4.1/ Descriptive statistics

First and foremost, which can be clearly seen from **Table 2** is the significant drop in observations when it comes to target's characteristics due to the lack of data. This can be explained by interpreting the large positive skewness of this binary variable that only small amounts of targets are publicly traded in comparison with acquirers'. When both acquirers and targets are public firms (Both_listed), the distribution is even more skewed to the left. Therefore, one can argue that the outcomes of the analysis on each sides of M&A deals is somewhat not as representative as each other since acquirers' data are more collectable than targets'.

Table 2: Descriptive Statistics

Variables	Obs	Mean	Std.Dev.	Min	Max	Skew.
Assets_Acq	6980	13.261	2.503	1.386	21.666	-.027
Assets_Tar	642	12.02	2.697	3.951	21.12	.1
Both_listed	29184	.015	.123	0	1	7.912
CBAcq	29184	.24	.427	0	1	1.22
CBTar	29184	.226	.418	0	1	1.312
Count_Acq	29184	95.675	366.3	1	2323	4.279
Count_Tar	29184	1.06	.294	1	8	7.213
MTB_Acq	6687	.776	1.179	-4.605	13.428	1.147
MTB_Tar	981	.516	1.492	-4.605	10.248	.716
Listed_Acq	29184	.262	.44	0	1	1.084
Listed_Tar	29184	.042	.201	0	1	4.568
ROA_Acq	5487	1.722	.918	-4.605	8.326	-1.23
ROA_Tar	346	1.697	1.06	-2.996	4.204	-.999
for_Acq	27550	0	.011	-.117	.109	-1.027
for_Tar	27395	0	.016	-1.741	.709	-41.576
deltaAT	26739	0	.02	-.709	1.741	23.757
deltaTA	26739	0	.02	-1.741	.709	-23.757
Brexit	29184	.324	.468	0	1	.752
ForexAT	26739	.076	.265	0	1	3.201
ForexTA	26739	.08	.272	0	1	3.087
Target	29184	.76	.427	0	1	-1.22
Acquirer	29184	.774	.418	0	1	-1.312
ffi_Tar	28860	32.226	12.47	1	48	-.91
ffi_Acq	29004	36.542	12.445	1	48	-1.243

Besides, the experience variable (Count_Acq, Count_Tar), especially for acquiring firms, indicates the remarkable influence M&A knowhow that firms tend to conduct acquisitions more once they have adopted certain relevant practical knowledge. This is exhibited via a large mean

in combination of large standard deviation of 366.3 from Count_Acq's statistics. In addition, the heavy skewedness to the right also elaborates the asymmetric value distribution of this variable. Regarding measure of performance (ROA), two variables represent profitability of each side of M&A transactions illustrate only small differences in the upper sides (i.e max value, positive mean). However, the minimum value of acquirer is two times lower than that of targets suggests that acquirers might tend to acquire another firm to improve from their image from bad performance. Combing with other firm's characteristics, such as firm size (Assets_Acq, Assets_Tar) and market-to-book ratios (MTB_Tar, MTB_Acq), it seems that features of public targets are not so distinguishable from that of public acquirers. However, the valuation measure suggests that overvalued firms tend to acquire targets that are relatively less overvalued which is consistent with previous literatures such as Rhodes-Kropf and Viswanathan (2004), Shleifer and Vishny (2003) and Erel, Liao and Weisbach (2012). With regard to industry dummies variable (ffi_Acq, ffi_Tar), firms' industries are classified into 48 categories following Fama and French (1997) and the plotted distributions are shown in **Graph 2** and **3** in the **Appendix**. To describe the nature of population's industries, it can be observed from the graphs that there is a cluster of M&A activities in the UK in four main areas, namely Business Services, Personal Services, Trading and Almost Nothing which account for the largest proportions in the frequency distribution of the sample. In addition to this feature, M&As seem to spread its phenomenal to all 48 industries suggested by Fama and French (1997) but with lower degree of activities.

4.2/ Linear probability model (LPM)

4.2.1/ Cross-border M&As trend in the UK

In this subsection, the overview of how Brexit affects cross-border M&A transactions in the UK is described in presence of control variables Target and Acquirer which are assigned to 1 when UK are targets or acquirers respectively and 0 otherwise. In this regression, the universe of sample also includes domestic deals, rather than only accounts for cross-border deals in the following sections, in order to draw an overview of the impact of Brexit in this line of business in the UK. In addition, the linear probability model (LPM) is performed on the binary dependent variable CB which stands for probability of UK conducting M&As across countries. Dummy variables Brexit is representative of the occurrence of Brexit event. Besides, to measure the impact of Brexit on probability of UK firms to become targets or acquirers and their aggregate

impacts on international trades, dummy variables Target and Acquirer are plugged in the model as follows:

$$CB = \beta_0 + \beta_1 * Brexit + \beta_2 * Target + \beta_3 * Brexit * Target$$

$$CB = \beta_0 + \beta_1 * Brexit + \beta_2 * Acq + \beta_3 * Brexit * Acquirer$$

Whereby the results from regression of the first equation is presented in **Column 2** and the other's is in **Column 3**. All the variables (including dependent and independent variables) are defined in **Table 1**. In addition, the regressions on Target and Acquirer variables are controlled by Industry dummies, following the Fama and French (1997) industry classifications based on SIC codes.

Table 3: Cross-border M&As in the UK

Dependent Variable CB	(1)	(2)	(3)
Brexit	-0.0350*** (0.00624)	0.00728 (0.0104)	0.00166 (0.0106)
Target		-0.677*** (0.00663)	
Brexit*Target		-0.0277* (0.0118)	
Acquirer			-0.665*** (0.00685)
Brexit*Acquirer			-0.0323** (0.0120)
Industry dummies	No	Yes	Yes
_cons	0.477*** (0.00355)	0.924*** (0.0251)	0.842*** (0.0293)
<i>N</i>	29184	28860	29004
pseudo <i>R</i> ²			

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

It can be seen from **Table 3** that Brexit clearly has a bad influence on the cross-border M&As in the UK. The negative coefficient which is statistically significant at 0.1% level suggests that in overall, Brexit demotivates cash flows both inwardly and outwardly by 3.5%. This is in line

with my expectation that the cloudy road on Brexit deals in the future would result in unwillingness of investors to conduct businesses the UK. In **Column 2** where UK firms are controlled to be a target (sample includes domestic trades), Brexit unexpectedly has a positive relation with foreigners' interest, although this effect is not significantly different from 0. Furthermore, being a target dramatically decreases the chance of UK firms engaging in a cross-border acquisition and this effect is aggravated by Brexit variable with the negative coefficient from interaction term (0.0277), statistically significant at 5% level. Likewise, when UK firms are acquirers, same patterns are realized as Brexit exhibits a weak encouragement towards domestic investors in looking out for M&A opportunities across borders and reduces the likelihood for cross-border deals particularly when UK are bidders.

4.2.2/ Probability of UK firms being acquirers

In order to investigate if UK firms make cross-border M&A investment base on either firm's characteristics or movements of exchange rates, the linear regression model (LPM) is employed. As aforementioned, the dependent variables CBAcq which stands for the probability of UK firms being acquirers in cross-border M&A transactions are regressed on multiple independent variables as follows:

$$CBAcq = \beta_0 + \beta_1 * Brexit + \beta_2 MTB_Acq + \beta_3 * ROA_Acq + \beta_4 * Assets_Acq + \beta_5 * Count_Acq + \beta_6 * ForexTA \quad (1)$$

When the descriptions of variables can be found in **Table 2**. At the same time, the interaction terms associated with Brexit are added to examine the relative changes in different explanatory variables before and after the event occurs (**Column 5**). In addition, all the scenarios (columns) are controlled by Industry dummies variable as fixed effects, following the Fama and French (1997) industry classifications based on SIC codes.

Table 4 contains the results of regression **equation (1)** of determining probability of UK firms bidding for a foreign company. It can be seen from **Table 4** that with the negative coefficient of 0.0218 and statistically significant at 0.1% level, the result shows the consistency with the first hypothesis that the departure of the UK from the EU clearly discourages domestic firms conducting international businesses. When testing the model with other independent variables in the **Column 2**, this pattern appears even stronger, remaining significant at 0.1% level,

meaning that Brexit plays a role model in explaining cross-border M&A activities of UK firms regardless being controlled by different variables.

On top of that, the explanatory variable *ForexTA* which indicates the substantial movement of exchange rates has the coefficient positive and statistically significant at 1% level in every scenarios, implying a parallel relationship with the probability of UK firms being bidders in cross-border M&As. To explain in detail how to interpret this result, firstly, one should acknowledge that the exchange rate used is a translator of one unit GBP to a foreign currency. Furthermore, recalling the definition for *ForexTA* dummy variable in **Table 1**, it receives value of 1 if the degree of appreciation of GBP is over than one standard deviation of *deltaTA*. Given an example that if the foreign currency is depreciated against GBP that its 4-week-return is 5% which results in an increase in return of exchange rate. Eventually, the *deltaTA* variable will have a positive value of 5% ($5\% = 5\% - 0$) as the return on exchange rate of GBP itself is 0 in every state of this universe. This result will be then compared to the standard deviation of *deltaTA* as roughly 2% which can be found in **Table 2**, to define the value for variable *ForexTA*. This variable will be assigned to 1 if the difference is greater than one standard deviation (2%) and 0 if otherwise. By this way, one can interpret that when Sterling is appreciated by 2% against foreign currencies over 4-week horizon, it is expected to incentivize UK firms to look for opportunistic acquisitions in different markets. In particular, the fluctuation of exchange rates in the pre-Brexit period plays a significant role in explaining M&A investment behaviour of the UK firms where it enhances 23.8% likelihood of international deployment. This is consistent with previous literatures, such as Cushman (1985), Froot and Stein (1991); Blonigen (1997); Giovanni (2003); Erel, Liao and Weisbach (2012); and Lin and Shen (2014) that exchange effect impacts strongly the decision of management in international business. Concentrating on the impact of Brexit from **Column 5**, it is in line with my argument (Hypothesis 2) that Brexit diminishes the effect of exchange rates with the negative coefficient of 0.182 and statistically significant at 0.1% level. The result in **Column 4** supports this finding by showing that the significance of exchange rates disappears after Brexit happens. In general, the change of exchange rates between before and after Brexit is statistically significant (**Column 2**), combined with its positivity indicates a pronounced encouragement for UK investors on carrying out acquisitions.

In respect with firm's characteristics, the findings are partly consistent with the third hypothesis. Prior to the occurrence of Brexit, market-to-book ratios (*MTB_Acq*) and M&A experience

(Count_Acq) play certain roles in explaining cross-border M&A behaviours in contrast to the weak influences from return on assets (ROA) and firm size (Assets_Acq) variables. Specifically, the first variable of acquiring firms which explains how overvalued or undervalued they are, has the strong correlation with the probability of UK firms bidding for a foreign target at 0.1% level (**Column 2**), even with the effect of Brexit. In comparison with pre-Brexit period, this effect is more pronounced, indicating an unexpected enhancement of this political event towards the influence of this variable on M&A activities in the UK. Quantitatively, an increase by one percent in market value of UK acquirers relative to their book value would lead to 2.46% higher tendency to seek for investment opportunities outside of the UK. One can reason this reinforcement by looking at the interaction term in **Column 5** that Brexit has a positive influence on this variable even though this correlation is insignificant. In term of pre-Brexit period, the finding is consistent with previous studies, such as Shleifer and Vishny (2003), Rhodes-Kropf and Viswanathan (2004), Moeller and Schlingemann (2004) and Erel, Liao and Weisbach (2012) that acquirers firms are generally overvalued compared to their book value. However, its significance disappears after the occurrence of Brexit even though the correlation is still positive. Regarding experience variable, it shows the remarkable influence on the dependent variable in all cases with or without being controlled by Brexit, indicating the power of determining the M&A investment behaviours of UK investors. This finding is identical with existing papers such as DeYong (1997), Bunch and Delong (2004) that if a firm gains certain knowledge in M&A deals across borders, they tend to do it more frequently to make use of this profitable strategy. Interestingly, after Brexit happens, while other effects drop out their significant effects, M&A experience is still a variable that matters in the equation, (comparison between **Column 3 and 4**) even though its effect is adversely influenced by Brexit, demonstrated by the negative coefficient of interaction term of 0.00344 (**Column 5**). This suggests that the uncertainty of Brexit deals restrains inexperienced competitors from joining the international play field.

Apart from that, in the pre-Brexit period, the economic size of acquirers, measured by logged total assets (Assets_Acq) shows the inconsistency with previous study (Palepu, 1986) which suggested that the growth in total assets (firm size) would encourage firms to participate in bidding competition. However, in **Column 2** with the presence of all variables, its coefficient is positive and significant at 1% level, implying that with one percent increase in total assets, UK firms have 0.8% higher chance to acquire a foreign target. Relating to performance indicator (ROA), the coefficient is insignificant in every scenarios which are inconsistent with

the third hypothesis nor previous documented evidences (Banerjee and Cooperman, 2000; Liu and Qiu, 2013) that higher performance of potential bidder may motivate management carrying out M&A activity. Nevertheless, the effect of Brexit on this parameter is, indeed, detrimental that initiates a negative coefficient of 0.032 at 5% level (**Column 5**).

Table 4: UK firms- Acquirers in cross-border M&As

Dependent Variable	(1)	(2)	(3)	(4)	(5)
CBAcq	Brexit eff.	Full	Pre-Brexit	Post-Brexit	Interac.
Brexit	-0.0218*** (0.00528)	-0.0744*** (0.0143)			-0.00490 (0.0993)
MTB_Acq		0.0246*** (0.00645)	0.0252** (0.00794)	0.0147 (0.0114)	0.0246** (0.00774)
ROA_Acq		0.000167 (0.00714)	0.00914 (0.00840)	-0.0264 (0.0136)	0.00863 (0.00825)
Assets_Acq		0.00800** (0.00298)	0.00599 (0.00348)	0.0102 (0.00596)	0.00664 (0.00339)
Count_Acq		0.00823*** (0.000745)	0.00939*** (0.00106)	0.00732*** (0.00106)	0.00982*** (0.00103)
ForexTA		0.192*** (0.0186)	0.238*** (0.0219)	0.0638 (0.0355)	0.240*** (0.0216)
Brexit*MTB_Acq					0.000136 (0.0130)
Brexit*ROA_Acq					-0.0320* (0.0160)
Brexit*Assets_Acq					0.00896 (0.00572)
Brexit*Count_Acq					-0.00344* (0.00137)
ForexTA*Brexit					-0.182*** (0.0423)
Industry dummies	Yes	Yes	Yes	Yes	Yes
_cons	0.122*** (0.0304)	-0.0191 (0.0847)	-0.0143 (0.0892)	-0.125 (0.403)	-0.0251 (0.0871)
N	29004	4788	3615	1173	4788
pseudo R ²					

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

To sum up, Brexit affects adversely not only to the tendency of UK firms in acquiring a business outside of their country, but also to the explanatory power of suggested determinants. Market-to-book ratio, experience and movement in exchange rates clearly play vital roles when it comes to cross-border M&A investment behaviour, meanwhile return on assets variable is less pronounced in the regression analysis due to an adverse impact of this political turbulence. The gain in significant level of firm size variable in the presence of Brexit implies the existence of more big players in economic term in bidding competition.

4.2.3/ Probability of UK firms being targets

On the other side of the international M&A where UK firms are targeted, the dependent variable (CBTar) are also regressed on the same variables as follow:

$$CBTar = \beta_0 + \beta_1 * Brexit + \beta_2 * MTB_Tar + \beta_3 * ROA_Tar + \beta_4 * Assets_Tar + \beta_5 * Count_Tar + \beta_{10} * ForexAT \quad (2)$$

Similarly, the results of the regression from **equation (2)** are controlled by industry dummies variable, (following 48 industry portfolios of Fama and French, 1997) and shown in **Table 5**. Interesting, Brexit does not have significant impact on probability of UK firms become targets regardless being or not controlled by other variables (**Column 1 and 2**). The negative impact but not statistically significant is somewhat in line with the first hypothesis that Brexit indeed slightly reduces the willingness of foreigners to acquire a UK target. As mentioned in **Section 4.1**, the number of observations declines substantially when incorporating the effects of different control variables into the model due to the nature of the sample that there are limited number of public targets. Yet, the influence of exchange rate movement is still significantly pronounced. In **Column 2**, given the return of national currency of targets which is GBP in this case is 0, an increase in GBP power by more than the sample's standard deviation (2%) would result in 20.9% increase in probability of UK firms being targeted in cross-border M&As. By this way, the finding illustrates the strong explanatory power of exchange rates even when it is controlled with Brexit variable. In pre-Brexit period, the positive coefficient with a same significant level shows the consistency with previous studies, namely Cushman (1985), Froot and Stein (1991); Blonigen (1997); Giovanni (2003); Erel, Liao and Weisbach (2012); and Lin and Shen (2014) that movement of exchange rates does influence the choice of acquisitions even in international context. In contrast, after the Brexit announcement date, foreigners seem

more reluctant to acquire UK firms. This feature is captured by the disappearance of significant level despite the coefficient is still positive (**Column 4**). Although the interaction term in **Column 5** with Brexit indicates a weak positive relation of Brexit with this exchange rate effect,

Table 5: UK firms- Targets in cross-border M&As

Dependent Variables	(1)	(2)	(3)	(4)	(5)
CBTar	Brexit eff.	Full	Pre-Brexit	Post-Brexit	Interac.
Brexit	-0.00772 (0.00524)	-0.00934 (0.0582)			0.161 (0.397)
MTB_Tar		0.0170 (0.0207)	0.00382 (0.0229)	0.0858 (0.0495)	0.0178 (0.0254)
ROA_Tar		-0.0559* (0.0270)	-0.0128 (0.0273)	-0.182* (0.0865)	-0.0472 (0.0302)
Assets_Tar		0.00906 (0.0121)	-0.00386 (0.0119)	0.0182 (0.0320)	0.0118 (0.0136)
Count_Tar		0.0714 (0.0366)	0.104* (0.0499)	0.0186 (0.0653)	0.0985 (0.0501)
ForexAT		0.209** (0.0697)	0.215** (0.0803)	0.175 (0.172)	0.188* (0.0829)
Brexit*MTB_Tar					-0.00122 (0.0418)
Brexit*ROA_Tar					-0.0388 (0.0624)
Brexit*Assets_Tar					0.00787 (0.0238)
Brexit*Count_Tar					-0.0547 (0.0750)
ForexAT*Brexit					0.0964 (0.156)
Industry dummies	Yes	Yes	Yes	Yes	Yes
_cons	0.173*** (0.0259)	0.449 (0.307)	0.117 (0.190)	-0.0534 (0.466)	0.373 (0.325)
N	28860	294	228	66	294
pseudo R2					

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

this is contradicting to my argument in the second hypothesis that the announcement of Brexit is favorable for exchange rate. This implies that from the perspective of foreign investors, an increase in power of GBP currency may signal a favorable sentiment for the future of Brexit that improves the attractiveness of UK firms.

Besides, the M&A experience variable of targets also yields an expected result in the absence of Brexit (**Column 3**) even in the international context. This conclusion is supportive of previous lines of argument by DeYong (1997), Bunch and Delong (2004) that experience is a good proxy to predict firms' intention of taking part in an M&A transaction. The positive coefficient statistically significant at 5% level suggests that if targets have been traded one more time, there is an increase by 10.4% in the UK firm's attractiveness to foreign investors. In term of Brexit impact, the result from regression shows a slight reduction in explanatory power of experience variable on the main dependent variable that is consistent with second hypothesis. Consequently, being traded more frequently does not necessarily improve target's image in international investor's perception.

Another firm' characteristic that yields a statistical outcome is return on assets (ROA_Tar) besides market to book ratios (MTB_Tar) and firm size (Assets_Tar) variables which surprisingly have no significant effects in the analysis. This profit efficiency measure has an inverse relationship with CBTar variable, implying that one percent increase in return on assets would result in lower probability of UK firms being targeted by foreigners. Furthermore, its magnitude is largest after Brexit happens suggesting that international investors are more hesitated in choosing firms with high performance. This is a result from the aggravation of Brexit on this variable, shown by the negative coefficient in **Column 5**.

In conclusion, although Brexit badly influences the image of UK firms in foreign investors, the effect is not statistically different from 0. In addition, experience does matter also for targets but only in the absence of Brexit (in pre-Brexit period). Nevertheless, return on assets is also a good determinant for cross-border M&As where UK firms are on the sell side. Besides, the exit of the UK out of the EU does not adversely influence but rather improves currency effect.

5/ Robustness testing

In this section, I apply the logistic regression to the two dependent variables for testing robustness of the existing models. The reason of using this model is that there is a significant variance of distinctive variables in the models that may not be well predicted by linear regression model (OLS). The equations are therefore:

$$\begin{aligned} \text{Log}(P_{CBAcq} = 1 | P_{CBAcq} = 0) \\ = \beta_0 + \beta_1 * Brexit + \beta_2 * MTB_Acq + \beta_3 * ROA_Acq + \beta_4 * Assets_Acq \\ + \beta_5 * Count_Acq + \beta_6 * ForexTA \end{aligned} \quad (3)$$

$$\begin{aligned} \text{Log}(P_{CBTar} = 1 | P_{CBTar} = 0) \\ = \beta_0 + \beta_1 * Brexit + \beta_2 * MTB_Tar + \beta_3 * ROA_Tar + \beta_4 * Assets_Tar \\ + \beta_5 * Count_Tar + \beta_6 * ForexAT \end{aligned} \quad (4)$$

Again, the results are controlled by industry dummies variable following Fama and French (1997) 48-industry classification, based on SIC number of each firm. In overall, the results appear identical to what **Table 4** and **5** have shown.

From the logit regression of **Table 6**, the unfavourable effect of Brexit on the logged odd of probability of UK firms being acquires is consistent with the result in **Table 4** regardless the impacts of other variables in **Column 1 and 2**. In addition, experience has coefficient statistically significant in all scenarios with different control variables. Market-to-book ratios (MTB_Acq) and the large change of exchange rate of GBP against other currencies (ForexTA) indicate the same patterns in which their coefficients are strongly pronounced in pre-Brexit period as well as when they are tested with all variables (**Column 2**). However, the significance is faded after Brexit happens. Similarly to outcomes from **Table 4**, the effect of Brexit on variable MTB is positive meanwhile on ForexTA is remarkably negative.

On the other hand, when UK firms are targeted, the consistency in results to that of **Table 5** is recognized that Brexit has no significant influence on the probability of foreigners bidding for UK companies even though the coefficient shows a negative correlation. Specifically, moving of exchange rates (ForexAT) have positive coefficient (**Column 2 and 3**) with logged odd of CBAcq variable, suggesting of being an effective influencer even when it is controlled by Brexit

variable. In fact, the interaction term with Brexit in **Column 5** indicates an enhancing effect of ForexAT on the logged odd of the probability of UK firms being targeted. Same features recognized in **Table 5** coming from other variables are consistently described in **Table 6**. Conversely, return on assets (ROA_Tar) has its strong effect in no cases but only after Brexit happens in comparison with previous results that signal also in the full variable column.

To sum up this section, the robustness tests indicate that the linear regression and non-linear regression have identical results of the effects of control variables on CBAcq and CBTar.

6/ Conclusion

Due to the rapid growth of M&A activities across countries, especially in the EU where markets are mature and regulations are well standardized, investors are urged to participate in such international play field in order to not be left behind their competitors. In addition, the cross-border M&A opportunities which enables them to reach out geographically for another potential market with large demands and sometimes provides them a huge premium due to misbalance of different standard of valuation, allow to maximize profitability for their portfolio. However, internalization requires a deliberate action from manager since there are numerous hidden danger they would confront of when penetrating in a new market. One of the determinants which has the most influence on management decision in cross-border M&A framework is regulation. Understanding this importance, my study focuses on the impact of the withdrawal of the UK from the EU (which is also called as Brexit) which eventually results in a regulatory chaos and high uncertainty of trading barriers.

This paper, based on 29,184 M&A deals involving a UK firm in at least of one side of the transaction, illustrates that Brexit detrimentally affects the cross-border M&A investment behaviours of both acquirers and targets. When a UK firm is an acquirer, the effect is more pronounced and statistically significant than when it is a target in a borderless takeover. That to say, Brexit can be seen as a good determinant for cross-border M&As in the UK, especially for the buy side. At this point, the finding is consistent with the first hypothesis.

Furthermore, I also examine the effect of other factors suggested in the previous literatures such as movement of exchange rates. The results suggest that fluctuation of exchange rates plays role model in determining whether a firm intend to engage in a cross-border acquisition. The results of the regressions imply the adverse impact of Brexit on effect of exchange rates when UK firms are bidders in cross-border M&As. Nonetheless, it is surprising that the appreciation of GBP encourages not only UK firms to acquire other firms in other depreciated-currency countries but also enhances the likelihood of being acquired by foreigners. One can argue that the increase in power of Sterling against other currencies might signal a promising future for trades within the UK. However, this significant trend disappears after Brexit occurs, demonstrating that Brexit reduces the impact of this determinant on the likelihood of cross-border M&As in the UK.

Apart from the macroeconomic factor, I also examine firm's characteristics suggested in the previous literatures such as return on assets, market-to-book ratios, firm size and M&A experience to see how dominant Brexit variable is compared to others. The results are partly in line with my expectation. Firstly, return on assets which is also known as profit efficiency measure, exhibits a decreasing influence between pre- and post- Brexit period. One can argue that firms in the UK perform worse they did before Brexit that leads to a lower probability that they participate in M&A transactions across borders. Yet, this indicator seems not to be a good predictor for cross-border M&As, especially when firms experience regulatory issues such as Brexit. Secondly, valuation does matter in international context, especially when UK firms are acquirers. This finding supports the existing theory on M&As that misvaluation encourages firms to take part in bidding competition for another company that, in this case, is outside of their home country. The effect remains its significance and magnitude with or without the impact of Brexit. Thirdly, firm size seems to be not that important in the bidding side of a cross-border transaction. The effect is only significant in case of UK firms acquiring a foreign company and such analysis is controlled by Brexit variable. Although in other scenarios, the effects are insignificant, they are somewhat consistent with previous studies that there is a positive relation amongst size of acquiring firm and cross-border M&As meanwhile a negative correlation amongst size of targets. On the other hand, where UK are targets, there is an inconclusive evidence showing that foreigners are more interested in UK firms whose sizes are relatively big after the Brexit. Lastly, M&A experience encourages firms to implement M&A strategies across borders. The effect is somewhat stronger in the acquirer's side when UK firms are bidders than when UK are targets. However, the later still indicates the significant effect on the probability in almost scenarios, except after Brexit happens, suggesting that this event badly influences the perception of foreign investors towards UK targets, even they are actively traded.

Although such results are mostly consistent with previous studies, I argue that this study still has some limitations. First and foremost, since I only take into account data of all firms with public status according to ThomsonOne database, it reduces dramatically the sample pool, especially from target's side, thus, it is somewhat not representative and indicative as the finding for UK acquiring firms whose data is more abundant. Secondly, I do not disentangle investment behaviour of individual types of investor, such as Public, Private Equity, Subsidiaries, Government-own enterprises, Joint Venture, Mutual funds who have different purposes in cross-border acquisitions that different strategic moves might lead to different results in the analysis. I argue that this paper tries to generalize the cross-border M&A

investment behaviours in the UK rather than particularly concentrates on that of individuals. In other words, it may be more important for those who study on specific genre of investor's behaviour. For instance, Private Equity firms benefit from buying and selling a target with high multiples that this paper does not touch upon. Finally, there are more factors which have great impacts on cross-border M&As in the UK that I do not account for in this paper due to the sake of simplification. At this point, other factors are highly recommended for future study when the negotiation of future deals of Brexit comes to the end and executed.

Appendix

Table 6: *Logit regression- UK firms are Acquirers in cross-border M&As*

Dependent Variable CBAcq	(1) Brexit eff.	(2) Full	(3) Pre-Brexit	(4) Post-Brexit	(5) Interac.
Brexit	-0.125*** (0.0304)	-0.429*** (0.0883)			-0.0555 (0.600)
MTB_Acq		0.137*** (0.0378)	0.138** (0.0462)	0.0957 (0.0727)	0.131** (0.0455)
ROA_Acq		-0.00482 (0.0433)	0.0562 (0.0511)	-0.188* (0.0863)	0.0513 (0.0507)
Assets_Acq		0.0442* (0.0180)	0.0322 (0.0208)	0.0621 (0.0391)	0.0365 (0.0206)
Count_Acq		0.0448*** (0.00463)	0.0506*** (0.00635)	0.0404*** (0.00687)	0.0522*** (0.00618)
ForexTA		0.985*** (0.101)	1.192*** (0.117)	0.384 (0.223)	1.188*** (0.117)
Brexit*MTB_Acq					0.0235 (0.0776)
Brexit*ROA_Acq					-0.205* (0.0951)
Brexit*Assets_Acq					0.0520 (0.0344)
Brexit*Count_Acq					-0.0180* (0.00853)
ForexTA*Brexit					-0.853*** (0.244)
Industry dummies	Yes	Yes	Yes	Yes	Yes
_cons	-2.001*** (0.227)	-2.722*** (0.588)	-2.691*** (0.604)	-3.609*** (0.609)	-2.761*** (0.602)
<i>N</i>	29004	4779	3567	1124	4779
<i>pseudo R</i> ²	0.029	0.139	0.143	0.153	0.143

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 7: *Logit regression- UK firms are Targets in cross-border M&As*

Dependent Variable CBTar	(1) Brexit eff.	(2) Full	(3) Pre-Brexit	(4) Post-Brexit	(5) Interac.
Brexit	-0.0450 (0.0306)	-0.0369 (0.457)			-0.729 (3.650)
MTB_Tar		0.0822 (0.145)	-0.0450 (0.198)	0.634 (0.411)	0.0874 (0.184)
ROA_Tar		-0.383 (0.201)	-0.296 (0.230)	-1.539* (0.780)	-0.311 (0.223)
Assets_Tar		0.0544 (0.0912)	0.0787 (0.108)	0.134 (0.222)	0.0524 (0.101)
Count_Tar		0.559* (0.249)	0.830* (0.365)	0.216 (0.518)	0.742* (0.347)
ForexAT		1.470** (0.489)	1.267* (0.585)	0.871 (1.272)	1.270* (0.560)
Brexit*MTB_Tar					0.00873 (0.291)
Brexit*ROA_Tar					-0.439 (0.620)
Brexit*Assets_Tar					0.162 (0.235)
Brexit*Count_Tar					-0.274 (0.532)
ForexAT*Brexit					1.158 (1.188)
Industry dummies	Yes	Yes	Yes	Yes	Yes
_cons	-1.568*** (0.166)	-0.335 (1.835)	-1.051 (1.995)	0.0228 (3.576)	-0.650 (1.947)
<i>N</i>	28860	233	161	41	233
pseudo <i>R</i> ²	0.011	0.200	0.179	0.262	0.210

Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Countries having M&A deals with the UK from 2010 to 2018.

Total deals			Cross-border deals		
Nation	United Kingdom	Percentage	Nation	United Kingdom	Percentage
United Kingdom	5,602	53.46%	United Kingdom	NA	NA
United States	4,227	14.48%	United States	4,227	31.12%
Germany	852	2.92%	Germany	852	6.27%
France	781	2.68%	France	781	5.75%
Netherlands	539	1.85%	Netherlands	539	3.97%
Canada	506	1.73%	Canada	506	3.73%
Australia	501	1.72%	Australia	501	3.69%
Ireland-Rep	490	1.68%	Ireland-Rep	490	3.61%
Spain	412	1.41%	Spain	412	3.03%
Italy	352	1.21%	Italy	352	2.59%
Sweden	313	1.07%	Sweden	313	2.30%
India	245	0.84%	India	245	1.80%
Guernsey	236	0.81%	Guernsey	236	1.74%
Singapore	207	0.71%	Singapore	207	1.52%
Japan	201	0.69%	Japan	201	1.48%
Switzerland	189	0.65%	Switzerland	189	1.39%
China	188	0.64%	China	188	1.38%
Norway	186	0.64%	Norway	186	1.37%
South Africa	186	0.64%	South Africa	186	1.37%
Denmark	184	0.63%	Denmark	184	1.35%
Hong Kong	176	0.60%	Hong Kong	176	1.30%
Belgium	154	0.53%	Belgium	154	1.13%
Jersey	125	0.43%	Jersey	125	0.92%
Luxembourg	124	0.42%	Luxembourg	124	0.91%

Poland	116	0.40%	Poland	116	0.85%
Russian Fed	114	0.39%	Russian Fed	114	0.84%
Brazil	109	0.37%	Brazil	109	0.80%
Utd Arab Em	107	0.37%	Utd Arab Em	107	0.79%
Finland	96	0.33%	Finland	96	0.71%
Turkey	76	0.26%	Turkey	76	0.56%
Israel	70	0.24%	Israel	70	0.52%
Malaysia	68	0.23%	Malaysia	68	0.50%
New Zealand	64	0.22%	New Zealand	64	0.47%
Isle of Man	63	0.22%	Isle of Man	63	0.46%
Austria	62	0.21%	Austria	62	0.46%
Czech Republic	58	0.20%	Czech Republic	58	0.43%
South Korea	54	0.19%	South Korea	54	0.40%
British Virgin	50	0.17%	British Virgin	50	0.37%
Bermuda	49	0.17%	Bermuda	49	0.36%
Portugal	44	0.15%	Portugal	44	0.32%
Taiwan	41	0.14%	Taiwan	41	0.30%
Mexico	39	0.13%	Mexico	39	0.29%
Cayman Islands	35	0.12%	Cayman Islands	35	0.26%
Ukraine	34	0.12%	Ukraine	34	0.25%
Romania	34	0.12%	Romania	34	0.25%
Nigeria	34	0.12%	Nigeria	34	0.25%
Indonesia	32	0.11%	Indonesia	32	0.24%
Cyprus	32	0.11%	Cyprus	32	0.24%
Argentina	31	0.11%	Argentina	31	0.23%
Thailand	30	0.10%	Thailand	30	0.22%
Hungary	29	0.10%	Hungary	29	0.21%

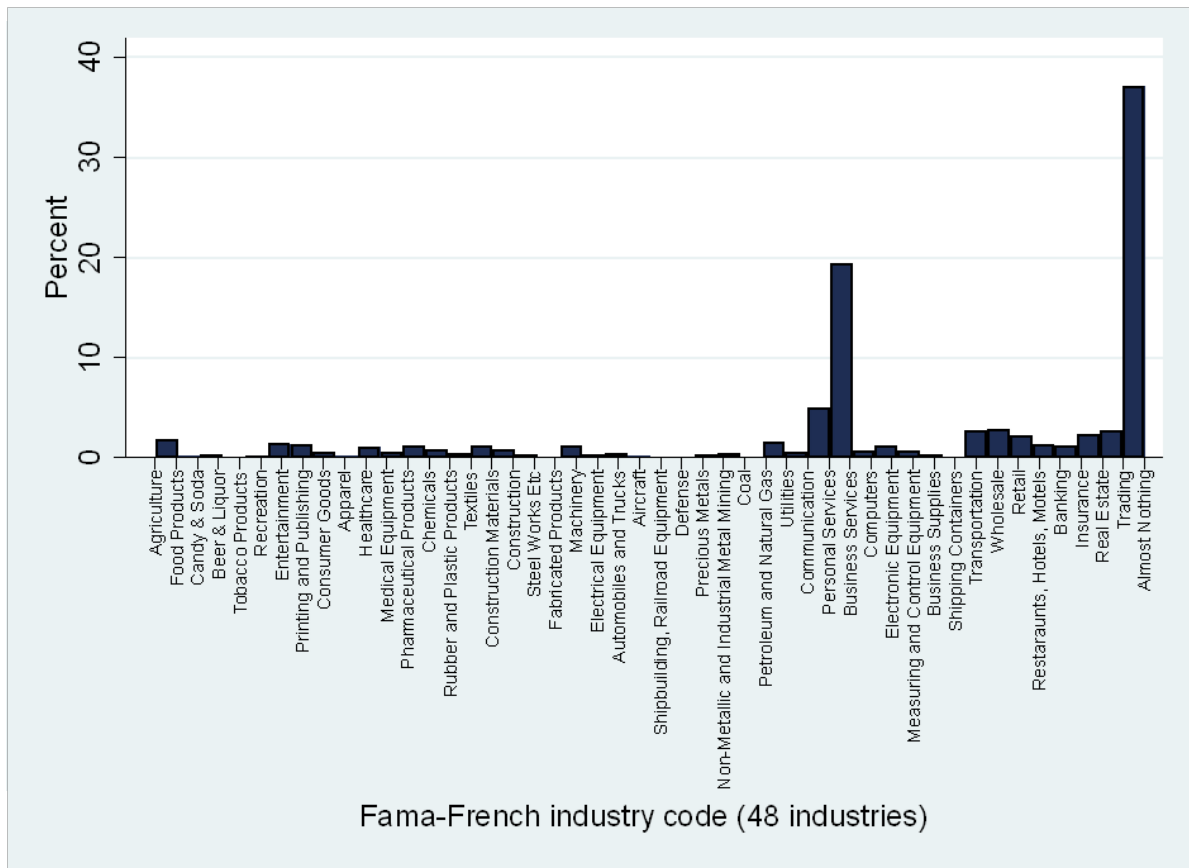
Chile	25	0.09%	Chile	25	0.18%
Malta	25	0.09%	Malta	25	0.18%
Kenya	24	0.08%	Kenya	24	0.18%
Greece	22	0.08%	Greece	22	0.16%
Colombia	22	0.08%	Colombia	22	0.16%
Saudi Arabia	20	0.07%	Saudi Arabia	20	0.15%
Bulgaria	19	0.07%	Bulgaria	19	0.14%
Egypt	19	0.07%	Egypt	19	0.14%
Philippines	18	0.06%	Philippines	18	0.13%
Morocco	18	0.06%	Morocco	18	0.13%
Gibraltar	18	0.06%	Gibraltar	18	0.13%
Qatar	17	0.06%	Qatar	17	0.13%
Vietnam	17	0.06%	Vietnam	17	0.13%
Mauritius	15	0.05%	Mauritius	15	0.11%
Peru	13	0.04%	Peru	13	0.10%
Croatia	12	0.04%	Croatia	12	0.09%
Bahamas	12	0.04%	Bahamas	12	0.09%
Kuwait	12	0.04%	Kuwait	12	0.09%
Mozambique	11	0.04%	Mozambique	11	0.08%
Lithuania	11	0.04%	Lithuania	11	0.08%
Iceland	10	0.03%	Iceland	10	0.07%
Estonia	10	0.03%	Estonia	10	0.07%
Iraq	10	0.03%	Iraq	10	0.07%
Bahrain	10	0.03%	Bahrain	10	0.07%
Latvia	9	0.03%	Latvia	9	0.07%
Slovak Rep	9	0.03%	Slovak Rep	9	0.07%
Serbia	9	0.03%	Serbia	9	0.07%

Zambia	8	0.03%	Zambia	8	0.06%
Sri Lanka	7	0.02%	Sri Lanka	7	0.05%
Tanzania	7	0.02%	Tanzania	7	0.05%
Pakistan	7	0.02%	Pakistan	7	0.05%
Ethiopia	7	0.02%	Ethiopia	7	0.05%
Oman	7	0.02%	Oman	7	0.05%
Bangladesh	7	0.02%	Bangladesh	7	0.05%
Georgia	7	0.02%	Georgia	7	0.05%
Costa Rica	6	0.02%	Costa Rica	6	0.04%
Zimbabwe	6	0.02%	Zimbabwe	6	0.04%
Kazakhstan	6	0.02%	Kazakhstan	6	0.04%
Uganda	5	0.02%	Uganda	5	0.04%
Ghana	5	0.02%	Ghana	5	0.04%
Panama	5	0.02%	Panama	5	0.04%
Monaco	5	0.02%	Monaco	5	0.04%
Azerbaijan	5	0.02%	Azerbaijan	5	0.04%
Jordan	5	0.02%	Jordan	5	0.04%
Ivory Coast	4	0.01%	Ivory Coast	4	0.03%
Rwanda	4	0.01%	Rwanda	4	0.03%
Cameroon	4	0.01%	Cameroon	4	0.03%
Barbados	4	0.01%	Barbados	4	0.03%
Slovenia	3	0.01%	Slovenia	3	0.02%
Liberia	3	0.01%	Liberia	3	0.02%
Trinidad&Tob	3	0.01%	Trinidad&Tob	3	0.02%
Bosnia	3	0.01%	Bosnia	3	0.02%
Dem Rep Congo	3	0.01%	Dem Rep Congo	3	0.02%
Belize	3	0.01%	Belize	3	0.02%

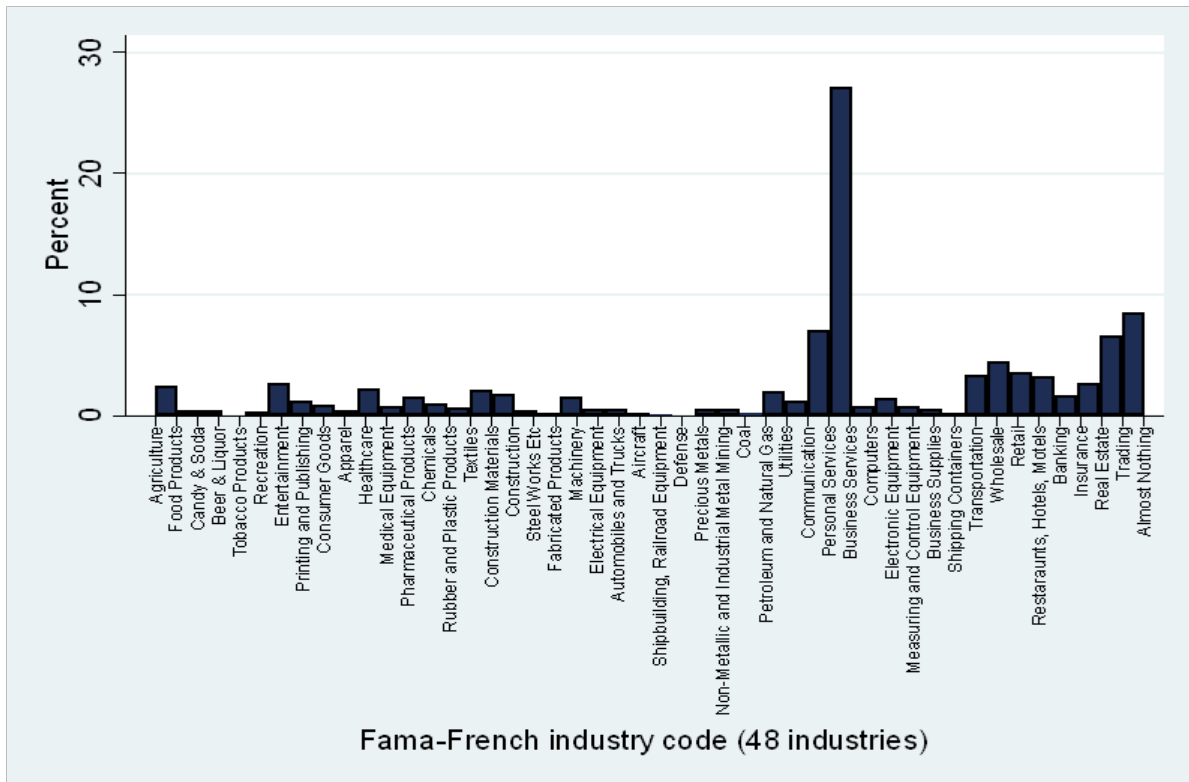
Macedonia	3	0.01%	Macedonia	3	0.02%
Sierra Leone	3	0.01%	Sierra Leone	3	0.02%
Mali	3	0.01%	Mali	3	0.02%
Lesotho	3	0.01%	Lesotho	3	0.02%
Botswana	3	0.01%	Botswana	3	0.02%
Uruguay	3	0.01%	Uruguay	3	0.02%
Lebanon	3	0.01%	Lebanon	3	0.02%
Marshall Is	3	0.01%	Marshall Is	3	0.02%
Seychelles	2	0.01%	Seychelles	2	0.01%
Tunisia	2	0.01%	Tunisia	2	0.01%
Belarus	2	0.01%	Belarus	2	0.01%
Puerto Rico	2	0.01%	Puerto Rico	2	0.01%
Cambodia	2	0.01%	Cambodia	2	0.01%
Burkina Faso	2	0.01%	Burkina Faso	2	0.01%
Somalia	2	0.01%	Somalia	2	0.01%
Moldova	2	0.01%	Moldova	2	0.01%
Angola	2	0.01%	Angola	2	0.01%
Armenia	2	0.01%	Armenia	2	0.01%
Algeria	2	0.01%	Algeria	2	0.01%
Faroe Islands	2	0.01%	Faroe Islands	2	0.01%
Myanmar(Burma)	2	0.01%	Myanmar(Burma)	2	0.01%
Namibia	2	0.01%	Namibia	2	0.01%
Liechtenstein	2	0.01%	Liechtenstein	2	0.01%
Antigua	1	0.00%	Antigua	1	0.01%
Libya	1	0.00%	Libya	1	0.01%
Togo	1	0.00%	Togo	1	0.01%
Falkland Is	1	0.00%	Falkland Is	1	0.01%

Rep of Congo	1	0.00%	Rep of Congo	1	0.01%
Guinea	1	0.00%	Guinea	1	0.01%
Guyana	1	0.00%	Guyana	1	0.01%
Mongolia	1	0.00%	Mongolia	1	0.01%
El Salvador	1	0.00%	El Salvador	1	0.01%
Malawi	1	0.00%	Malawi	1	0.01%
Paraguay	1	0.00%	Paraguay	1	0.01%
Mauritania	1	0.00%	Mauritania	1	0.01%
Montenegro	1	0.00%	Montenegro	1	0.01%
Guatemala	1	0.00%	Guatemala	1	0.01%
Afghanistan	1	0.00%	Afghanistan	1	0.01%
Uzbekistan	1	0.00%	Uzbekistan	1	0.01%
Turks/Caicos	1	0.00%	Turks/Caicos	1	0.01%
Nepal	1	0.00%	Nepal	1	0.01%
Neth Antilles	1	0.00%	Neth Antilles	1	0.01%
Senegal	1	0.00%	Senegal	1	0.01%
Gabon	1	0.00%	Gabon	1	0.01%
Western Somoa	1	0.00%	Western Somoa	1	0.01%
Chad	1	0.00%	Chad	1	0.01%
Albania	1	0.00%	Albania	1	0.01%
US Virgin Is	1	0.00%	US Virgin Is	1	0.01%
St Lucia	1	0.00%	St Lucia	1	0.01%
Supranational	1	0.00%	Supranational	1	0.01%
Total	29,184	100.00%	Total	13,582	100.00%

Graph 2: Fama-French 48 Industry Coverage of acquirers



Graph 3: Fama-French 48 Industry Coverage of targets



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