Universidade do Minho

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Valuation impact of currency depreciations on cross-border mergers and acquisitions – evidence from the Eurozone, UK and USA

Master's Dissertation:

Master in Finance

Trabalho realizado sob a orientação do:

Professor Doutor Gilberto Loureiro

July 2019

Agradecimentos

Concluindo uma importante etapa no meu percurso académico, são várias as pessoas a quem quero deixar um agradecimento especial.

Antes demais, quero agradecer ao meu orientador, o professor Gilberto Loureiro, que foi fundamental para a elaboração e conclusão deste trabalho, agradeço pela sua paciência, disponibilidade e partilha de conhecimentos.

De seguida, quero deixar um agradecimento especial à minha mãe e às minhas irmãs que sempre me motivaram em todo o percurso académico e não me deixaram desistir.

Por fim, quero agradecer às minhas colegas de mestrado, Catarina Pires e Sofia Rebelo por todos os momentos que passamos juntos que acabaram por tornar esta experiência inesquecível, e que certamente deixará saudades.

Statement of integrity

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism or any form of undue use of information or falsification of results along the process leading to its elaboration.

I further declare that I have fully acknowledged the Code of Ethical Conduct of the University of Minho.

Abstract

In this study I analyze the impact of currency shocks on the Cumulative Abnormal Returns (CAR) resulted from cross-border Mergers and Acquisitions (M&As) around the announcement day. Cross-border M&As represent almost one third of the deals. As there is not much information about it, this makes this analysis relevant. Furthermore, the scarce of information increases when we talk the ways that currency movements affect this kind of deals.

Throughout this study, I analyze three different samples, with acquirers from Eurozone, United Kingdom and United States of America, each of them in relation to the rest of the world to see how the CARs are affected by currency shocks, which might or not, create incentives to pursue cross-border deals under depreciation effects.

I believe that companies only would follow a cross-border deal under depreciation shocks, only if, they believe that those currency changes are temporary. They must be aware that a depreciation in the target's currency decreases the cost of the deal, but it also reduces the revenues when converted to the local currency.

To make this analysis, I rely on three clean samples with 1204 deals for the Eurozone sample, 763 deals for the UK sample and 2126 for the US sample, all the deals occur between 2009 and 2018. Attending the main target's currencies, I find that Brazilian real and Australian dollar are currencies that depreciate more frequently in relation to Euro and the US dollar. On the UK side, the currencies that depreciate more frequently in relation to the pound are the Australian and the Canadian dollar.

Despite I do not find many significant variables related to currency depreciations, the ones that I find when isolated from other variables reveal positive effects on the CARs. In the hypothesis 1a) and 1b) the Eurozone sample reveals a positive impact of 1.84 percentage points for the CAR(-2,+2) and 0.677 percentage points for the CAR(-1,+1), respectively, when the deal occurs 4 quarters after a currency shock. Moving to hypothesis 2b) the UK sample reveals a positive impact of 4.23,4.57 and 5.35 percentage points for CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), when there were at least 2 currency shocks in 4 quarters before the deal.

Keywords: cross-border M&As, Cumulative Abnormal Returns, currency shocks

Resumo

Neste estudo vou analisar o impacto de choques cambiais nos *Cumulative Abnormal Returns* (CAR), resultantes de fusões e aquisições internacionais, na altura do anúncio do negócio. Este tipo de negócios representa quase um terço do número total de fusões e aquisições. Esta análise torna-se relevante, porque apesar de haver muitos estudos para fusões e aquisições, não há muitos que abordem fusões e aquisições internacionais. Essa escassez aumenta quando falamos de efeitos de câmbio em fusões e aquisições.

Ao longo deste trabalho, vamos analisar 3 amostras diferentes, cada uma delas com adquirentes da Zona Euro, do Reino Unido e dos Estados Unidos da América, em relação ao resto do mundo, para ser possível analisar como reagem à volatilidade das taxas de câmbio, o que poderá criar incentivos a seguir uma fusão ou aquisição internacional.

Acredito que as empresas apenas sigam um negócio deste tipo quando houver efeitos de câmbio, apenas se acreditarem que as mudanças cambiais são temporárias. Por um lado, a depreciação da moeda da empresa alvo decresce o custo do negócio, mas por outro, também reduz as receitas, quando convertidas para a moeda do adquirente.

Para realizar este estudo, vou analisar três amostras com 1204 negócios para a amostra da zona Euro, 763 para a amostra do Reino Unido e 2126 para a amostra dos Estados Unidos. Todos os negócios estão compreendidos entre o período temporal 2009 a 2018. Atendendo às moedas dos principais alvos dos adquirentes, o real do Brasil e o dólar australiano são as moedas que se depreciam mais frequentemente em relação ao euro e ao dólar americano. Do lado do Reino Unido, as moedas que se depreciam mais frequentemente em relação à libra são o dólar australiano e canadiano.

Apesar de não ter encontrado muitas variáveis significativas relacionadas com o câmbio da moeda, as que encontrei e isoladas de outras variáveis, revelam efeitos positivos nos CARs. Na hipótese 1a) e 1b) a amostra da zona Euro revela um impacto positivo de 1.84 pontos percentuais para o CAR(-2,+2) e 0.677 pontos percentuais para o CAR(-1,+1), respetivamente, quando o negócio ocorre nos 4 trimestres depois de um choque cambial. Na hipótese 2b) a amostra do Reino Unido

revela um impacto positivo de 4.23, 4.57 e 5.35 pontos percentuais para o CAR(-1,+1), CAR(-2,+2) e CAR(-5,+5), quando houveram pelo menos 2 choques cambiais nos 4 trimestres antes do negócio.

Palavras-Chave: fusões e aquisições internacionais, CARS, desvalorização da moeda

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1. Introduction

In this study I analyze if currency shocks have a considerable impact on the bidder's announcement returns when the target's currency suffers a depreciation. The purpose is to study if the acquirer sees a depreciation as an opportunity to buy a given company cheaper than usual. As that event could also reduce revenues when converted to acquirer's currency, the bidder would take advantage of it if it believes that shock is temporary. If it is, the deal price would be smaller, and revenues would not be affected that much. It is important to study cross-border Mergers and Acquisitions due to its large weight on the total of deals of this kind and the lack of information related to it.

To do this work, I will rely on 3 samples: the first includes acquirers from eurozone countries, the second acquirers from the UK and the third acquirers from the US, all the samples do not include deals with targets that share the same currency, in order understand the impact of currency depreciations in relation to euro, pound and the US dollar.

Regarding targets, it will be interesting studying if developing countries use depreciation to attract foreign direct investment (FDI) to increase efficiency and productivity. The influence and power is changing at a fast pace, still, developing economies will need years to converge and reach a position to take back some power and influence from the developed countries (Brakman & Marrewijk, 2008).

It will be important to collect some literature about the general motivations of cross-border Mergers and Acquisitions to fully understand the phenomenon and select the better control variables to build the models.

Globalization aligned to trade liberalization has helped to create a common area between countries, and as the time passes, they are even more linked, which make companies from different countries have more commercial relations (Grave, Vardiabasis & Yavas, 2012).

M&A started evolving since the 90s, first on a domestic market, with companies through joining forces to increase productivity and efficiency by acquiring mainly homogenous firms (Grave et al., 2012). The reduction of income levels and consequently consumption has motivated the US and Europe to expand their markets to Asia, Middle-East and South America (Grave et al., 2012). In 2000

a peak of M&A in relation to the previous years was observed and in 2003 a new peak was observed which had resulted in a constant growth from 2003 to 2007, on the other hand, a financial crisis was coming, with the failure of Lehman Brothers and other financial institutions keep trying to survive, lending hit the lowest levels, with that even domestic deals suffered a big drop (Grave et al., 2012).

Based on Erel, Liao, and Weisbach (2012) results, 96% of the transactions involve a private acquirer and 97% have either a private acquirer or target. The volume of cross-border acquisitions had increased substantially between 1998 to 2007, from 23% to 45% (Erel et al., 2012). The exchange rate of the acquirer tends to appreciate and the country-level stock return of the acquirer's stocks is higher in the 12, 24 and 36 months before the deal which results in a market-to-book ratio higher by 9,93% when the deal occurs for the acquirer countries (Erel et al., 2012).

There are some factors that could make a cross-border deal harder and costly, such as cultural and geographic differences. However, it could also have benefic effects, even for the acquired company if the acquirer's country offers a better protection due higher governance standard. Acquisitions are more likely to happen if the distance between the target and acquirer is shorter, or if they already have a relationship or common cultural background. The chance of acquiring a relatively inexpensive company due to changes in exchange rates or market valuations in local currency could trigger the bidder's interest (Erel et al., 2012).

To sum up, in this study I analyze if target's currency affects the acquirer's gains and understand if that fact may be considered a crucial factor to pursue a cross-border deal.

This worked is divided in 7 sections: Section 2 provides information related to similar studies, in order to present an overlook on this subject. Section 3 presents the hypotheses to be tested. Section 4 describes the methodology used, event study and regressions. In Section 5 I provide information about the collected data and some descriptive analysis. Section 6 shows regression tables and their analysis. Finally, section 7 concludes this dissertation.

2. Literature Review

2.1 M&A Motivations

Generally, mergers occur when it is estimated that the combined firm's value is superior to the sum of the separate value of each firm. The main motivations are synergies (economies of scope/scale), market power, diversification, lower combined tax liabilities (Erel et al., 2012).

According to Erel et al. (2012), concerning to the volume of cross-border transactions (in 1990 dollars), it suffers some oscillations in the 90s and increased significantly from 1997, hitting a peak of approximately 33% in 2000, then suffers a decrease and starts increasing again between 2004 and 2007, in 2007 reaches a percentage of 45% (Erel et al., 2012). Acquirers tend to buy firms in nearby countries, for example about two thirds of New Zealand's acquisitions were Australian companies; China was the main target of Hong Kong and the main target of Germany was from US and European companies. It's important to study how these behaviors have changed since 2007, as there are not many studies available for this matter after 2007.

2.2 Market Value and Currency Movements

An important point to take into consideration is the market value of firm's equity. Based on data from 1990 to 2007, companies from countries whose stock market appreciated and therewith have a higher-market-to-book value tend to be acquirers, while firms from struggle economies are more likely to become potential targets (Erel et al., 2012).

By analyzing valuation differences using country-level data, stock and currency differences have a larger impact when the acquirer country is rich. Moreover, the effect of currency is higher when the distance between 2 countries is less than the sample median (Erel et al., 2012).

Still regarding market valuation, if the acquiring company believes that differences in valuation are temporary, then there are some opportunities to explore and that could lead to higher expected profits, the acquirer will buy the target's stocks when they worth less and expect the value to appreciate

afterwards. If a manager of a given company knows that the stocks are overvalued, probably, he/she will want to raise money by issuing new shares at inflated prices and then buy the stocks of an undervalued company or at least less overvalued (Shleifer & Vishny, 2003). Cross-border M&As could still occur because of mispricing of securities due to irrational expectations and changes in risk aversion, and the target could accept the payment in a temporarily depreciated currency or overvalued stock (Baker, Foley, & Wurgler, 2009). Apparently, companies in richer countries purchase foreign firms after a drop in the poorer country's stock market.

Also, a permanent change in valuation could motivate cross-border deals because it leads a lower cost of capital, therewith a potential foreign acquirer could act more aggressively in pursuing domestic assets than domestically rival bidders (Froot & Stein, 1991).

Overvaluation argument applies essentially to public companies that can issue new stock at the high valuation prices or it could be useful if the company buys the target using its overvalued stocks (Baker et al., 2009).

The currency has also a considerable weight on mergers, even more, the closer the companies are from each other. Mergers are affected by changes in valuation that makes one of the parties economically fragile and then more attractive for the other party, and, for that reason currency may be seen as an influencing factor of cross-border M&As (Erel et al., 2012).

The results suggest that cross-border mergers tend to happen in country pairs that are used to experience large currency movements, but in many situations, cross-border mergers tend to happen even without currency concerns (Erel et al., 2012). An analysis of two-way bilateral Foreign Direct Investment (FDI) has shown that the investment in foreign soil tends to happen when there is a strong presence of exchange rate volatility, and FDI between the US, the UK, Canada and Japan is stimulated in this scenario of volatility (Goldberg & Koistad, 1994).

An exchange rate movement might either increase or decrease the FDI, which involves firm-specific assets, that can be accessed either by foreign or domestic companies at the same currency. However, they can generate cash flows in multiple currencies, this may explain why Japanese acquisitions are favorable when the real value of the US dollar depreciates, especially for targets that own firm-specific assets (Blonigen, 1997).

A currency depreciation leads to a lower cost for foreign acquiring firms, on the other hand, the conversion of the revenues for the foreign acquiring firm could offset the cost reduction of the merger or acquisition (Georgopoulos, 2008). However, following the idea of Shleifer and Vishny (2003), if the acquirer believes that depreciation is temporary, then we could think that despite we could convert revenues at a lower rate at first, after a while the conversion rate will increase, and the deal would be profitable.

Another theory says that regarding the point above could happen, a foreign acquirer could take advantage of it, since the target may have a valuable innovation or a specific asset that does not involve foreign currency transactions and still generates returns in a diversity of markets and currencies at the same time (Guo & Trivedi, 2002). Other studies also support the idea that cross border M&As could be driven not only by tangible assets, but also for intangible assets, such as, technology, brand names, specialized workforce, etc (Kang & Johansson, 2000).

A study led by Georgopoulos (2008) suggests that depreciation leads to successful cross-border M&As but only in high R&D intensive industries. This highlights the importance of R&D in this matter.

Exchange rates changes affect costs of production overseas, which usually, is not followed by an increase in costs in the target market (wages, for example). If such movements are anticipated they could be reflected in higher costs of financing for the project, as the risk is adjusted to rates of returns among countries – interest rate parity (Klein & Rosengren, 1996).

Several empirical studies have found that a depreciation of the US dollar leads to an increase of FDI in the USA and to a higher takeover premium (Froot & Stein, 1991; Harris & Ravenscraft, 1991; Swenson, 1993).

Probably, the most direct effect of a currency depreciation is regarded to relative wealth, since a depreciation in the target's country increases the bidder's relative wealth, lowering the relative cost of capital, which could motivate potential acquirers to invest more intensely in assets abroad.

2.3 Financial Crisis and its impact on M&A

Financial crisis is another factor that can affect M&As, the crisis from 2008 to 2009 demanded struggling industries to consolidate in the economic downturn, and had effects on the global wealth distribution leading to shifting locations of potential growth; cross-border deals increased and were expanded to other areas such as Brazil, Russia, India, and China (Grave et al., 2012). In a financial scenario, it is important to join forces to improve expansion, growth, and innovation to overcome difficulties.

Financial crisis brought the sub-prime impact and put the global financial sector in need of a revolutionary reform, with risks of bankruptcy, growing deficits and loss of confidence on financial institutions. As a result, small companies were really struggling and only a few large companies could take advantage of consolidating the market by acquiring firms in their core industries (Grave et al., 2012).

China prospered in this financial crisis buying companies that suffer effects of sovereign-debt, focusing essentially on natural resources industry that has pioneered M&As innovation (Grave et al., 2012).

Africa, Latin America and parts of Asia companies have also made some steps to grow and started buying labor force to specific industry skills in some regions and then proceed to educate and build skills and offer good conditions to them to keep the key workers (Grave et al., 2012).

2.4 Barriers and catalysts to M&As

Mergers and Acquisitions involve a complex process, especially in cross-border deals. There are several features to pay attention to that could facilitate or make the deal harder. Differences or shocks in terms of language, culture, believes and geographic differences are some of the turnoffs that we could find in the process, while, differences in valuation, governance standards and access to lower costs of production could make the process smoother. But the intention of the acquirer could be beyond

that, the technology, communication, travel improvements have facilitated deals for firms which want to enhance its global position and wide diversity (Grave et al., 2012).

Most of the studies agree that cultural differences are barriers to cross-border M&As. However, it was found that in contrast with the announcement effect, in the long run, acquisitions are more successful if acquirer and target come from countries with different cultures (Chakrabarti, Gupta-Mukherjee, & Jayaraman, 2009).

A merger or acquisition abroad could also be motivated by the acquirer's will to get a quicker access to the markets where the target is located (Sharma, 2016).

2.5 Determinants of acquirer's returns

Target status classify companies as public, private, joint ventures, subsidiaries and government companies, which has influence on bidder's returns, essentially through two hypotheses.

The first related to managerial motive, which says that bidder is not willing to pay high premiums for smaller and less-known unlisted firms motivated by synergies that could be created with the deal, which does not increase the acquisition price. It is important to keep on mind that is easier to integrate small private targets than large listed targets. For these reasons some authors believe that bidders could have more benefits by acquiring private targets than public targets (Draper & Paudyal, 2006).

The second hypothesis is related to liquidity. Good standards of information are required in order to not have liquidity issues. However, usually there is lack and poor information for unlisted targets, which arises problems of liquidity. Due to illiquid targets, acquirer's bargaining power is enhanced, which also suggests that bidders of private targets are more likely to have higher gains, increasing the likelihood of underpaying (Chang, 1998; Draper & Paudyal, 2006).

Draper and Paudyal (2006) split their sample into two, one for listed targets and the other for unlisted. They find that acquirers of public targets deal with a significant loss, on average, of 0.4% around the deal announcement. On the other hand, a positive return up to 2,19% is observed when

unlisted targets are involved. These results seem to support the hypotheses of managerial motive and liquidity.

Focusing now on means of payment, there are many studies which supports the idea that the payment choices can influence the stock excess returns, and that happens due asymmetric information and, also, insufficient corporate monitoring.

Apparently, the means of payment could transmit some signs about the market price and consequently influence the stock gains. If the bidder company sees its stocks undervalued the acquirer could pursue a merger or acquisition paid in cash, otherwise, the acquirer's manager has incentives to choose a stock payment (Chang, 1998).

It is expected a positive impact on returns if the payment is made in cash and a negative impact if it is made in stock (Loughran & Vijh, 1997). Still, there is some studies that find no abnormal returns from a cash offering (Chang, 1998).

Other studies seem to agree with the idea that if the acquirer does the payment in stock suffers a decline in its share price, and the opposite happens if the payment is made in cash. The effect is expected to be the same also for the target's stock price (Draper & Paudyal, 1999).

A study by Draper and Paudyal (2006) shows that bidders that use cash as mean of payment, reveal excess returns around the announcement date, by approximately 2%. On the other hand, and contrary to other studies, they did not find a significant loss, on average, regarding payments in shares. The results are slightly different when the analysis is made for listed and unlisted targets.

Regarding listed targets, the results are sensitive concerning cash payments and there is a significant drop in case of a stock payment, empowering the hypothesis of asymmetric information, and this payment could be comparable to the act of issuing equity to the public. As far as unlisted targets are concerned, a cash payment has a significant impact on returns, and so does a payment in stock, however, in the last method of payment the results are not significant post-event period. In this study, the impact on bidder's shareholders for unlisted targets are positive either for cash or stock payment (Draper & Paudyal, 2006).

Privately held targets acquisitions paid in stock may create blockholders, since private targets are managed by a small group of people. Blockholders can have two different effects, it could serve as a group of people who cares about monitoring managerial performance (Shleifer & Vishny, 1986). However, the reverse effect could happen if that ownership concentration make the blockholders acting to maximize only their wealth or if makes deals more expensive (Fama& Jensen, 1983), Stulz (1988), (Morck, Shleifer, & Vishny, 1988).

A payment in stock can also have a negative impact on bidder's returns if the acquirer pays in stock to a publicly traded target with many shareholders who are dealing with asymmetric information (Myers & Majluf, 1984).

Some studies have found that companies that are used to make many mergers and acquisitions, called serial acquirers, earn lower returns up a certain number of deals (Boubakri, Chan, & Kooli, 2012; Fuller, Netter, & Stegemoller, 2002). This result may be explained by "anticipation effect", which means that the market is able to identify serial acquirers, and, therefore, the announcement returns are reduced with additional M&As (Karolyi, Liao, & Loureiro, 2015). Another explanation to the lower announcement returns could be given by agency costs required to monitor serial acquirers, that can destroy investment value to create an "illusion of growth" (Jensen, 2005), that illusion could be motivated by acquirer's overconfident after successful previous deals – management hubris (Billett & Qian, 2008).

Management hubris is many times related to the firm's size, the bigger the company is, more confident the managers are. Usually large firms start from negative dollar synergies due to the higher acquisition premiums that they are willing to pay. That could explain why small firms overperform large firms, exceeding the large firms' abnormal returns by 2.24 percentage points (Moeller, Schlingemann & Stulz, 2004).

Serial acquirers are gaining importance as far as M&As are concerned, to reinforce this idea it was found that 1/5 of listed acquirers is a serial acquirer. Serials acquirers act not only in the domestic market and industry, but, they pursue more and more in cross-border deals and in different industries, which is motivated by changes of industrial competition (Karolyi et al., 2015).

Other factor that has impact on bidder's returns in this kind of deals is differences between the bidder and target corporate governance standards. If acquirer is from a country that offers better protection, then, the synergies generated could be higher, and it may be anticipated that target assets would be better managed, leading to abnormal returns (Martynova & Renneboog, 2008). Also, macroeconomic factors, such as GDP (that can be related to corporate governance) may lead to international expansion, through mergers and acquisitions, for example (Boateng, Hua, Uddin, & Du, 2013).

3. Hypotheses

As it was mentioned, there is lack of studies that relate the effects of currency depreciations with the impact of returns on cross-border deals. That's why I will try to establish a link between depreciation variables with target status and acquirer's and target's industries.

Based on literature review a depreciation event should bring positive returns to the bidder (Goldberg & Koistad, 1994). Plus, if the company is seeking a specific asset that is able to generate returns in multiple currencies, it may take advantage from a currency depreciation to get access to get access to that asset at a lower cost (Guo & Trivedi, 2002). On the side of FDI (which includes cross-border M&As), the higher is the exchange rate volatility the higher is the investment (Guo & Trivedi, 2002). Given this, it is expected that depreciation leads to higher CARs.

Regarding target status, if the target is private, the announcement returns are expected to be higher regardless the mean of payment used (Draper & Paudyal, 2006). So, in interaction with currency depreciation variables it is expected a positive impact on the CARs from this interaction.

At last, if the acquirer and target play in the same industry the impact of currency shocks on bidder's returns is expected to be positive (Harris & Ravenscraft, 1991), which makes me believe that the interaction of the industry variables with depreciation variables would once more lead to a positive impact on the CARs.

In this study I have to lower the recommended level of depreciation to consider a currency shock, that's why besides the variable "aftershock" I also use the variable "multipleshocks" to see if the effect of the second is stronger or more significant. For this reason, I will test two hypotheses, one of them related to the variable "aftershock" and the other with the variable "multipleshocks". Each hypothesis will be divided into two parts, according to the interactions above mentioned.

I am going to test the following hypotheses:

H1) bidders obtain higher announcement returns when they acquire a target from countries that have suffered a currency depreciation.

H1a) The effect of H1 is enlarge when the target is private

H1b) The effect of H1 is enlarge when acquirer and target play in the same industry

H2) bidders obtain higher announcement returns when they acquire a target from countries that have suffered multiple currency depreciations.

H2a) The effect of H2 is enlarge when the target is private

H2a) The effect of H2 is enlarge when acquirer and target play in the same industry

4 Methodology

4.1 Event Study

This study aims to measure the impact of currency shocks on announcement returns in cross-border M&As for acquirers from Eurozone, the UK and the USA.

In order to measure those returns, I will use the same methodology used by Frankel and Rose (1996) event study methodology, that is the most used method to assess the value creation resulted of M&As.

An event study is made in order to measure a specific event on the value of a given firm, in this case, we will measure the impact of a cross-border merger or acquisition on the firm value. First, we have to define an event window, that is typically very short, a few days before the event and a few days after. We also, need to define the estimation window, that will end a few days before the event window, to not take the risk of contamination. The estimation window (by average) will help us estimating the expected stock price if the event doesn't occur. Then, we just need to compute the difference between the expected stock price without the event and the actual stock price to get the expected returns.

The abnormal return (AR) for any company j in day t is given by:

$$AR_{i\tau} = R_{j\tau} - \widehat{\alpha_j} - \widehat{\beta_i} R_{m\tau},$$

where $R_{i\tau}$ represents the realized stock return at day t, the predicted return is given by $\widehat{\alpha_j} - \widehat{\beta_j} R_{m\tau}$ that is the estimate of the shareholder return if the takeover hadn't happened, finally τ may assume different values, is equal to zero at the time of the announcement, is equal to 1 one day after the announcement, is equal to -1 one day before the announcement and so on. It is important to say that the control return is estimated from α and β that are computed from the regression of the individual firm return, based on the market return ($R_{m\tau}$) for the 255-day period ending 25 days before the announcement.

Finally, the cumulative abnormal return - (CAR) between any 2 dates (τ_a and τ_b) is given by:

$$CAR_{j(\tau_1,\tau_2)} = \sum_{i=\tau_b}^{i=\tau_a} AR_{j\tau}.$$

In this study I use three window lengths, ±1 ($\tau_a = -1$ and $\tau_b = 1$),±2 ($\tau_a = -2$ and $\tau_b = 2$) and ±5 ($\tau_a = -5$ and $\tau_b = 5$). The CARs will be computed for each deal.

4.2 Regressions

In order to test if a currency depreciation in the target's country leads to positive abnormal returns for the bidder, being the dependent variable the Cumulative Abnormal Returns (CAR), I will test the null hypothesis - the event has no impact on firm value.

As currency shocks would take time to be noticed, under this hypothesis, I use the variable "aftershock", which is the variable of greatest interest in this analysis, it is a dummy variable and is equal to one in the four quarters after the shock. Moreover, there will be an interaction of this variable with acquirer and target's industries and target public status.

Under the first hypothesis the following regressions are used for each of the three samples in this study:

$$car\ (\tau_1,\tau_2) = \beta_0 + \beta_1 privatetarget + \beta_2 cash + \beta_3 stock + \beta_4 sameindustry + \beta_5 serialacq + \beta_6 acqgdp(t) + \beta_7 lnacqsize(t-1) + \beta_8 MBV(t-1) + \beta_9 leverage(t-1) + \beta_{10} aftershock + \beta_{11} afterschok\_privatetarget + \delta_1 acqindustry + \delta_2 targetnation + \varepsilon \qquad 1a)$$

Where, $car\ (\tau_1,\tau_2)$ is the dependent variable that represents the cumulative abnormal return for a given event window, which is computed for each deal; "privatetarget" is a dummy variable, which is equal to 1 if the target is private; "cash" is a dummy variable, which is equal to 1 if the deal payment is made exclusively in cash; "stock" is a dummy variable, which is equal to 1 if the deal payment is made exclusively in stock; "sameindustry" is a dummy variable, which is equal to 1 if acquirer and target operate in the same industry; "serialacq" is a dummy variable, which is equal to 1 if over the all sample the bidder acquires more than five times; "acqgdp" is the GDP growth rate of the acquirer's nation in the year of the deal; "lnacqsize(t-1)" is the logarithmic variable of the acquirer's total assets, one year before the deal; "MBV t-1" is the logarithmic variable of the acquirer's market-to-book value,

one year before the deal, in the acquirer's currency ; "leverage t-1" is the ratio of Total Liabilities/Total Assets, one year before the deal, in the acquirer's currency; "aftershock" is a dummy variable, which is equal to 1 in the four quarters after the currency shock; "aftershock_privatetarget" is a dummy variable, which is equal to 1 for private targets four quarters after a currency shock ; "acqindustry" represents dummies for acquirer industries (classified by the 2-digit SIC-codes); finally "targetnation" represents dummies for the target's Nation .

$$car\ (\tau_1,\tau_2) = \beta_0 + \beta_1 privatetarget + \beta_2 cash + \beta_3 stock + \beta_4 sameindustry + \beta_5 serialacq + \beta_6 acqgdp(t) + \beta_7\ lnacqsize(t-1) + \beta_8\ MBV(t-1) + \beta_9\ leverage(t-1) + \beta_{10}\ aftershock + \beta_{11} aftershock\_sameindustry + \delta_1 acqindustry + \delta_2 targetnation + \varepsilon \quad 1b)$$

All the variables are defined above, except "aftershock_sameindustry" that is a dummy variable, which is equal to 1 for acquirers and targets that play in the same industry (classified by the 2-digit SIC-codes) four quarters after a currency shock.

Under the second hypothesis the following regressions are used for each of the three samples in this study:

$$car\ (\tau_1,\tau_2) = \beta_0 + \beta_1 privatetarget + \beta_2 cash + \beta_3 stock + \beta_4 sameindustry + \beta_5 serialacq + \beta_6 acqgdp(t) + \beta_7 lnacqsize(t-1) + \beta_8 MBV(t-1) + \beta_9 leverage(t-1) + \beta_{10} multipleshocks + \beta_{11} multipleshocks\_privatetarget + \delta_1 acqindustry + \delta_2 targetnation + \varepsilon \quad 2a)$$

All the variables are defined above, except "multipleshocks" that is a dummy variable, which is equal to 1 if in the last four quarters there were at least two currency shocks; and also the variable "multipleshocks_privatetarget that is a dummy variable, which is equal to 1 for private targets if in the last four quarters there were at least two currency shocks.

$$car\ (\tau_1,\tau_2) = \beta_0 + \beta_1 privatetarget + \beta_2 cash + \beta_3 stock + \beta_4 sameindustry + \beta_5 serialacq + \beta_6 acqgdp(t) + \beta_7\ lnacqsize(t-1) + \beta_8\ MBV(t-1) + \beta_9\ leverage(t-1) + \beta_{10}\ multipleshoks + \beta_{11} multipleshocks\_sameindustry + \delta_1 acqindustry + \delta_2 targetnation + \varepsilon \quad 2b)$$

All the variables are defined above, except “multipleshocks_sameindustry” that is a dummy variable, which is equal to 1 for acquirers and targets that play in the same industry (classified by the 2-digit SIC-codes) if there were at least 2 currency shocks in the last 4 quarters.

As I include the variable “targetnation” in all regressions, in the Eurozone sample, I could have added a variable for acquirer’s nation, because it is the only sample with more than one acquirer. However, I already have the variable “acqgdp” that already captures some characteristics of acquirer’s country. Plus, in this way all the regressions are exactly the same among the three samples.

5.Data

From SDC Platinum, we gathered three samples regarding cross-borders M&As. The first when the acquirer is in one of the countries that belong to the Eurozone, while the target is not included in that group of countries. The second when the acquirer is from the UK in relation to foreign targets. Finally, the third sample includes US acquirers and non-US targets. I downloaded the data for deals announcements between 2009 and 2018.

Attending to the methodology used, I had to apply some criteria on these samples, using the following filters:

1) Bidder must be listed
2) Keep only 1 deal per month for each bidder
3) Bidder must acquire at least 30% of the target
4) Bidder must own more than 50% of the target after the deal
5) Drop the observation if there is no informational available about Acquirer Net Assets[1], Acquirer Liabilities[2] and Acquirer Market to Book Value[3] or if it was not possible to gather enough returns to compute the Cumulative Abnormal Returns.
6) Targets that represent less than 3% of the total deals are eliminated.

The first filter must be used, otherwise it would not be possible to compute the bidder's CAR, that is the dependent variable in this analysis.

The second is used to avoid contamination in case of multiple events.

The third and fourth are used to guarantee representative and significant deals.

The fifth filter has to be used because with no information about those variables it wouldn't be possible to run the regressions.

[1] In relation to the year before transaction.
[2] In relation to the year before transaction.
[3] In relation to the year before transaction.

Finally, the last filter allows us to select the main target's countries for each acquirer, which makes the analysis easier. If this filter was not used, we would have to download innumerous exchange rates, CPIs , making all the computations necessary to get our currency shocks and other variables for deals that are not much significant.

Now, in the clean samples we have a total of 1204 observations for Eurozone, 763 observations for the UK and 2126 observations for the US.

Looking at the table 1, we can see that all the UK main targets are on the US and Eurozone list, excluding of course situations of Target Nation=Acquirer Nation. The US and UK lists have a few more Target Nations, and they have almost the same main targets, except Switzerland and Sweden on the Eurozone side and France on the US side.

To sum up, the most repeated Target nations are from United States, United Kingdom, Germany, Netherlands, Brazil, Canada and Australia.

Table 1 Target Nations

The table shows the Target Nations for each acquirer sample, after the last filter is applied

Panel A : Acquirers from Eurozone			
Target Nation	**Freq.**	**Percent**	**Cum.**
United States	526	30.42	30.42
United Kingdom	267	15.44	45.86
Switzerland	107	6.19	52.05
Sweden	86	4.97	57.03
Brazil	85	4.92	61.94
Canada	68	3.93	65.88
Australia	65	3.76	69.64

Panel B: Acquirer from the United Kingdom			
Target Nation	Freq.	Percent	Cum
United States	479	40.63	40.63
Australia	87	7.38	48.01
Germany	79	6.7	54.71
Canada	59	5	59.71
Netherlands	59	5	64.72

Panel C: Acquirer from the United States			
Target Nation	Freq.	Percent	Cum.
United Kingdom	700	19.68	19.68
Canada	551	15.49	35.17
Germany	265	7.45	42.62
Australia	203	5.71	48.33
France	156	4.39	52.71
Netherlands	136	3.82	56.54
Brazil	115	3.23	59.77

Being the Eurozone sample, the only one with more than one Acquirer Nation, it is relevant to see from where are the main bidders from. Looking at table 2, we can see that bidders from France, Germany, Finland and Netherlands represent almost of 80% of the Eurozone sample.

Table 2 Deals by acquirer nation

The table shows how many deals are made by each acquirer of the Eurozone sample

NATION	FREQ.	PERCENT	CUM.
FRANCE	427	35.47	35.47
GERMANY	276	22.92	58.39
FINLAND	127	10.55	68.94
NETHERLANDS	119	9.88	78.82
ITALY	59	4.90	83.72
BELGIUM	50	4.15	87.87
SPAIN	47	3.90	91.78
IRELAND-REP	44	3.65	95.43
LUXEMBOURG	30	2.49	97.92
AUSTRIA	20	1.66	99.58
ESTONIA	2	0.17	99.75
GREECE	2	0.17	99.92
PORTUGAL	1	0.08	100.00
TOTAL	1204	100.00	

In table 3 we can find some statistics of our main variables used in our regressions for our 3 samples.

The variable "privatetarget" assume similar values for the 3 samples, according its mean, which is 61.8%, 62.6% and 65.6%, for deals from the Eurozone, the UK and the USA, respectively. We can then conclude that more than 60% of our deals involve a private target.

Moving to "cash" and "stock", we can observe that in the 3 samples, it is found that the percentage of deals paid in stock doesn't go beyond 3%. On the other hand, only cash payments represent 12% for the Eurozone deals, 27.2% for the UK deals and 15.2% for the US deals.

We classified industries as Rose, Sørheim and Lerkerød (2017) do, using the two-digit SIC code. Our statistics indicate that about 50-52% of our sample deals are made by acquirers and targets that play in the same industry.

If the acquirer is involved in more than 5 deals over the sample, it is characterized as "serial acquirer", there are several possible classifications for serial acquirers, this one follows Karolyi et al. (2015). Looking at the tables we can conclude that either the Eurozone or the UK have the presence of a serial acquirer for more than half of the deal, 52.1% and 54,6%, respectively. Regarding the US this value is a bit lower, 41.6%.

The variable "aftershock", that is equal to 1 in the 4 quarters after the deprecation shock, covers 24.4%, 13,3% and 43,1% of the total deals for the Eurozone, the UK and the US samples. "Multipleshocks", that is equal to 1 if in the last 4 quarters there were at least 2 shocks, covers 7.7%, 2,24% and 23,4%, respectively. Finally, the variable "shock" that is equal to 1 if there is a shock in relation to the same quarter of the previous year, covers 7.7%, 4.61% and 4,31%, respectively. After this, it is possible to understand that the US acquirers see its target's currencies devaluated more frequently than the Eurozone and the UK. Even the "multipleshocks" frequency is much higher for the US than the other two groups.

The variable "acqgdp" represents the GDP growth (annual %) of the acquirer's nation, by the table above we can see that half of the deals occur in years for which GDP growth is up to 1.51%, 1.823% and 2.250% for the Eurozone, the UK and the US samples, respectively. The maximum values for this variable are quite similar for the UK and the US, that are 2.948% and 2.881%, and is much higher for the Eurozone sample, 25.12% which is explained because in this sample there are many acquirers. The maximum value for the Eurozone sample belongs to Ireland, and its growths are quite unstable over the sample, it reaches a minimum of 0.18% in 2012 and the referred maximum in 2015.

Acquirer's total assets in the year before the deal is characterized as "totalassets(t-1)", it is measured according to the acquirer's currency, which means that is not correct to make comparisons among the three samples. In the Eurozone sample half of the acquirers had in the year before the deal total assets valued up to 2.699 million €, the UK 0.690338 million £ and the US 1.030 million $.

Regarding the acquirer's Market-to-Book Value in the year before the deal represented as "MBV(t-1)", has similar medians among the Eurozone, the UK and the US, 2.040, 2.280 and 2.430, respectively, which means that acquirers from the US are more valued by the market.

Finally, the leverage ratio in the year before the deal, “leverage(t-1)”, which is computed by the ratio Total Liabilities (t-1) / Total Assets (t-1), is once more quite similar for the Eurozone, the UK and the USA, regarding medians, that display values of 0.58,0.50,0,52, respectively.

Table 3 Descriptive statistics

Table 3 shows descriptive statistics for the main variables of each sample, the variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results.

The meaning of each variable can be consulted in the appendix.

Panel A: Eurozone sample

VARIABLES	(1) N	(2) Mean	(3) p50	(4) Sd	(5) min	(6) max
Privatetarget	1,195	0.618	1	0.486	0	1
Cash	1,195	0.120	0	0.325	0	1
Stock	1,195	0.0117	0	0.108	0	1
Sameindustry	1,195	0.520	1	0.500	0	1
Serialacq	1,195	0.521	1	0.500	0	1
Aftershock	1,195	0.244	0	0.430	0	1
Multipleshocks	1,195	0.0770	0	0.267	0	1
Shock	1,195	0.0770	0	0.267	0	1
Acqgdp	1,195	1.338	1.551	2.782	-9.132	25.12
Totalassets(t-1) million€	1,195	8.595	2.699	1.1940	67,709	3.8790
MBV (t-1)	1,195	2.321	2.040	1.228	0.890	4.680
Leverage (t-1)	1,195	0.579	0.582	0.143	0.338	0.786

Panel B: UK sample

VARIABLES	(1) N	(2) Mean	(3) p50	(4) Sd	(5) min	(6) max
Privatetarget	760	0.626	1	0.484	0	1
Cash	760	0.272	0	0.445	0	1
Stock	760	0.0250	0	0.156	0	1
Sameindustry	760	0.513	1	0.500	0	1
Serialacq	760	0.546	1	0.498	0	1
Aftershock	760	0.133	0	0.340	0	1
Multipleshocks	760	0.0224	0	0.148	0	1
Shock	760	0.0461	0	0.210	0	1
Acqgdp	760	1.397	1.823	1.830	-4.188	2.948
Totalassets(t-1) million £	760	2.340	0.690338	3.637	33,128	1.2930
MBV(t-1)	760	2.730	2.280	1.640	0.890	5.980
Leverage (t-1)	760	0.502	0.504	0.185	0.208	0.799

Panel C: US sample

VARIABLES	(1) N	(2) mean	(3) p50	(4) sd	(5) min	(6) max
Privatetarget	2,118	0.656	1	0.475	0	1
Cash	2,118	0.152	0	0.359	0	1
Stock	2,118	0.0165	0	0.128	0	1
Sameindustry	2,118	0.500	1	0.500	0	1
Serialacq	2,118	0.416	0	0.493	0	1
Aftershock	2,118	0.431	0	0.495	0	1
Multipleshocks	2,118	0.234	0	0.424	0	1
Shock	2,118	0.183	0	0.387	0	1
Acqgdp	2,118	1.923	2.250	1.272	-2.537	2.881
Totalassets(t-1) million$	2,118	2.700	1.030	3.638	66,460	1.2410
MBV	2,118	2.847	2.430	1.675	0.930	6.270
Leverage	2,118	0.524	0.523	0.193	0.219	0.827

5.1 Currency Shocks

In order to identify the most relevant variable in this work, is necessary to identify currency shocks as a result of depreciation episodes, which will be crucial to understand how shocks affect our CARs.

Usually currency shocks episodes are characterized as a depreciation of at least 25%, in relation to another currency, for differences computed in relation to the same quarter of the previous year (Desai, Foley, & Forbes, 2008; Frankel & Roseb, 1996). However, following the same values I was not able to find any currency shocks for the target's currencies for the UK sample, regarding the Eurozone sample I only found shock for Brazil and in the US sample I found 8 shocks for Brazil and 1 for France and Australia (no shocks for the remaining 3 targets). Lowering the reference value to 15% the currency shocks improve significantly for the US sample, and the Eurozone sample, however in the last sample I did not find shocks for Canada and Switzerland, for the UK sample I only got 1 shock for Canada and 2 shocks for Australia (no shocks for the three remaining target's countries). In order to assess better results, I will consider that there is a currency shock when there is a depreciation of 10% at least, in relation to the same quarter in the year before – homologous analysis. Plus, I compute currency changes computing real exchange rates, using for that effect the CPI for the required countries.

In this analysis was required to extract from Datastream the quarterly nominal exchange rates[4] from the main target's currencies to acquirer's currencies.

For the Eurozone sample, I obtained (x US $ to 1), (x £ to 1€), (x Swiss franc to 1€), (x Brazilian real to 1€), (x Swedish krona to 1€), (x Canadian $ to 1€) and (x Australian $ to 1€).

Regarding the UK sample, I obtained (x US $ to 1£), (x Australian $ to 1£), (x € to 1£) and (x Canadian $ to 1£).

[4] Exchange rates were collected from 4 quarters before the beginning of the sample untill the end, in order to identify shocks from the beginning if necessary. Those 4 quarters are necessary, because it is made a homologous analysis, and for that reason we will get missing values from the first 4 quarters.

Finally, for the last sample, I obtained (x £ to 1 US $), (x Canadian $ to 1 US $), (x € to 1 US $), (x Australian $ to 1 US $) and (x Brazilian real to 1 US $).

Then, those exchange rates were adjusted to the rate of inflation, using for that purpose the Consumer Price Index (CPI)[5], of each target country, which was also gathered from Datastream.

Table 4 Depreciations against acquirer's currency

Table 4 shows the number of currency shocks found in the entire period for each sample, for year and quarters.

Panel A: Depreciations against €		
US $	3 shocks	2009(Q4) 2011(Q2) 2018(Q1)
UK: £	3 shocks	2009(Q1) 2016(Q3,Q4)
Swiss franc	0 shocks	-
Brazilian real	10 shocks	2009(Q1) 2013(Q3,Q4) 2014(Q1) 2015(Q3,Q4) 2016(Q1) 2018(Q1,Q2,Q3)
Sweden krona	2 shocks	2009(Q1,Q2)
Canadian $	3 shocks	2013(Q3,Q4) 2014(Q1)

Panel B: Depreciations against £		
US $	1 shock	2009(Q4)
Australia $	4 shocks	2013(Q4) 2014(Q1,12) 2015(13)
Canadian $	4 shocks	2014(Q1,Q2),2015(Q3,Q4)
Germany: €	1 shock	2015 (Q1)
Netherlands: €	1 shock	2015(Q1)

[5] Following the same line as exchange rates, also, the CPIs were gathered from 4 quarters before the sample untill 2018.

Panel C: Depreciations against the US $		
UK: £	8 shocks	2009(Q1,Q2,Q3) 2015(Q2) 2016(Q3,Q4), 2017(Q1,Q2)
Canadian $	7 shocks	2009(Q1,Q2,Q3) 2015(Q2,Q3,Q4) 2016(Q1)
Germany: €	9 shocks	2009(Q1,Q2) 2010(Q3) 2012(Q3) 2015(Q1,Q2,Q3,Q4) 2016(Q1)
Australian $	9 shocks	2009(Q1,Q2,Q3) 2013(Q3) 2014(Q1) 2015(Q2,Q3,Q4) 2016(Q1)
France: €	9 shocks	2009(Q1,Q2) 2010(Q3) 2012(Q3) 2015(Q1,Q2,Q3,Q4) 2016(Q1)
Netherlands:€	9 shocks	2009(Q1,Q2) 2010(Q3) 2012(Q3) 2015(Q1,Q2,Q3,Q4) 2016(Q1)
Brazilian real	11 shocks	2009(Q1,Q2,Q3), 2012(Q3), 2014(Q1), 2015(Q2,Q3,Q4), 2016(Q1), 2018(Q3,Q4)

Looking first at panel A, we can see that Brazilian real is the currency that suffers more from currency depreciation shocks against euro, having 11 shocks, the second currency with more shocks (6) is the Australian dollar, then we have the pound, the US dollar and the Canadian dollar with 3 shocks, Sweden krona with 2 shocks and at last we have the Swiss franc without any shocks in the sample.

Moving to panel B, we can observe that there are not many currency shock depreciations against £, we have 4 shocks for Australian and Canadian dollar and only 1 shock for the US dollar and for euro (from France and Netherlands).

Finally, in panel C, we can observe the currency depreciations shocks in relation to the US dollar, as had happened in the Eurozone Sample, Brazil is once more the currency with more shocks (11), followed by Australian dollar, and euro (from Germany, France and Netherlands) with 9 shocks, then we have £ with 8 shocks and Canadian dollar with 7 shocks. The US sample is the one with more currency shocks in relation to the main target's currencies. We can also highlight that either Eurozone sample or US sample display a devaluation of the pound in the 2 quarters after the Brexit referendum 2016(Q3,Q4), in the US Sample those shocks are also followed by another 2 shocks, 2017(Q1,Q2).

Table 5 CARs analysis

Table 5 shows tests of equality of means and medians, it also shows t-stats and Wilcoxon-stats from the tests, respectively. *, **, *** stand for statistical significance at 10%, 5%, and 1% levels, respectively.

Panel A: Eurozone sample

CAR(-1,+1)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	903	0.009	0.003	-2.345***	-1.071
1	292	0.017	0.004		
diff (1-0)	1195	0.008	0.001		
CAR(-2,+2)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	903	0.010	0.004	-1.075	0.256
1	292	0.011	0.005		
diff (1-0)	1195	0.001	0.001		
CAR(-5,+5)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	903	0.008	0.004	-0.2906	0.273
1	292	0.010	0.004		
diff (1-0)	1195	0.002	0.000		

Panel B: UK sample

CAR(-1,+1)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	659	0.012	0.005	-0.638	-0.266
1	101	0.016	0.008		
diff (1-0)	760	0.004	0.003		
CAR(-2,+2)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	659	0.012	0.005	-0.0228	0.438
1	101	0.012	0.004		
diff (1-0)	760	0.000	-0.001		
CAR(-5,+5)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	659	0.010	0.005	-0.423	0.077
1	101	0.014	0.006		
diff (1-0)	760	0.004	0.001		

Panel C: US sample

CAR(-1,+1)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	1205	0,006	0,002	0,678	1,215
1	913	0,003	0,000		
diff (1-0)	2118	-0,003	-0,002		
CAR(-2,+2)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	1205	0,008	0,002	0,9166	0,567
1	913	0,002	0,001		
diff (1-0)	2118	-0,006	-0,001		
CAR(-5,+5)					
Aftershock	obs	Mean	Median	t-stats means	Wilcoxon z-test
0	1205	0,003	-0,001	0,4164	0,156
1	913	-0,002	0,000		
diff (1-0)	2118	-0,005	0,001		

Looking at panel A from table 5 we can observe that the tests of equality of means and medians on CARS, that are computed for each deal. The results are only significant for the Eurozone CAR(-1,+1), that is the cumulative abnormal return between one day before and one day after the announcement, which is statistically significant at 1% level and reveals that the mean for The CAR(-1,+1) is always positive either if aftershock is equal to zero (0.9%) or to one(1.7%), but the impact is higher under the effect of aftershock=1, the difference between the means of CAR(-1,+1) when "aftershock"=1 and "aftershock"=0 is of 0.008, or 0.8 percentage points. The remaining insignificant Eurozone CARS are positive independent of the value that aftershock assumes, and there's a higher impact for the deals that occur 4 quarters after a currency shock. The insignificant Eurozone medians are always positive and higher for deals that occurs 4 quarters after a currency shock, expect for CAR(-5,+5).

Looking at panel B, we can say that the UK Sample is not significant regarding the means and medians for the CARS. The table shows that all the CARS are positive either under the effect of depreciation or not, but they are higher for deals that occur 4 quarters after a currency shock, except for CAR(-2,+2) that the difference between the means is approximately zero. The medians are also positive for all situations, but higher for CAR(-1,+1) and CAR(-5,+5) when "aftershock"=1, and lower for the CAR(-2,+2).

Moving to panel C, we can see that once more there is no significance for means and medians. The means for the CARS are always positive, except for CAR (-5,+5) when aftershock=1. Looking at the differences, we can also see that CARS are higher when "aftershock"=0, for all the CARS, which leads to better results when there is not a depreciation effect. Finally, looking at the medians they have always positive values whatever the value that "aftershock" assumes, except for CAR(-5,+5) when "aftershock"=0. The medians are higher when "aftershock"=0 for CAR(-1,+1) and CAR(-2,+2) and lower for CAR(-5,+5).

6. Empirical Results

Table 6 Regressions to test the hypotheses H1a) and H1b)

Table 6 displays the outputs for the regressions 1a) and 1b) for the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5) for each sample.

Panel A: *Eurozone regressions of CARS- 1st hypothesis*

VARIABLES	H1a) car(-1,+1)	H1a) car(-2,+2)	H1a) car(-5,+5)	H1b) car(-1,+1)	H1b) car(-2,+2)	H1b) car(-5,+5)
privatetarget	0.0006	0.0019	-0.0031	-0.0037	-0.0031	-0.00898**
	(0.185)	(0.538)	(-0.705)	(-1.185)	(-0.932)	(-2.180)
cash	-0.0018	0.0018	0.0001	-0.0020	0.0016	-0.0001
	(-0.508)	(0.489)	(0.0226)	(-0.554)	(0.425)	(-0.0193)
stock	0.0087	0.0172	0.0117	0.0074	0.0154	0.0104
	(0.364)	(0.677)	(0.337)	(0.307)	(0.606)	(0.297)
sameindustry	0.00850*	0.00929**	0.0122***	0.00700**	0.00804**	0.00900**
	(1.914)	(2.200)	(2.732)	(2.293)	(2.383)	(2.103)
serealacq	0.0002	0.0002	-0.0002	0.0003	0.0003	0.0000
	(0.0534)	(0.0478)	(-0.0385)	(0.0781)	(0.0686)	(-0.00483)

acqgdp(t)	-0.0001	0.0002	0.0000	-0.0002	0.0001	0.0000
	(-0.302)	(0.277)	(-0.0200)	(-0.331)	(0.215)	(-0.0201)
lnacqsize(t-1)	-0.0060***	-0.0060***	-0.0063***	-0.0061***	-0.0061***	-0.0065***
	(-3.086)	(-3.324)	(-3.284)	(-3.005)	(-3.261)	(-3.309)
MBV(t-1)	0.0041	0.0036	0.0035	0.0039	0.0035	0.0033
	(1.497)	(1.465)	(1.420)	(1.479)	(1.422)	(1.353)
leverage(t-1)	0.0377**	0.0382**	0.0315	0.0390**	0.0396**	0.0333*
	(2.097)	(2.175)	(1.596)	(2.085)	(2.190)	(1.658)
aftershock	0.0197	0.0184*	0.0162	0.00677*	0.0041	-0.0039
	(1.600)	(1.653)	(1.550)	(1.679)	(0.889)	(-0.612)
aftershock_privatetarget	-0.0167	-0.0197*	-0.0230**			
	(-1.427)	(-1.789)	(-2.014)			
aftershock_sameindustry				0.0055	0.0044	0.0121
				(0.530)	(0.440)	(1.127)
Constant	0.0514	0.0446	0.0859**	0.0547	0.0480	0.0915**
	(1.522)	(1.363)	(2.257)	(1.549)	(1.416)	(2.318)
Observations	1,195	1,195	1,195	1,195	1,195	1,195
R-squared	0.102	0.109	0.108	0.098	0.104	0.104
Acquirer Industry Dummy	YES	YES	YES	YES	YES	YES
Target Nation Dummy	YES	YES	YES	YES	YES	YES

Note: The estimations from the regression 1a) and 1b) presented in section 4 are presented in this table. The dependent variables are the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), all variables definition can be consulted in the appendix. The variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results. . T-statistics are in parentheses. ***, ** or * indicates that the coefficient estimates are significant at 1%, 5% or 10% level, respectively.

Panel B: *UK regressions of CARS- 1st hypothesis*

VARIABLES	H1a) car(-1,+1)	H1a) car(-2,+2)	H1a) car(-5,+5)	H1b) car(-1,+1)	H1b) car(-2,+2)	H1b) car(-5,+5)
privatetarget	-0.0047	-0.0039	-0.0099	-0.0058	-0.0052	-0.0127
	(-0.810)	(-0.578)	(-1.187)	(-1.047)	(-0.801)	(-1.583)
cash	0.0020	-0.0020	-0.0060	0.0021	-0.0019	-0.0061
	(0.395)	(-0.343)	(-0.743)	(0.412)	(-0.333)	(-0.753)
stock	-0.0025	0.0167	0.0017	-0.0024	0.0168	0.0016
	(-0.0779)	(0.392)	(0.0362)	(-0.0732)	(0.395)	(0.0326)
sameindustry	-0.0070	-0.0076	-0.0035	-0.0061	-0.0070	-0.0044
	(-1.542)	(-1.444)	(-0.480)	(-1.251)	(-1.243)	(-0.577)
serealacq	-0.0019	-0.0061	-0.0098	-0.0017	-0.0060	-0.0097
	(-0.319)	(-0.871)	(-1.054)	(-0.284)	(-0.845)	(-1.046)
acqgdp(t)	-0.00304*	-0.0030	-0.0045	-0.0030	-0.0030	-0.0044
	(-1.657)	(-1.483)	(-1.594)	(-1.644)	(-1.470)	(-1.571)
lnacqsize(t-1)	-0.0058***	-0.0051**	-0.0035	-0.0058***	-0.0051**	-0.0034
	(-2.778)	(-2.152)	(-1.068)	(-2.759)	(-2.137)	(-1.050)
MBV(t-1)	-0.0009	0.0005	0.0019	-0.0009	0.0005	0.0020
	(-0.657)	(0.272)	(0.928)	(-0.660)	(0.275)	(0.959)
leverage(t-1)	0.0208	0.0182	0.0007	0.0207	0.0180	0.0000
	(1.138)	(0.818)	(0.0246)	(1.131)	(0.809)	(-0.0005)
aftershock	0.0187	0.0179	0.0285	0.0145	0.0111	0.0072
	(1.312)	(1.086)	(1.405)	(1.370)	(0.919)	(0.459)
aftershock_privatetarget	-0.0116	-0.0135	-0.0259			
	(-0.707)	(-0.720)	(-1.102)			

aftershock_sameindustry				-0.0078	-0.0055	0.0048
				(-0.583)	(-0.366)	(0.255)
Constant	0.126***	0.133***	0.153***	0.125***	0.132***	0.153***
	(4.257)	(4.039)	(3.537)	(4.212)	(4.020)	(3.544)
Observations	760	760	760	760	760	760
R-squared	0.104	0.081	0.093	0.103	0.080	0.091
Acquirer Industry Dummy	YES	YES	YES	YES	YES	YES
Target Nation Dummy	YES	YES	YES	YES	YES	YES

Note: The estimations from the regression 1a) and 1b) presented in section 4 are presented in this table. The dependent variables are the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), all variables definition can be consulted in the appendix. The variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results. . T-statistics are in parentheses. ***, ** or * indicates that the coefficient estimates are significant at 1%, 5% or 10% level, respectively.

Panel C: *US regressions of CARS- 1st hypothesis*

VARIABLES	H1a) car(-1,+1)	H1a) car(-2,+2)	H1a) car(-5,+5)	H1b) car(-1,+1)	H1b) car(-2,+2)	H1b) car(-5,+5)
privatetarget	-0.0031	-0.0045	-0.0290	-0.0053	-0.0055	-0.0269
	(-0.311)	(-0.340)	(-1.001)	(-0.668)	(-0.500)	(-1.112)
cash	-0.0024	-0.0010	-0.0104	-0.0022	-0.0008	-0.0097
	(-0.611)	(-0.174)	(-1.063)	(-0.562)	(-0.142)	(-1.023)
stock	0.0009	0.1320	-0.0001	0.0022	0.1330	0.0011
	(0.00813)	(0.740)	(-0.00436)	(0.0186)	(0.743)	(0.00373)
sameindustry	0.0064	0.0002	0.0159	0.0162	0.0071	0.0346
	(0.894)	(0.0173)	(0.677)	(1.584)	(0.459)	(1.059)
serealacq	0.00512**	0.0053	0.0103**	0.00563**	0.0057	0.0112**
	(1.984)	(1.546)	(2.144)	(2.118)	(1.621)	(2.300)
acqgdp(t)	-0.0005	-0.0021	-0.0042	-0.0003	-0.0020	-0.0037
	(-0.354)	(-1.147)	(-1.626)	(-0.254)	(-1.056)	(-1.473)
lnacqsize(t-1)	-0.0057**	-0.0061**	-0.0044	-0.0056**	-0.0061**	-0.0043
	(-2.472)	(-2.182)	(-1.001)	(-2.462)	(-2.170)	(-0.975)
MBV(t-1)	-0.0030	-0.0024	-0.0001	-0.0030	-0.0024	0.0000
	(-1.413)	(-0.870)	(-0.0156)	(-1.408)	(-0.865)	(-0.00694)
leverage(t-1)	0.0307	0.0434	0.0204	0.0310	0.0437	0.0213
	(0.872)	(0.880)	(0.229)	(0.884)	(0.888)	(0.241)
aftershock	-0.0016	-0.0086	-0.0090	0.0073	-0.0014	0.0178
	(-0.345)	(-1.177)	(-0.925)	(1.273)	(-0.132)	(0.914)
aftershock_privatetarget	-0.0037	-0.0014	0.0074			
	(-0.539)	(-0.154)	(0.481)			
aftershock_sameindustry				-0.0227**	-0.0161	-0.0440*

				(-2.374)	(-1.191)	(-1.800)
Constant	0.0772***	0.0751***	0.0037	0.0800***	0.0763***	-0.0005
	(5.035)	(3.483)	(0.121)	(5.337)	(3.638)	(-0.0156)
Observations	2,112	2,112	2,112	2,112	2,112	2,112
R-squared	0.037	0.086	0.095	0.040	0.087	0.096
Acquirer Industry Dummy	YES	YES	YES	YES	YES	YES
Target Nation Dummy	YES	YES	YES	YES	YES	YES

Note: The estimations from the regression 1a) and 1b) presented in section 4 are presented in this table. The dependent variables are the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), all variables definition can be consulted in the appendix. The variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results. . T-statistics are in parentheses. ***, ** or * indicates that the coefficient estimates are significant at 1%, 5% or 10% level, respectively.

6.1 Hypothesis 1a)

Regarding our hypothesis H1 a) we can see that the variable "aftershock" is only significant for the Eurozone sample, at 1% level, for CAR (-2,+2), displaying a beta of 0.0184, which means that, on average, a deal made 4 quarters after a currency shock, has a positive impact of 1.84 percentage points on the CAR(-2,+2), ceteris paribus. Despite all the remaining "aftershock" variables are insignificant for 1a) regressions, they have a positive impact for the Eurozone and UK CARs, and a negative impact on all the US CARs.

The interaction between aftershock and privatetarget, variable "aftershock_privatetarget", is only significant for the Eurozone sample, for the CAR(-2,+2) and CAR(-5,+5), at 1% level. Then, we can say, that, on average, a deal that involves a private target in the 4 quarters after a currency shock, has an impact on cars of -1.97 percentage points and -2.30 percentage points, respectively. Although the remaining "aftershock_privatetarget" variables are insignificant all of them have a negative impact on the car, except for the US CAR(-5,+5), ceteris paribus.

Looking at the significant values I am not able to say that the hypothesis H1 is enlarged with the interaction between the variables "aftershock" and "privatetarget" for the Eurozone CAR(-2,+2) that is the only one with significant coefficients for the variable "aftershock" and "aftershock_privatetarget". In this case a private target does not contribute to higher CARS.

6.2 Hypothesis 1b)

Moving to the hypothesis 1b) related to 1b) regressions, we can see that once more, we only can observe a significant coefficient of 0.00677 for "aftershock", significant at 1% level, from the Eurozone sample, CAR(-1,+1). Then, on average, when a deal occurs 4 quarters after a currency shock there's a little positive impact of 0.677 percentage points on the CAR(-1,+1), ceteris paribus. All the remaining aftershock variables for this hypothesis are positive, expect the US CAR(-2,+2).

The interaction between aftershock and same industry, variable "aftershock_sameindustry", is only significant for the US CAR(-1,+1) and CAR(-5,+5), at 5% and 1% levels, respectively. This means that on average, a deal that involves an acquirer and target that play in the same industry, have a negative impact of 2.27 percentage points and 4.4 percentage points on CAR(-1,+1) and CAR(-5,+5), respectively, ceteris paribus. The remaining "aftershock_sameindustry" for regresions 1b) are only positive for all the Eurozone sample, being consistent to the "aftershock" positive betas, and also for the UK CAR(-5,+5).

To sum up, due to the insignificant coefficients I am not able to say that the bidder's return in the 4 quarters after a currency shock are enlarged when target and acquirer play in the same industry.

Table 7 Regressions to test the hypotheses H2a) and H2b)

Table 6 displays the outputs for the regressions 2a) and 2b) for the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5) for each sample.

Panel A: *Eurozone regressions of CARS- 2nd hypothesis*

VARIABLES	H2a) car(-1,+1)	H2a) car(-2,+2)	H2a) car(-5,+5)	H2b) car(-1,+1)	H2b) car(-2,+2)	H2b) car(-5,+5)
Privatetarget	0.0002	0.0007	-0.0059	-0.0034	-0.0029	-0.00883**
	(0.0633)	(0.211)	(-1.424)	(-1.167)	(-0.903)	(-2.152)
Cash	-0.0022	0.0016	0.0000	-0.0028	0.0010	-0.0007
	(-0.614)	(0.412)	(0.00665)	(-0.752)	(0.246)	(-0.127)
Stock	0.0092	0.0174	0.0112	0.0081	0.0162	0.0116
	(0.389)	(0.694)	(0.321)	(0.341)	(0.643)	(0.332)
Sameindustry	0.00847*	0.00927**	0.0121***	0.00631**	0.00723**	0.00846**
	(1.896)	(2.189)	(2.708)	(2.092)	(2.184)	(2.100)
Serealacq	-0.0003	-0.0003	-0.0006	0.0008	0.0008	0.0008
	(-0.0872)	(-0.0819)	(-0.122)	(0.209)	(0.186)	(0.153)
Acqgdp(t)	0.0001	0.0003	0.0000	0.0000	0.0002	0.0000
	(0.156)	(0.532)	(0.0565)	(-0.0224)	(0.368)	(-0.0472)
Lnacqsize(t-1)	-0.0058***	-0.0059***	-0.0063***	-0.0061***	-0.0061***	-0.0066***
	(-3.221)	(-3.442)	(-3.353)	(-3.072)	(-3.330)	(-3.409)
MBV(t-1)	0.0037	0.0034	0.0034	0.0036	0.0032	0.0032

	(1.522)	(1.477)	(1.419)	(1.503)	(1.440)	(1.374)
Leverage(t-1)	0.0379**	0.0383**	0.0319	0.0389**	0.0394**	0.0320
	(2.179)	(2.228)	(1.627)	(2.181)	(2.240)	(1.621)
Multipleshocks	0.0416	0.0366	0.0241	0.0029	-0.0014	-0.0200
	(1.301)	(1.353)	(1.059)	(0.389)	(-0.165)	(-1.472)
multipleshocks_privatetarget	-0.0459	-0.0463*	-0.0376			
	(-1.491)	(-1.739)	(-1.501)			
multipleshocks_sameindustry				0.0266	0.0250	0.0475**
				(0.956)	(1.018)	(2.001)
Constant	0.0498	0.0431	0.0855**	0.0549	0.0482	0.0906**
	(1.484)	(1.342)	(2.276)	(1.550)	(1.429)	(2.360)
Observations	1,195	1,195	1,195	1,195	1,195	1,195
R-squared	0.110	0.116	0.108	0.102	0.107	0.111
Acquirer Industry Dummy	YES	YES	YES	YES	YES	YES
Target Nation Dummy	YES	YES	YES	YES	YES	YES

Note: The estimations from the regression 2a) and 2b) presented in section 4 are presented in this table. The dependent variables are the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), all variables definition can be consulted in the appendix. The variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results. . T-statistics are in parentheses. ***, ** or * indicates that the coefficient estimates are significant at 1%, 5% or 10% level, respectively.

Panel B: *UK regressions of CARS- 2nd hypothesis*

VARIABLES	H2a) car(-1,+1)	H2a) car(-2,+2)	H2a) car(-5,+5)	H2b) car(-1,+1)	H2b) car(-2,+2)	H2b) car(-5,+5)
privatetarget	-0.0064	-0.0061	-0.0132	-0.0061	-0.0056	-0.0128
	(-1.137)	(-0.924)	(-1.645)	(-1.093)	(-0.862)	(-1.610)
cash	0.0021	-0.0019	-0.0059	0.0022	-0.0019	-0.0057
	(0.425)	(-0.335)	(-0.734)	(0.434)	(-0.326)	(-0.718)
stock	-0.0034	0.0159	0.0007	-0.0028	0.0168	0.0014
	(-0.107)	(0.378)	(0.0144)	(-0.0880)	(0.400)	(0.0288)
sameindustry	-0.0068	-0.0074	-0.0034	-0.0062	-0.0068	-0.0023
	(-1.499)	(-1.418)	(-0.473)	(-1.358)	(-1.272)	(-0.313)
serealacq	-0.0016	-0.0060	-0.0095	-0.0013	-0.0056	-0.0090
	(-0.277)	(-0.857)	(-1.030)	(-0.224)	(-0.791)	(-0.971)
acqgdp(t)	-0.0029	-0.0030	-0.0043	-0.0029	-0.0030	-0.0043
	(-1.613)	(-1.480)	(-1.563)	(-1.616)	(-1.486)	(-1.561)
lnacqsize(t-1)	-0.0060***	-0.0053**	-0.0036	-0.0060***	-0.0054**	-0.0037
	(-2.842)	(-2.202)	(-1.109)	(-2.855)	(-2.223)	(-1.126)
MBV(t-1)	-0.0012	0.0003	0.0017	-0.0012	0.0003	0.0017
	(-0.845)	(0.155)	(0.834)	(-0.849)	(0.150)	(0.827)
leverage(t-1)	0.0211	0.0182	0.0005	0.0217	0.0190	0.0014
	(1.155)	(0.816)	(0.0183)	(1.184)	(0.854)	(0.0490)
multipleshocks	0.0005	-0.0149	-0.0108	0.0423**	0.0457**	0.0535**
	(0.0287)	(-0.808)	(-0.394)	(2.530)	(2.129)	(2.169)
multipleshocks_privatetarget	0.0377*	0.0571**	0.0509			
	(1.729)	(2.218)	(1.562)			
multipleshocks_sameindustry				-0.0178	-0.0216	-0.0401

				(-0.832)	(-0.703)	(-1.524)
Constant	0.128***	0.135***	0.155***	0.128***	0.135***	0.154***
	(4.288)	(4.078)	(3.560)	(4.277)	(4.066)	(3.545)
Observations	760	760	760	760	760	760
R-squared	0.107	0.085	0.094	0.106	0.084	0.094
Acquirer Industry Dummy	YES	YES	YES	YES	YES	YES
Target Nation Dummy	YES	YES	YES	YES	YES	YES

Note: The estimations from the regression 2a) and 2b) presented in section 4 are presented in this table. The dependent variables are the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), all variables definition can be consulted in the appendix. The variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results. . T-statistics are in parentheses. ***, ** or * indicates that the coefficient estimates are significant at 1%, 5% or 10% level, respectively.

Panel C: *US regressions of CARS- 2nd hypothesis*

VARIABLES	H2a) car(-1,+1)	H2a) car(-2,+2)	H2a) car(-5,+5)	H2b) car(-1,+1)	H2b) car(-2,+2)	H2b) car(-5,+5)
privatetarget	-0.0040	-0.0037	-0.0245	-0.0048	-0.0050	-0.0258
	(-0.474)	(-0.320)	(-0.988)	(-0.605)	(-0.458)	(-1.084)
cash	-0.0026	-0.0010	-0.0098	-0.0026	-0.0010	-0.0098
	(-0.658)	(-0.176)	(-1.035)	(-0.656)	(-0.175)	(-1.035)
stock	0.0009	0.1320	-0.0016	0.0017	0.1320	-0.0001
	(0.00819)	(0.736)	(-0.00537)	(0.0143)	(0.738)	(-0.00046)
sameindustry	0.0065	0.0004	0.0158	0.0089	0.0009	0.0211
	(0.912)	(0.0325)	(0.684)	(1.088)	(0.0727)	(0.829)
serealacq	0.00507**	0.0052	0.0100**	0.00523**	0.0052	0.0103**
	(1.986)	(1.499)	(2.097)	(2.013)	(1.503)	(2.143)
Acqgdp(t)	-0.0005	-0.0019	-0.0037	-0.0005	-0.0020	-0.0037
	(-0.380)	(-1.094)	(-1.501)	(-0.396)	(-1.135)	(-1.508)
lnacqsize(t-1)	-0.0057**	-0.0062**	-0.0045	-0.0057**	-0.0062**	-0.0044
	(-2.459)	(-2.186)	(-1.000)	(-2.458)	(-2.183)	(-0.983)
MBV(t-1)	-0.0030	-0.0025	-0.0001	-0.0030	-0.0025	-0.0002
	(-1.410)	(-0.883)	(-0.0266)	(-1.417)	(-0.885)	(-0.0371)
leverage(t-1)	0.0310	0.0441	0.0208	0.0312	0.0438	0.0212
	(0.875)	(0.888)	(0.231)	(0.879)	(0.884)	(0.237)
multipleshocks	-0.0023	-0.0044	0.0039	0.0007	-0.0071	0.0117
	(-0.412)	(-0.566)	(0.310)	(0.134)	(-0.781)	(0.768)
multipleshocks_privatetarget	-0.0029	-0.0055	-0.0046			
	(-0.448)	(-0.677)	(-0.399)			
multipleshocks_sameindustry				-0.0102	-0.0020	-0.0226

				(-1.151)	(-0.168)	(-1.353)
Constant	0.0781***	0.0714***	-0.0095	0.0824***	0.0754***	-0.0012
	(4.914)	(3.276)	(-0.281)	(5.170)	(3.515)	(-0.0360)
Observations	2,112	2,112	2,112	2,112	2,112	2,112
R-squared	0.037	0.086	0.095	0.038	0.086	0.095
Acquirer Industry Dummy	YES	YES	YES	YES	YES	YES
Target Nation Dummy	YES	YES	YES	YES	YES	YES

Note: The estimations from the regression 2a) and 2b) presented in section 4 are presented in this table. The dependent variables are the CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), all variables definition can be consulted in the appendix. The variables "acqgdp", "totalassets" and "MBV" were winsoried at 1% level of each tail, in order to remove extreme values that could bias our results. . T-statistics are in parentheses. ***, ** or * indicates that the coefficient estimates are significant at 1%, 5% or 10% level, respectively.

6.3 Hypothesis 2a)

Moving now to the hypothesis 2a), it was not found any significant coefficients for the variable "multipleshocks", that has a positive impact on all the CARS for the Eurozone sample, and for the UK CAR(-1,+1) and the US CAR(-5,+5).

The interaction between multipleshocks and privatetarget, variable "multipleshocks_privatetarget", is only significant for Eurozone CAR(-2,+2) and UK CAR(-1,+1) and CAR(-2,+2), at 1% of significant level for the first two, and at 5% for the last one. On average, a deal that involves a private target when there were at least two currency shocks in the last four quarters, has a negative impact of 4.63 percentage points for the Eurozone CAR(-2,+2) and a positive impact of 3.77 and 5.71 percentage points for the UK CAR(-1,+1) and CAR(-2,+2), ceteris paribus. The remaining insignificant coefficients for the CARS are negative, except for the UK CAR(-5,+5), which means that this variable is always positive for our CARs in the UK sample.

Due to the lack of significant values this hypothesis cannot be confirmed.

6.4 Hypothesis 2b)

Finally, in our last hypothesis 2b), we can observe that the variable "multipleshocks", is only significant for the UK CARs, significant at 5% level. When there were at least 2 currency shocks in the 4 quarters before the deal, on average, there is a positive impact of 4.23,4.57 and 5.35 percentage points, for the UK CAR(-1,+1), CAR(-2,+2) and CAR(-5,+5), respectively, ceteris paribus.

At last, the interaction between multipleshocks and sameindustry, variable "multipleshocks_sameindustry", is only significant for the Eurozone CAR(-5,+5) at a 5% level of significance. The coefficient of 0.0475 means that, on average, when there were at least 2 currency shocks in the 4 quarters before the deal that involves an acquirer and a target that play in the same industry, there is, on average, a positive impact of 4.75 percentage points on the Eurozone CAR(-5,+5),

ceteris paribus. The remaining insignificant “multipleshocks_sameindustry” have a positive impact for the Eurozone CARs and a negative impact for all the UK and the US CARs.

As there are no significant UK CARs for the variable “multipleshocks_sameindustry” we cannot confirm that the positive effects on bidder’s CARS for the UK displayed in the variable “multipleshocks” are enlarged. Then, I am not able to confirm this hypothesis.

7. Conclusion

I have examined the value creation of currency effects on bidder's cumulative abnormal returns for different event windows, resulted from cross-border M&As announcements.

In this analysis the main problem is related to the lack of currency shocks that were found for a reference level of 25% and 15%, which made me to use a value of 10% to have currency shocks for almost all the targets, because without shocks this analysis would be worthless. To face this problem, I thought about including a variable to identify multiple shocks, because if there were many continuously devaluations of a given target currency, that could make the currency matter be more relevant.

In this analysis was quite difficult to identify significant variables of interest, maybe this could be explained the post-effects of the financial crisis. Still, I found a few significant variables related to currency depreciations.

For our hypothesis 1a) I found a positive impact of the variable "aftershock" on the CAR(-2,+2) for the Eurozone. However, still in the same hypothesis the variable "aftershock_private" target has a negative impact on CAR(-2,+2) and CAR(-5,+5), which was not expected and goes against the findings of Draper and Paudyal (2006). Regarding hypothesis 1b) it was found once more one significant coefficient for the variable "aftershock" related to CAR(-1,+1) from Eurozone, and a significant negative coefficient for "aftershock_sameindustry" linked to the CAR(-1,+1) and CAR(-5,+5) from the USA, which is not expected by Harris and Ravenscraft (1991). Overall for the first hypothesis the significant coefficients indicate a positive impact of the variable "aftershock" on the bidder's CAR

In the hypothesis 2a) I found no significant coefficients for "multipleshocks". However the relation between the variables "multipleshocks" and "privatetarget", counts on a negative coefficient for the CAR(–2,+2) from Eurozone and two significant and positive coefficients for CAR(-1,+1) and CAR(-2,+2) from the UK bidders, which is expected based on Harris and Ravenscraft (1991).

The last hypothesis 2b) reveals that all the variables "multipleshocks" from the UK have significant coefficients that indicate positive effects of "multipleshocks" on all the CARS used in this

analysis as dependent variable. Regarding the variable "multipleshocks_sameindustry" I found a significant and positive coefficient for the Eurozone CAR(-5,+5).

Overall the few significant coefficients of the variables "aftershock" and "multipleshocks" – isolated variables related to currency depreciations, indicate higher CARS when there are effects of currency depreciation, which is expected based on a studies led by (Blonigen, 1997; Froot & Stein, 1991; Goldberg & Koistad, 1994). The interactions between these variables with target status and acquirer and target's industries are not conclusive, since I did not find the same coefficients signs for those variables. This inconclusive link between currency effects and industry/private status may serve as an incentive to future researches.

Finally, it was used several control variables based on literature, and the variables more significant are "acqsize" and "sameindustry" (from the Eurozone sample). The first has a negative impact on CARs, which meets with the results of Moeller et al. (2004), who say that usually bigger bidders are associated with the term management hubris, destroying value. The second variable has positive coefficients as expected by a study led by Harris and Ravenscraft (1991).

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Appendix

Variable	Meaning
$car(\tau_1, \tau_2)$	Dependent variable, cumulative abnormal return for a given event window, that is computed for each deal **Source: Datastream**
Privatetarget	Dummy variable, which is equal to 1 if the target is private **Source: SDC Platinum**
Cash	Dummy variable, which is equal to 1 if the deal payment is made exclusively in cash **Source: SDC Platinum**
Stock	Dummy variable, which is equal to 1 if the deal payment is made exclusively in stock **Source: SDC Platinum**
Sameindustry	Dummy variable, which is equal to 1 if acquirer and target operate in the same industry, which is classified by the 2-digit SIC-codes **Source: SDC Platinum**
Serialacq	Dummy variable, which is equal to 1 if over the all sample the bidder acquires more than five times **Source: SDC Platinum**
Acqgdp(t)	GDP growth rate of the acquirer's nation in the year of the deal **Source: Datastream**
Lnacqsize(t-1)	Logarithmic variable of the acquirer's total assets, one year before the deal **Source: Datastream**
MBV(t-1)	Acquirer's market-to-book value, one year before the deal, in the acquirer's currency **Source: Datastream**
Leverage(t-1)	Ratio of Total Liabilities/Total Assets, one year before the deal, in the acquirer's currency **Source: Datastream**
Aftershock	Dummy variable, which is equal to 1 in the four quarters after the currency shock **Source: Datastream**

Aftershock_privatetarget ,	Dummy variable, which is equal to 1 for private targets four quarters after a currency shock **Source: Datastream/SDC Platinum**
Aftershock_sameindustry	Dummy variable, which is equal to 1 for acquirers and targets that play in the same industry (classified by the 2-digit SIC-codes) four quarters after a currency shock **Source: Datastream/SDC Platinum**
Multipleshocks	Dummy variable, which is equal to 1 if in the last four quarters there were at least two currency shocks **Source: Datastream**
Multipleshocks_private target	Dummy variable, which is equal to 1 for private targets if in the last four quarters there were at least two currency shocks **Source: Datastream/SDC Platinum**
Multipleshocks_sameindustry	Dummy variable, which is equal to 1 for acquirers and targets that play in the same industry (classified by the 2-digit SIC-codes) if there were at least 2 currency shocks in the last 4 quarters **Source: Datastream/SDC Platinum**
Acqindustry	Dummies for acquirer industries (classified by the 2-digit SIC-codes) **Source: SDC Platinum**
Targetnation	Dummies for the target's Nation **Source: SDC Platinum**