# Better the devil you know: the effect of Brexit on European import-export

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**Abstract**

The paper analyses market reaction to three different events related to Brexit, i.e. the announcements of the referendum date (20 February 2016), the referendum result (23 June 2016) and the election of Theresa May as Prime Minister (11 July 2016). We study the impact of these announcements on stock prices of UK companies belonging to export- and import-oriented industries. We also investigate the influence of previous events on stock prices of European companies belonging to the same sectors. Our results show that the announcement of the referendum date and the election of Theresa May as Prime Minister were not perceived by financial markets as elements of political uncertainty. However, in the days before the referendum, a high level of uncertainty on the result emerged, and investors priced it as an uncertain political event. Stock market performance around these events depends more on industry factors than on firm-specific characteristics, both for UK and EU companies. The only exception is company size, which positively affects investor reaction.

**Keywords:** Brexit, event study, stock market reaction, import, export

**JEL Codes** : G1, L1

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## 1. Introduction

On 23 June 2016, British citizens were asked to decide whether to remain in or leave the European Union. This was a day which made history. Voters made the decision to leave, for Brexit, and the government started the process of managing the exit from the EU. It is very likely that the outcome of the UK referendum will shape the future of the European Union.

Brexit is critical from multiple perspectives. It is the first time that an EU member has made the decision to leave the EU, and it has created a cloud of uncertainty around the future of the EU in its original structure, aims and scope. Euroscepticism is rooted in the mainly populist view of the EU as a limitation to national sovereignty; a source of bureaucracy and a non-transparent burdens and rules in favor of business elites and against the working class; an encouragement of high levels of migration enhancing the risk of terrorist attacks. Although levels of trust in Europe increased soon after the British vote, in many countries the main political parties still rail against rigidity of EU budgetary policies. This is particularly true in Italy, which according to the most recent Eurobarometer survey (2017) is now the most Eurosceptic country in the EU.

Moreover, Brexit is likely to be an important source of political risk, since returns on investment are usually negatively affected by political changes and the consequent instability. Stock markets react negatively to political uncertainty, in election cycles and also in the case of any kind of change in government policies. Brexit is in fact a possible key determinant of market volatility. Market reaction soon after the referendum could also have been boosted by a dominant pro Brexit bias, as testified by the fact that only 27% of press articles were pro remain.

In fact, the day the referendum results were announced, 24 June 2016, the British Pound registered a historic drop to $1.3229, its lowest level since September 1985. The pound was down as much as 11.1% from its New York close of $1.4877 on the previous day. This was almost double the next-biggest intraday drop of 5.9% on 24 October 2008, the day when stock markets around the world collapsed, during the depths of the financial crisis (Peter Wells, “Historic moves for the pound on Brexit vote”. Financial Times, 24 June 2016). However, in the case of Brexit, not only the referendum day itself was important. Analysis of the period from the announcement that the referendum would be held until referendum day reveals whether these events could be considered as features of political and economic instability. In fact, all economic sectors were affected by the possibility of Brexit during the period, both in UK and in the European Union. The most important European stock indices dropped during 2016 (the FTSE 100 fell by -3.2%, the German DAX by -6.8% and the Dow Jones Industrial Average by -3.4% - Bloomberg, 2016), and the main cause was the increase in political instability in Europe.

At the end of November 2018, more than two years after the referendum date, in the midst of the UK negotiation with the European Commission about exit agreements, outflows from UK-focused equity funds since Brexit vote were $20bn (Chris Flood, Financial Times, 28 November 2018). Brexit agreements will strongly affect economic competition and trade balances throughout European countries and around the world, changing the competitive landscape and import-export flows. Hence, the economic value of UK companies showing high import and export volumes should reflect future conditions of prices and currencies international trade.

Our study first investigates short-term stock market reaction to the referendum result, focusing on export- and import-oriented industries. It then examines whether the referendum announcement can be considered a politically uncertain event. It also investigates market reaction to another important date – the election of Theresa May – to assess whether the return to political stability under a new Prime Minister was accepted as a positive event or not.

To achieve these aims, we carry out event studies on three different events relating to Brexit, i.e. the announcements of the referendum date (20 February 2016), the referendum result (23 June 2016) and the election of Theresa May as Prime Minister (11 July 2016). We consider the impact of these

events on stock prices of UK companies in export- and import-oriented industries. We also investigate the influence of previous events on stock prices of European companies belonging to the same industries. Furthermore, we conduct OLS regression analyses aimed at explaining cumulative abnormal returns using different determinants. Our findings suggest that investor reaction to different stages of Brexit depends more on industry factors than on firm-specific characteristics, both for UK and EU companies. The only exception is company size which positively affects investor reaction in our paper as in previous literature.

Our sample is composed of 796 European listed companies. It includes 171 UK companies representing different industries, divided into import-oriented (Computer, electronic and optical products; Food products; Mining) and export-oriented (Other transport; Motor vehicles, trailers and semi-trailers; Chemicals and chemical products; Machinery and equipment; Metals and metal products) industries. The other 625 are non-UK European listed firms belonging to UK import-oriented (240 companies) and export-oriented (385 companies) industries. We argue that political uncertainty, as in the days before the referendum, negatively affects market prices, while a clear political decision, whatever it may be, can restore investor capacity to assess political risk and to rely on fundamentals. This expectation is also based on the hypothesis that, thanks to market efficiency, the stock market is able to absorb political uncertainty in the days before the 23 June and to positively react to the appointment of Theresa May as Prime Minister, in line with the idea of "better the devil you know". Our results show that, in the case of political uncertainty, investors react uniformly, particular firm characteristics are less important, and the abnormal stock returns depend more on the overall impact of the event on the industry than on other idiosyncratic factors. Our study contributes to previous literature in several ways. Firstly, to the best of our knowledge, no studies have so far focused at the same time on UK sectors which import or export to EU and European economic sectors which import or export to UK. Secondly, the research analyzes the effect of Brexit on the stock market, considering important dates, from Cameron's announcement of the referendum, to the referendum day, up to the appointment of Theresa May as prime minister. Focusing on the three dates makes it possible to observe the stock market reaction to the whole period of political uncertainty.

## 2. Literature review

Our paper is at the crossroads of two streams of literature. The first addresses the relationship between political uncertainty and the stock market, while the second focuses on the stock market reaction to the Brexit referendum.

The period ranging from the Cameron's referendum announcement to the referendum date may be seen as a period of political uncertainty, related to the possible change in the government policy (Schiereck et al., 2016; Krause et al., 2016; Smales, 2017). As suggested by Pastor and Veronesi (2012), changes in government policy usually generate uncertainty in the economy and can affect stock prices, thus leading to negative stock returns. Similar results are obtained by other authors who test the negative stock market reaction to government changes, especially in case of political elections (Boutchkova et al., 2016; Brogaard and Detzel, 2015; Santa-Clara and Valcanov, 2003; Nippani and Medlin, 2002). In this context, Bialkowski et al. (2008) analyze the relationship between stock market volatility and the US national elections. They find an increase in stock market volatility on the election day which continued for a number of days thereafter. These results suggest that, despite widespread efforts to accurately predict election outcomes, investors still tend to be surprised by the final result, so that stock market volatility increases after the elections. Moreover, Smales (2015, 2016) shows that stock market uncertainty increases (decreases) as the level of uncertainty around the election day increases (decreases) while, in a case of "better the devil you know", stock market uncertainty decreases as the likelihood of the incumbent winning increases. Goodell and Vahamaa (2013) obtain similar results, finding that stock market volatility follows the changes in the probability of success

of the eventual winner of the election, i.e. the higher the probability that the expected winner wins, the lower the stock market volatility. In addition, Brogaard and Detzel (2015) and Pantzalis et al. (2000) show that stock prices increase when political uncertainty is resolved. Furthermore, on the basis of information efficiency theory, Pantzalis et al. (2000) believe that much of the uncertainty caused by political events should be absorbed before the election date. In their study, the authors find positive abnormal returns in the two weeks before the election day. This positive reaction is a function of both timing of the election and the country degree of political, economic and press freedom. Pantzalis et al. (2000) believe that when election-induced uncertainty is reduced and the risk-adjusted expected return falls, stock prices rise. So when the election result becomes more certain, stock prices start to increase again. They also show that even after election results, political uncertainty may be resolved only partially and the stock market may need more time to process the election impact. However, where there is a significant amount of uncertainty resolution in the post-election period, positive abnormal returns would also be expected after the election day.

With regard to Brexit as a specific case of political uncertainty, there is as yet little extant literature. Krause et al. (2016) analyze the relationship between the exit polls and the UK stock market volatility. They find that the increasing consensus on Brexit led to an increase in stock market volatility. Moreover, Smales (2017) investigates the impact of the political uncertainty caused by the Brexit referendum on both the UK and German financial market, and finds increasing volatility associated with a higher uncertainty. All these results support the hypothesis that the stock market reacts negatively to political uncertainty, both during the election cycle and during every kind of change in the government policies.

Looking specifically at the impact of the Brexit referendum on stock prices, there are few studies in extant literature (Ramiah et al., 2017; Tielman and Schiereck, 2017; Schiereck et al., 2017; Oehler et al., 2017). Tielman and Schiereck (2017) focus on the logistics sector, under the assumption that this industry will have been particularly hard hit by Brexit, because of slower movement of goods and an increase in costs of transportation. The authors show that the negative effect of Brexit on the logistics sector was strong in all European countries, but particularly so in the UK. Furthermore, they find that size and market-to-market ratio have a statistically significant positive influence on abnormal stock returns, while diversification and the involvement in road transport contribute to reducing the negative impact on stock prices. Schiereck et al. (2017) focus on the banking sector by comparing Brexit with the Lehman Brothers crisis. Their results show that Brexit was not “another Lehman Brothers moment” for banks for two reasons. On the one hand, the short-term drop in the bank stock market after the Lehman crisis was stronger than in the case of Brexit. And on the other hand, the increase in bank CDS spreads was significantly lower in the case of Brexit than in the case of Lehman Brothers bankruptcy. Moreover, Ramiah et al. (2017) analyze the effect of the announcement of the UK referendum results on various UK sectors over the period June-July 2016. They show that the event had different sectorial effects. Specifically, most sectors, and especially the banking industry, show a negative reaction to Brexit in term of stock market returns. Furthermore, Oehler et al. (2017) investigate the impact of firm internationalization on stock prices of FSTE100 UK companies. Their results show that, after a first decrease in stock returns and an increase in price volatility in the first trading day after the referendum outcome, in the days following the event the FSTE100 started with an up-gap and low volatility, reaching levels higher than those before the referendum (6,360 points on June 29 vs 6,117 points on June 23). They also show that in the UK more international firms show higher positive stock returns than firms with more domestic sales. However, this positive effect emerges only on the first trading day after the referendum result. In the following days, in fact, internationalization ceases to be significant. Finally, Aristeidis and Elias (2017) investigate the possible contagion effect related to the referendum result. They find that, although in the very short-

term the reaction of stock markets all over the world was negative, after just a few days most of them had fully recovered their losses, indicating that there was in fact no contagion effect.

This evidence appears to support the hypothesis that the result of the referendum surprised stock markets both in the UK and in other countries, but only in the very short-term. In the days following the Brexit announcement, in fact, financial markets returned to a "normal" volatility. As observed by Baur et al. (2018), Brexit caused a storm, but no storm damage.

As suggested by Levy et al. (2016) and Moore and Ramsey (2017), media coverage during the referendum campaign was very strong in the UK and played a very important role. In particular, Levy et al. (2016), analyzing the period ranging from the Cameron's vote announcement to 23 June 2016, find that the number of articles published on the referendum increased dramatically in the last week. In this week, most of the press was pro exit, thus creating a dominant "pro Brexit bias".

In this context, our research studies stock market reaction to different events related to Brexit, i.e. the announcements of the referendum date, the referendum result and the election of Theresa May as Prime Minister. It focuses on UK companies belonging to export- and import-oriented industries and on other European companies belonging to the same industries.

Our first hypothesis assumes that financial markets, both in the UK and in other European countries, on 20 February 2016 did not consider the Brexit referendum as an uncertain political event. This idea is based on the evidence that, at that time, "remain" received high volumes of coverage in the UK press (Moore and Ramsay, 2017) and, for this reason among others, "remain" was thought to be the most likely outcome of the vote. We do not therefore consider the announcement of the referendum date as marking the beginning of a period of political uncertainty.

$H_1$: *On the announcement of the referendum date, on 20 February 2016, investors assumed that the final result would be "remain", thus not considering the referendum an uncertain political event.*

However, in the days before the vote, and especially in the last week, a high level of uncertainty on the referendum result emerged. In that period, the UK press also stimulated this uncertainty, as demonstrated by Levy et al. (2016). For this reason, our second hypothesis is the following:

$H_2$: *On the referendum date, on 23 June 2016, investors perceived the final result as ambiguous, thus considering the referendum an uncertain political event.*

Following Cameron's resignation, Theresa May won a leadership election on 11 July 2016, becoming the UK's second female Prime Minister in history. Mrs. May, who took a firm lead in the first round of voting, was perceived as a trustworthy and credible politician both in the UK and in other European countries. She sent the message to the world that "together with British people, a better Britain would be built". In this context, our third hypothesis is the following:

$H_3$: *The election of Theresa May as Prime Minister, on 11 July 2016, was not considered by investors as an uncertain political event.*

Finally, the effects of Brexit differ among industries (Jackowicz et al., 2017; Ramiha et al., 2017). On this point, Davies and Studnicka (2018) demonstrate that impact was heterogeneous. In particular, they find that, because of the depreciation of the pound, more export-oriented companies were less affected by the negative effect of Brexit. They also show that firms with a global value chain more oriented towards the European markets suffered more than the market as a whole. These results suggest a diversified effect of Brexit on companies operating in different sectors and markets.

Moreover, Jackowicz et al. (2017) find that firm fundamentals modestly influenced investor reaction to the referendum results. Our fourth hypothesis is thus the following:

$H_4$: *Investor reaction to events related to Brexit depends more on the industry than on company specific characteristics.*

## 3. Sample and methodology

### *3.1 Event study methodology*

Our paper tests the effects of three different events related to Brexit, i.e. the announcements of the referendum date (on 20 February 2016), the referendum result (on 23 June 2016) and the election of Theresa May as Prime Minister (on 11 July 2016), on stock prices of UK companies belonging to export- and import-oriented industries. We also investigate the influence of previous events on stock prices of European companies belonging to the same industries.

The analyses are conducted using the event study technique (MacKinlay, 1997). Specifically, we calculate abnormal returns following the announcements of the three events related to Brexit that are thought to explain stock return changes. Abnormal returns are estimated as the difference between stock returns registered from the listed company i on day t, i.e. the day when the event is announced, and the expected returns that the stock would have registered in the case that no event happened. Expected returns are calculated using Sharpe's (1963) market model, as suggested by previous literature (Campbell et al., 1997):

$$\hat{R}_{i,t} = \alpha_i + \beta_i R_{mkt,t} + \varepsilon_{i,t} \tag{1}$$

where $\widehat{\boldsymbol{R}}_{\boldsymbol{i,t}}$ is the stock return of company i on day t; αi is the intercept of the regression line; βi is the slope of the regression line; $R_{mkt,t}$ is the national market index return on day t; εi,t is the random error. Some OLS regressions of $\widehat{\boldsymbol{R}}_{\boldsymbol{i,t}}$ on $R_{mkt}$ for 250 days (i.e. from the 270th to the 21st day before the event announcement) are implied to estimate the αi and βi coefficients. We define the date of the event related to Brexit as Day 0, and the event window as the period ranging from $-\tau_1$ days before and $+\tau_2$ days after Day 0. We consider different window lengths, both before and after Day 0, because it is possible that the market could price some information before its official announcement. We estimate the abnormal return ($AR_{i,t}$) due to each event for the company i on Day t as follows:

$$AR_{i,t} = R_{i,t} - \left(\hat{\alpha}_i + \hat{\beta}_i R_{mkt,t}\right) \tag{2}.$$

Then we aggregate the abnormal returns for all n company stocks and calculate the average abnormal return ($\overline{\boldsymbol{AR}_{\boldsymbol{t}}}$):

$$\overline{AR_t} = \frac{1}{n}\sum_{i=1}^{n} AR_{i,t} \tag{3}.$$

Moreover, we estimate the cumulative abnormal return $\boldsymbol{CAR_i(\tau_1, \tau_2)}$ for each stock i by summing all $AR_{i,t}$ within the event period $[\boldsymbol{\tau_1}, \boldsymbol{\tau_2}]$:

$$CAR_i(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_{i,t}$$

(4)

and calculate the mean CARs in the different event windows ($\overline{\boldsymbol{CAR_i}}(\boldsymbol{\tau_1, \tau_2})$):

$$\overline{CAR}_i(\tau_1, \tau_2) = \frac{1}{n}\sum_{i=1}^{n} CAR_i(\tau_1, \tau_2\ )$$

(5).

The statistical significance of mean CARs is verified using two parametric and one non-parametric test. The first parametric test ($T_1$) suggested by Campbell et al. (1997) is widely used in previous literature and is constructed as follows:

$$T_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{[\hat{\sigma}^2(\tau_1, \tau_2)]^{\frac{1}{2}}} \approx N(0,1)$$

(6).

However, Harrington and Shrider (2007) demonstrate that $T_1$ can be biased in a short-time period. For this reason, we also calculate a second parametric test ($T_2$) more robust to an event-induced variance increase (Boehmer et al., 1991):

$$T_2 = \sqrt{N}\ \frac{\overline{SCAR}(\tau_1, \tau_2)}{\sqrt{\frac{1}{N-1}\sum(\ SCAR(\tau_1, \tau_2) - \overline{SCAR}(\tau_1, \tau_2))^2}} \approx T(0, \frac{g}{g-2})$$

(7)

with g>2, where N is the number of stocks and $\boldsymbol{SCAR_i(\tau_1, \tau_2)}$ is the standardised abnormal return on security i at day t. We follow the methodology suggested by Mikkelson and Partch (1988) in order to estimate $\boldsymbol{SCAR_i(\tau_1, \tau_2)}$:

$$SCAR_{i,t} = \frac{CAR_i(\tau_1, \tau_2)}{\hat{\sigma}_i \sqrt{T_s + \frac{{T_s}^2}{T} + \frac{\sum_{i=\tau_1}^{\tau_2}(R_{m,t} - T_s\overline{R_m})}{\sum_{i=1}^{T}(R_{m,t} - \overline{R_m})}}}$$

(8)

where $\tau_1$ and $\tau_2$ are respectively the first and last days in the event window, $\boldsymbol{CAR_i(\tau_1, \tau_2)}$ is the cumulative abnormal return of stock i in the event window $(\boldsymbol{\tau_1, \tau_2})$, $\overline{\boldsymbol{R_m}}$ is the mean return on market index in the estimation period, $\boldsymbol{\hat{\sigma}_i}$ is the estimated standard deviation of abnormal return on stock i, T is the number of days in the estimation period and $T_s$ is the number of days in the event window. $T_2$ shows a T-distribution with T-2 degrees of freedom, and converges to a unit normal. In order to confirm the results obtained by $T_1$ and $T_2$, we also calculate the non-parametric test suggested by Campbell et al. (1997) and MacKinlay (1997):

$$T_3 = \left[\frac{N^{(+/-)}}{N} - 0.5\right]\frac{N^{\frac{1}{2}}}{0.5} \approx N(0,1) \tag{9}$$

where N is the number of events and N(+)/N(-) is the number of events with a positive/negative CAR. We consider as statistically significant CARs those that passed all the three tests described above.

*3.2 The regression model*

In the second stage of our empirical analysis, we conducted some regressions in order to explain CARs using different determinants. We run OLS regressions with robust standard errors and sector dummy variables. Our models are constructed as follows:

$$y_i = \alpha + \beta_1 X_{i,t} + \beta_2 \Omega_{i,t} \; ++ \beta_3 \mathrm{FE}_{i,j,} \; \varepsilon_i \quad i = 1, \ldots, N \tag{10}$$

where subscript i denotes the cross-section dimension, and t and j respectively the time and the country of the country specific variable. The dependent variable is the statistically significant cumulative abnormal return (CAR) observed in the event study analysis. The X vector refers to the firm specific characteristics in term of balance sheet ratios, while the vector Ω includes the dummies referred to the sector. Finally, in order to control for the differences among European countries, we insert a further vector (COUNTRY FE) including a series of dummy variables referred to the country; we insert one dummy variable for each observed country.

With regard to the X vector, as suggested by Jackowiczer et al. (2017) and Brenlich et al. (2018), we consider the following firm-specific characteristics: i) the return on sales (ROS) as measure of profitability; ii) the share of current assets on total assets (CURRENT_RATIO) as proxy of liquidity; iii) the equity over total assets ratio (E_TA) as measure of capitalization; iv) and, finally, the natural logarithm of total revenues (SIZE) as proxy of firm size. Descriptive statistics are reported in Table 1, while correlations are presented in Table 2. Our results show no high Pearson correlation among independent variables: this means that they are suitable for further analysis.

Referring to the Ω vector, first we distinguish between UK import-oriented companies (UK import) and other European import-oriented firms (No UK import). We insert three dummy variables referring to different industries: i) computer, electronic and optical products (TECNOLOGY), ii) food products (FOOD) and iii) mining (MINING). Second, we distinguish between UK export-oriented companies (UK export) and other European export-oriented firms (No UK export). We insert five dummy variables referring to different industries: i) other transport (TRANSPORT), ii) motor vehicles, trailers and semi-trailers (VEHICLES), iii) chemicals and chemical products (CHEMICAL), iv) machinery and equipment (MACHINERY), and v) metals and metal products (METAL).

We consider three different events related to Brexit. For each event, we test the regression model (10) on the event windows showing a statistical significance in the event study analysis. We run regressions on all our four subsamples: a) UK import; b) No UK import; c) UK export; and finally, d) No UK export.

## Table 1. Descriptive statistics

| | UK IMPORT | | | | | UK EXPORT | | | | | NO UK IMPORT | | | | | NO UK EXPORT | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Obs | Mean | Std. Dev. | Min | Max | Obs | Mean | Std. Dev. | Min | Max | Obs | Mean | Std. Dev. | Min | Max | Obs | Mean | Std. Dev. | Min | Max |
| EW(-5;+5) | 90 | -0.015 | 0.132 | -0.445 | 0.286 | 81 | 0.017 | 0.116 | -0.421 | 0.382 | 238 | -0.003 | 0.153 | -1.908 | 0.329 | 385 | 0.011 | 0.101 | -0.490 | 0.596 |
| EW(-3;+3) | 90 | -0.016 | 0.109 | -0.453 | 0.255 | 81 | -0.003 | 0.106 | -0.513 | 0.224 | 238 | 0.004 | 0.077 | -0.580 | 0.294 | 385 | 0.004 | 0.083 | -0.515 | 0.518 |
| EW(-5;-1) | 90 | -0.030 | 0.058 | -0.248 | 0.132 | 81 | -0.028 | 0.065 | -0.205 | 0.189 | 238 | -0.008 | 0.052 | -0.317 | 0.272 | 385 | 0.001 | 0.055 | -0.208 | 0.419 |
| EW(-3;-1) | 90 | -0.024 | 0.051 | -0.200 | 0.086 | 81 | -0.024 | 0.062 | -0.210 | 0.180 | 238 | -0.002 | 0.037 | -0.241 | 0.140 | 385 | 0.000 | 0.048 | -0.247 | 0.419 |
| EW(0;+5) | 90 | 0.015 | 0.131 | -0.480 | 0.328 | 81 | 0.045 | 0.125 | -0.576 | 0.435 | 238 | 0.005 | 0.148 | -2.013 | 0.354 | 385 | 0.009 | 0.085 | -0.412 | 0.656 |
| EW(0;+3) | 90 | 0.007 | 0.113 | -0.482 | 0.274 | 81 | 0.022 | 0.110 | -0.540 | 0.303 | 238 | 0.006 | 0.067 | -0.344 | 0.376 | 385 | 0.005 | 0.065 | -0.348 | 0.371 |
| EW(0;+10) | 90 | 0.017 | 0.084 | -0.265 | 0.286 | 81 | 0.030 | 0.073 | -0.157 | 0.192 | 238 | 0.001 | 0.063 | -0.420 | 0.292 | 385 | 0.006 | 0.056 | -0.374 | 0.288 |
| ROS | 80 | -24.57 | 12.136 | -95.120 | 34.753 | 67 | -21.161 | 11.711 | -88.400 | 26.974 | 234 | -23.459 | 22.851 | -33.169 | 12.083 | 351 | -94.118 | 16.565 | -29.950 | 65.018 |
| E_TA | 89 | 53.401 | 33.823 | -144.673 | 98.195 | 79 | 61.885 | 25.634 | -14.733 | 99.907 | 237 | 41.813 | 78.542 | -102.184 | 93.854 | 363 | 45.363 | 26.406 | -177.441 | 99.865 |
| SIZE | 83 | 11.513 | 3.144 | 3.016 | 16.958 | 68 | 11.946 | 3.749 | 0.998 | 19.310 | 236 | 12.364 | 2.503 | 2.639 | 18.698 | 358 | 12.212 | 2.958 | -0.348 | 19.212 |
| CURRENT | 89 | 2.734 | 2.562 | 0.061 | 13.003 | 79 | 5.150 | 10.323 | 0.432 | 61.909 | 237 | 2.062 | 1.635 | 0.070 | 18.609 | 360 | 2.141 | 3.446 | 0.012 | 61.162 |
| TRANSPORT | 90 | 0.089 | 0.286 | 0.000 | 1.000 | - | - | - | - | - | - | - | - | - | - | 385 | 0.098 | 0.298 | 0.000 | 1.000 |
| VEHICLES | 90 | 0.078 | 0.269 | 0.000 | 1.000 | - | - | - | - | - | - | - | - | - | - | 385 | 0.132 | 0.339 | 0.000 | 1.000 |
| CHEMICAL | 90 | 0.356 | 0.481 | 0.000 | 1.000 | - | - | - | - | - | - | - | - | - | - | 385 | 0.238 | 0.426 | 0.000 | 1.000 |
| MACHINERY | 90 | 0.144 | 0.354 | 0.000 | 1.000 | - | - | - | - | - | - | - | - | - | - | 385 | 0.354 | 0.479 | 0.000 | 1.000 |
| METAL | 90 | 0.333 | 0.474 | 0.000 | 1.000 | - | - | - | - | - | - | - | - | - | - | 385 | 0.178 | 0.383 | 0.000 | 1.000 |
| FOOD | | - | - | - | - | 81 | 0.123 | 0.331 | 0.000 | 1.000 | 238 | 0.248 | 0.433 | 0.000 | 1.000 | - | - | - | - | - |
| MINING | | - | - | - | - | 81 | 0.543 | 0.501 | 0.000 | 1.000 | 238 | 0.134 | 0.342 | 0.000 | 1.000 | - | - | - | - | - |
| TECNOLOGY | | - | - | - | - | 81 | 0.333 | 0.474 | 0.000 | 1.000 | 238 | 0.618 | 0.487 | 0.000 | 1.000 | - | - | - | - | - |

Notes: Table 1 reports the descriptive statistics of the variables used in the regression model. We distinguish among four different subsamples: UK companies import-oriented (UK import), UK companies export-oriented (UK export), other European companies import-oriented (No UK import), other European companies export-oriented (No UK export).

## Table 2. Correlation Matrix

Panel A)

| | UK IMPORT | | | | | | | NO UK IMPORT | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROS | E_TA | SIZE | CURRENT | FOOD | MINING | TECHNOLOGY | ROS | E_TA | SIZE | CURRENT | FOOD | MINING | TECHNOLOGY |
| ROS | 1.000 | | | | | | | 1.000 | | | | | | |
| E_TA | -0.297 | 1.000 | | | | | | 0.036 | 1.000 | | | | | |
| SIZE | 0.524 | -0.510 | 1.000 | | | | | 0.272 | 0.096 | 1.000 | | | | |
| CURRENT | -0.351 | 0.407 | -0.458 | 1.000 | | | | 0.122 | 0.221 | -0.161 | 1.000 | | | |
| FOOD | 0.075 | -0.214 | 0.155 | -0.106 | 1.000 | | | 0.069 | 0.050 | 0.198 | -0.118 | 1.000 | | |
| MINING | -0.190 | 0.139 | -0.282 | 0.200 | -0.401 | 1.000 | | -0.220 | 0.006 | 0.074 | -0.011 | -0.224 | 1.000 | |
| TECHNOLOGY | 0.141 | 0.015 | 0.177 | -0.129 | -0.323 | -0.738 | 1.000 | 0.092 | -0.049 | -0.228 | 0.113 | -0.733 | -0.499 | 1.000 |

Panel B)

| | UK EXPORT | | | | | | | | | NO UK EXPORT | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ROS | E_TA | SIZE | CURRENT | TRANSPORT | CAR | CHEMICAL | MACHINERY | METAL | ROS | E_TA | SIZE | CURRENT | TRANSPORT | CAR | CHEMICAL | MACHINERY | METAL |
| ROS | 1.000 | | | | | | | | | 1.000 | | | | | | | | |
| E_TA | -0.122 | 1.000 | | | | | | | | 0.020 | 1.000 | | | | | | | |
| SIZE | 0.445 | -0.347 | 1.000 | | | | | | | 0.168 | -0.204 | 1.000 | | | | | | |
| CURRENT | -0.119 | 0.537 | -0.373 | 1.000 | | | | | | -0.016 | 0.300 | -0.127 | 1.000 | | | | | |
| TRANSPORT | 0.071 | -0.101 | 0.164 | -0.046 | 1.000 | | | | | 0.023 | -0.036 | 0.031 | -0.040 | 1.000 | | | | |
| VEICHELES | 0.020 | -0.124 | 0.032 | -0.083 | -0.103 | 1.000 | | | | -0.128 | -0.106 | 0.105 | -0.040 | -0.129 | 1.000 | | | |
| CHEMICAL | -0.195 | 0.171 | -0.293 | 0.105 | -0.265 | -0.246 | 1.000 | | | 0.023 | 0.067 | -0.079 | -0.008 | -0.182 | -0.210 | 1.000 | | |
| MACHINERY | 0.091 | -0.018 | 0.130 | -0.023 | -0.147 | -0.136 | -0.350 | 1.000 | | 0.055 | 0.019 | 0.013 | -0.027 | -0.253 | -0.291 | -0.413 | 1.000 | |
| METAL | 0.079 | -0.026 | 0.083 | -0.011 | -0.199 | -0.185 | -0.475 | -0.263 | 1.000 | 0.001 | 0.023 | -0.046 | 0.109 | -0.155 | -0.179 | -0.254 | -0.352 | 1.000 |

Notes: Panel A) reports the correlation matrix that refers to the import-oriented firms, while Panel B) reports the correlation matrix that refers to the export-oriented firms.

*3.3 The sample*

The sample consists of 796 European listed companies, as shown in Table 3. 171 are UK companies: 81 belong to import-oriented industries (Computer, electronic and optical products; Food products; Mining) and 90 to export-oriented industries (Other transport; Motor vehicles, trailers and semi-trailers; Chemicals and chemical products; Machinery and equipment; Metals and metal products). The other 625 are non-UK European listed firms belonging to UK import-oriented (240 companies) and export-oriented (385 companies) industries.

In order to avoid biases in the estimation of stock market performance, we exclude from our database all companies that announced price relevant information from 10 days before to 10 days after our three "Day 0".

**Table 3: The sample by industry**

| **Industry** | | **UK** | **Other European countries** |
|---|---|---|---|
| UK export-oriented industries | Other transport | 8 | 38 |
| | Motor vehicles, trailers and semi-trailers | 7 | 53 |
| | Chemicals and chemical products | 32 | 92 |
| | Machinery and equipment | 13 | 134 |
| | Metals and metal products | 30 | 69 |
| UK import-oriented industries | Computer, electronic and optical products | 27 | 147 |
| | Food products | 10 | 60 |
| | Mining | 44 | 32 |
| **Total** | | **171** | **625** |

Notes: Table 3 shows the sample over different industries. Source: Orbis database.

## 4. Results

*4.1 Event study*

In order to verify stock price reactions to three different events related to Brexit, i.e. the announcements of the referendum date, the referendum result and the election of Theresa May as Prime Minister, we carried out different event studies.

The first event we investigate is the announcement of the referendum date, which was made on 20 February 2016. Results on UK companies and other European firms are reported in Tables 4 and 5, respectively.

**Table 4. The referendum announcement: the effect on UK companies**

| | *Panel A) Export-oriented industries* | | | | | *Panel B) Import-oriented industries* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event window | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ |
| (-10, -1) | 0.041* | 90 | 2.723 | 1.711 | 1.476 | 0.020* | 81 | 1.874 | 1.413 | 1.444 |
| (-5, -1) | 0.018** | 90 | 1.991 | 2.525 | 2.530 | 0.046*** | 81 | 6.398 | 5.850 | 4.778 |
| (-3, -1) | 0.022*** | 90 | 3.663 | 2.807 | 2.319 | 0.033*** | 81 | 5.793 | 4.021 | 5.222 |
| (0, 10) | 0.070** | 90 | 3.746 | 1.924 | 2.438 | 0.074*** | 81 | 3.881 | 4.030 | 2.778 |
| (0, 5) | 0.017* | 90 | 1.748 | 1.949 | 1.590 | 0.026* | 81 | 1.906 | 1.622 | 1.565 |
| (0, 3) | 0.019*** | 90 | 2.381 | 2.835 | 2.558 | 0.023** | 81 | 2.083 | 1.814 | 2.138 |
| (0, 1) | 0.020*** | 90 | 2.522 | 2.404 | 3.967 | 0.023* | 81 | 2.409 | 1.442 | 1.937 |

Notes: Table 4 shows the results of event studies carried out on 171 listed UK companies related to the announcement of the referendum date (on 20 February 2016). 90 companies belong to UK export-oriented sectors, and 81 companies belong to UK import-oriented sectors. We measured the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests ($T_1$, $T_2$ and $T_3$), reported in Equations (6), (7) and (9). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

**Table 5. The referendum announcement: the effect on non-UK companies**

| | *Panel A) Export* | | | | | *Panel B) Import* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event window | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ |
| (-10, -1) | -0.006 | 384 | -0.719 | -0.095 | 0.306 | -0.010 | 240 | -1.621 | -1.214 | 1.936 |
| (-5, -1) | 0.018*** | 384 | 5.215 | 4.494 | 5.307 | 0.016*** | 240 | 2.689 | 5.706 | 5.164 |
| (-3, -1) | 0.009** | 384 | 2.953 | 1.809 | 2.347 | 0.013*** | 240 | 3.189 | 3.824 | 4.002 |
| (0, 10) | 0.036*** | 384 | 5.511 | 5.014 | 5.001 | 0.028*** | 240 | 2.608 | 4.149 | 2.324 |
| (0, 5) | 0.013** | 384 | 2.649 | 2.294 | 3.980 | 0.015** | 240 | 2.130 | 3.960 | 3.873 |
| (0, 3) | 0.006* | 384 | 1.549 | 1.693 | 3.219 | 0.012** | 240 | 2.185 | 2.377 | 3.241 |
| (0, 1) | 0.011* | 384 | 2.873 | 1.424 | 4.662 | 0.014* | 240 | 3.279 | 1.398 | 4.926 |

Notes: Table 5 shows the results of event studies carried out on 624 listed European companies related to the announcement of the referendum date (on 20 February 2016). 384 companies belong to UK export-oriented sectors, while 240 companies belong to UK import-oriented sectors. We measured the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests ($T_1$, $T_2$ and $T_3$), reported in Equations (6), (7) and (9). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

Our findings show positive and statistically significant mean CARs in almost all the investigated event windows.

Focusing on UK export-oriented companies (Table 4, Panel A), we identify statistically significant mean CARs of 4.1%, 1.8% and 2.2% in the event windows (-10, -1), (-5, -1) and (-3, -1), respectively. We obtained similar CARs (equal to 2%, 4.6% and 3.3%) on UK import-oriented companies (Table 4, Panel B) in the same event windows. We interpret these significant results before the event date as an evidence that the information on the referendum date circulated probably some days before its official announcement. In our opinion, the UK financial market positively priced such information as, on 20 February 2016, the Prime Minister David Cameron said he would be campaigning to remain in a reformed EU. In that period, "remain" was thought to be the most likely

outcome and received high volumes of coverage across most of the UK economic publications, as shown by the analysis by Moore and Ramsay (2017). The "remain" result allowed investors to immediately assess the effect on the country's future. As suggested by Pantzalis et al. (2000), in this case positive price changes should be expected, given that uncertainty about the policies to be implemented after the vote is resolved "ex ante".

Moreover, the event windows following the 20 February 2016, i.e. (0, 1), (0, 3), (0, 5) and (0, 10) also show statistically significant CARs equal to 2%, 1.9%, 1.7% and 7%, respectively, related to UK export-oriented companies (Table 4, Panel A). Similar CARs equal to 2.3%, 2.3%, 2.6% and 7.4% are found about UK import-oriented companies (Table 4, Panel B) in the same event windows. The positive results following the Day 0 can also be explained, in this case, considering that in February 2016 the market did not consider the referendum outcome as an uncertain event. In this view, our results are consistent with previous evidences by Pantzalis et al. (2000), Goodel and Vahamaa (2013), Broogaard and Detzel (2015) and Samles (2015, 2016).

We also investigate the effect of the announcement of the referendum date on stock prices of other European companies belonging to UK export- and import-oriented industries. Our findings, reported in Table 5, show positive and statistically significant mean CARs in all the investigated event windows except the (-10, -1) window. Specifically, we identify positive mean CARs both for European companies belonging to UK export- (Table 5, Panel A) and import-oriented (Table 5, Panel B) industries. This means that other European financial markets, like the UK one, positively priced the information on the referendum call. These results too could be explained by considering that the "remain" outcome was thought to be very likely and, consequently, political uncertainty was very low.

These results lead us to accept Hypothesis 1 both in relation to the UK and other-European countries financial markets

The second event we investigate is the referendum vote, which took place on 23 June 2016. Results are reported in Tables 6 and 7, respectively.

**Table 6. The referendum vote: the effect on UK companies**

| | *Panel A) Export-oriented industries* | | | | | *Panel B) Import-oriented industries* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event window | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ |
| (-10, -1) | -0.040*** | 89 | -4.070 | -4.428 | 3.838 | -0.035*** | 81 | -3.620 | -3.996 | 3.222 |
| (-5, -1) | -0.030*** | 89 | -4.958 | -4.535 | 4.558 | -0.028*** | 81 | -3.901 | -4.184 | 3.444 |
| (-3, -1) | -0.024*** | 89 | -4.352 | -2.856 | 3.624 | -0.024*** | 81 | -3.532 | -3.101 | 3.222 |
| (0, 10) | 0.052*** | 89 | 2.874 | 3.743 | 3.286 | 0.044** | 81 | 2.042 | 3.970 | 3.222 |
| (0, 5) | 0.015 | 89 | 1.068 | 1.525 | 0.742 | 0.045*** | 81 | 3.242 | 4.031 | 3.889 |
| (0, 3) | 0.007 | 89 | 0.559 | 0.922 | 0.318 | 0.026** | 81 | 2.159 | 1.688 | 2.138 |
| (0, 1) | 0.017 | 89 | 1.896 | 0.100 | 1.166 | 0.033** | 81 | 4.211 | 1.963 | 3.488 |

Notes: Table 6 shows the results of event studies carried out on 170 listed UK companies related to the referendum vote (23 June 2016). 89 companies belong to UK export-oriented sectors, while 81 companies belong to UK import-oriented sectors. We measured the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests ($T_1$, $T_2$ and $T_3$), reported in Equations (6), (7) and (9). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

**Table 7. The referendum vote: the effect on non-UK companies**

| | *Panel A) Export* | | | | | *Panel B) Import* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event window | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ |
| (-10, -1) | -0.008 | 385 | -2.185 | -0.056 | 3.202 | -0.027*** | 238 | -3.619 | -5.201 | 5.445 |
| (-5, -1) | 0.001 | 385 | 0.491 | 0.640 | -0.864 | -0.008*** | 238 | -2.414 | -3.247 | 2.463 |
| (-3, -1) | 0.000 | 385 | 0.202 | -0.101 | -1.677 | -0.002 | 238 | -0.913 | -2.523 | 0.259 |
| (0, 10) | 0.014** | 385 | 2.137 | 1.968 | 1.372 | 0.013** | 238 | 1.548 | 4.924 | 4.222 |
| (0, 5) | 0.009** | 385 | 2.129 | 2.094 | 2.389 | 0.013*** | 238 | 2.969 | 3.539 | 3.443 |
| (0, 3) | 0.005* | 385 | 1.609 | 1.841 | 2.701 | 0.006* | 238 | 1.484 | 2.111 | 1.556 |
| (0, 1) | 0.006* | 385 | 2.071 | 1.592 | 4.332 | 0.001 | 238 | 0.153 | 0.223 | 1.426 |

Notes: Table 7 shows the results of event studies carried out on 623 listed European companies relating to the referendum vote (23 June 2016). 385 companies belong to UK export-oriented sectors, while 238 companies belong to UK import-oriented sectors. We measured the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests ($T_1$, $T_2$ and $T_3$), reported in Equations (6), (7) and (9). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

Focusing on UK companies (Table 6) our findings show negative and statistically significant mean CARs in the event windows (-10, -1), (-5, -1) and (-3, -1) equal to -4%, -3%, -2.4% and -3.5%, -2.8%, -2.4% for export- and import-oriented industries, respectively. These results can be explained considering that, in the day before 23 June 2016, there was high uncertainty on the referendum result. Informational efficiency requires that financial markets price political news before voting outcomes. If uncertainty about the result is not resolved as it draws near, investors are not able to assess the effect on the country's future, and, for this reason, negative price changes should be expected, as suggested by Pantzalis et al. (2000), Brogaard and Detzel (2015), Krause et al. (2016) and Smales (2017). The UK press greatly stimulated this uncertainty. The analysis conducted by Levy et al. (2016) on the London editions of the nine national newspapers over the four months of the campaign show in fact that the UK press was divided into pro "remain" and pro "exit" camps, and the debate grew fiercer in the last week of the campaign. These results lead us to accept Hypothesis 2 in relation to the UK financial market.

On the contrary, import- and export-oriented UK companies reacted in a different way to the referendum vote. Specifically, the referendum outcome was almost uninformative for export-oriented industries, as CARs show statistically significant results only in the event window (0, 10). The reason could be that, in the days immediately following the referendum outcome, the market was probably confused on the possible effects of Brexit on UK export. On the one hand, "remain" would have let Britain avoid exporter tariffs and red tape, in a period where about 45% of British exports went to the EU. On the other hand, "exit" could have led Britain to negotiate new relationships with the EU without being bound by European law, and to secure trade deals with other important international non-Eurpean partners (Wielechowski and Czech, 2016). These results confirm previous evidence found by Gros (2016), who demonstrates that, except for a weaker pound and lower UK interest rates, the referendum outcome did not make a clear impact on the UK financial market, probably because Brexit had not yet happened (Begg, 2016). On the contrary, the referendum outcome was informative for import-oriented industries, as CARs show statistically significant results of 4.4%, 4.5%, 2.6% and 3.3% in the event windows (0, 10), (0, 5), (0, 3) and (0, 1). These positive results, which support the evidence found by Oehler et al. (2017), can be explained by good political communication following

the referendum outcome, which concentrated on the agreement that UK and EU were to develop in order to negotiate a positive deal.

This concern can justify also the positive impact of the referendum outcome on stock prices of other European companies in to UK export- and import-oriented industries. Our findings, reported in Table 7, show in fact positive and statistically significant mean CARs (although magnitude is low) in all the investigated event windows (except the (0, 1) window) following Day 0. This means that other European financial markets as well as the UK one, priced "uncertainty" before Day 0 and, consequently, positively priced the "certain" information on the referendum outcome after its announcement. In addition, other European companies belonging to UK import-oriented industries (Table 7, Panel B) show negative and statistically significant mean CARs in the event windows (-10, -1), (-5, -1) and (-3, -1) equal to -2.7%, -0.8% and -0.2%, respectively. As in the case of UK companies, these results can be explained considering that, in the day before the referendum vote, the outcome was uncertain and this uncertainty led to negative price changes, as suggested by Pantzalis et al. (2000), Brogaard and Detzel (2015), Krause et al. (2016) and Smales (2017).

The third event we investigate is the announcement of the election of Theresa May as Prime Minister, which took place on 11 July 2016. Findings on UK companies and other European firms are reported in Tables 8 and 9, respectively.

**Table 8. The election of Theresa May: the effect on UK companies**

| | *Panel A) Export-oriented industries* | | | | | *Panel B) Import-oriented industries* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event window | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ |
| (-10, -1) | 0.041*** | 90 | 3.027 | 2.463 | 3.795 | 0.016 | 81 | 0.835 | 2.708 | 2.778 |
| (-5, -1) | 0.027** | 90 | 2.858 | 2.078 | 3.162 | -0.008 | 81 | -0.555 | -0.225 | 0.333 |
| (-3, -1) | 0.019*** | 90 | 2.848 | 2.556 | 3.795 | -0.003 | 81 | -0.202 | 2.116 | -1.00 |
| (0, 10) | 0.028** | 90 | 1.953 | 1.730 | 2.951 | 0.049*** | 81 | 3.304 | 2.725 | 3.222 |
| (0, 5) | 0.030** | 90 | 3.022 | 1.783 | 3.373 | 0.040*** | 81 | 2.955 | 2.745 | 3.222 |
| (0, 3) | 0.030** | 90 | 3.460 | 2.124 | 3.795 | 0.037*** | 81 | 3.761 | 2.523 | 3.444 |
| (0, 1) | 0.032** | 90 | 3.960 | 2.053 | 4.216 | 0.032* | 81 | 3.527 | 1.538 | 3.801 |

Notes: Table 8 shows the results of event studies carried out on 171 listed UK companies related to the election of Theresa May as Prime Minister (11 July 2016). 90 companies belong to UK export-oriented sectors, while 81 companies belong to UK import-oriented sectors. We measured the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests ($T_1$, $T_2$ and $T_3$), reported in Equations (6), (7) and (9). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

**Table 9. The election of Theresa May: the effect on non-UK companies**

| | *Panel A) Export* | | | | | *Panel B) Import* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Event window | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ | Mean CAR | Number of firms | $T_1$ | $T_2$ | $T_3$ |
| (-10, -1) | 0.005 | 386 | 0.818 | -0.246 | -0.305 | 0.008 | 239 | 0.743 | 5.244 | 4.334 |
| (-5, -1) | -0.001 | 386 | -0.353 | 0.623 | 1.120 | 0.007 | 239 | 2.091 | 1.049 | 0.970 |
| (-3, -1) | -0.001 | 386 | -0.197 | 0.997 | -2.443 | 0.003 | 239 | 1.109 | 1.136 | 0.194 |
| (0, 10) | 0.027** | 386 | 3.679 | 1.764 | 5.090 | 0.023*** | 239 | 3.798 | 2.611 | 3.558 |
| (0, 5) | 0.027*** | 386 | 4.952 | 2.560 | 5.395 | 0.017** | 239 | 3.365 | 2.387 | 2.135 |
| (0, 3) | 0.025*** | 386 | 5.012 | 2.827 | 5.802 | 0.015** | 239 | 3.068 | 1.773 | 1.945 |
| (0, 1) | 0.016* | 386 | 4.679 | 1.570 | 5.657 | 0.007** | 239 | 1.701 | 1.780 | 2.022 |

Notes: Table 9 shows the results of event studies carried out on 625 listed European companies related to the election of Theresa May as Prime Minister (11 July 2016). 386 companies belong to UK export-oriented sectors, while 239 companies belong to UK import-oriented sectors. We measured the predicted normal bank returns using the market model. The CAR statistical significance is verified using three tests ($T_1$, $T_2$ and $T_3$), reported in Equations (6), (7) and (9). *, **, *** denote the statistical significance at 10%, 5% and 1%, respectively (one-tailed test).

Our findings show positive and statistically significant mean CARs in all the event windows following Day 0, both for UK and other European companies. In the case of UK firms (Table 8), all the event windows following the Day 0 show positive statistically significant mean CARs ranging from 2.8% (in the event window (0, 10) for export-oriented industries, Table 8, Panel A) to 4.9% (in the event window (0, 10) for import-oriented industries, Table 8, Panel B). In the case of other European firms, we again found positive and statistically significant results, although their magnitude is lower than in the previous subsample. Specifically, for other European firms we estimate positive mean CARs ranging from 0.7% (in the event window (0, 1) for UK import-oriented industries, Table 9, Panel B) to 2.7% (in the event windows (0, 5) and (0, 10) for UK export-oriented industries, Table 9, Panel A). This can be explained considering that the election of Theresa May as Prime Minister was interpreted as "good news" by financial markets, both in the UK and in the other European countries. Mrs May had in fact established a firm lead in the first round of voting, winning the support of more than half of the party's MPs, and was perceived as a trustworthy and credible politician. On 11 July 2016, she immediately declared that UK would have left the European Union and there would be "no attempts to remain inside the EU", with no second referendum or "attempts to rejoin it by the backdoor", and that "together with the British people, she would build a better Britain". In this context, the election of Theresa May as Prime Minister allowed investors to immediately assess the effect on the country's future. As suggested by Pantzalis et al. (2000), Goodel and Vahamaa (2013), Broogaard and Detzel (2015) and Samles (2015, 2016), in this case positive price changes are not to be expected, as uncertainty about the policies to be implemented after the vote is resolved "ex ante". These results lead us to accept Hypothesis 3 both in relation to the UK and other-European countries financial markets.

### *4.2 Econometric results*

In order to investigate the determinants of significant CARs quantified in the three event dates related to Brexit, we run some cross-sectional regressions on the four subsamples.

First, we focus on 20 February 2016, the day on which Cameron announced the referendum (Table 10). We run some regressions on CARs estimated in the event windows showing the highest significance in the event study analysis. The magnitude of the coefficients is higher for sectorial

variables than for firm-specific characteristics. This means that CARs are more affected by the industry than by the company fundamentals. Table 10 shows in fact that investor reaction is particularly evident in mining (for both UK and other EU import-oriented firms) and metallurgical industries (for both UK and other EU exporters). With regard to the company fundamentals, only size shows a positive and significant relationship with CARs of the export-oriented firms (both UK and No UK), which suggests that investor reaction may be stronger for larger companies. ROS appears to be negligible for European companies operating in UK import-oriented industries (NO UK import). Finally, focusing on UK import-oriented firms, investors seem to react more positively when companies show lower capitalization and higher liquidity.

Second, we tried to explain CARs estimated around the referendum date. We detect the determinants of CARs calculated in the asymmetric event window (-3, -1), i.e. the event window prior to the event showing the highest statistical significance (at 1%), and (0, 5), i.e. the most statistically significant event window following Day 0. We limited the analysis to the UK import-oriented firms, as they are the only companies presenting statistically significant CARs. Table 11 reports our results.

The role of firm fundamentals in determining investor reaction to the outcome of the referendum is modest. ROS has a very small coefficient in the case of UK import-oriented companies, thus suggesting that the profitability effect on CARs is small. Looking at size, its effect is different considering import and export-oriented firms. In fact, larger companies show higher abnormal returns after the referendum and lower negative abnormal returns in the period before Day 0. With regard to capitalization (E_TA) and liquidity (CURRENT_RATIO), their coefficients, although negative and statistically significant, are so small that a relevant explanation value of these firm-specific variables cannot be identified. Looking at the magnitude of coefficients, the industry has a greater significant effect on CARs than company characteristics. In particular, UK firms operating in the mining sector show higher positive CARs after the referendum vote. We also identify negative CARs before Day 0 for the metallurgical sector in UK export-oriented companies.

Our last analysis focuses on the announcement of the election of Theresa May as Prime Minister, which was made on 11 July 2016. We consider only the asymmetric event windows (0, +3) – with the exception for the UK export firms, for which we also consider the statistically significant asymmetric event window (-3, -1) – because it shows the highest significance in the event study analysis. Results are reported in Table 12. In the case of UK companies, firm-specific characteristics do not mainly contribute to explaining CARs, except for size for UK export-oriented firms and ROS in the UK import-oriented firms, where however the magnitude of coefficient is low enough to be negligible. In other European countries too, larger firms show higher cumulative abnormal returns after the announcement of the new Prime Minister. Moreover, our results show that, in the case of other European firms operating in UK import-oriented industries, ROS and Equity on Total Assets are negatively related to the dependent variable. However, their coefficients are so low that the explanatory role of profitability and capitalization seem to be negligible. Finally, the sectorial effect appears significant only for UK export-oriented companies.

**Table 10. Regression analysis: investor reaction to the referendum date announcement**

| | UK IMPORT | | UK EXPORT | | NO UK IMPORT | | NO UK EXPORT | |
|---|---|---|---|---|---|---|---|---|
| VARIABLES | EW(-3,-1) | EW(0,10) | EW(-3,-1) | EW(0,10) | EW(-3,-1) | EW(0,10) | EW(-3,-1) | EW(0,10) |
| Constant | 0.007 | 0.050 | 0.021 | -0.223 | -0.025 | -0.098 | -0.028 | -0.051 |
| | (0.043) | (0.125) | (0.045) | (0.139) | (0.029) | (0.074) | (0.018) | (0.043) |
| ROS | -4.68e-07 | 6.79e-07 | -1.88e-07 | -2.08e-05 | -3.42e-05* | 2.57e-05 | 1.39e-07 | 3.76e-06 |
| | (6.62e-07) | (1.90e-06) | (5.86e-06) | (1.78e-05) | (2.05e-05) | (5.23e-05) | (1.71e-06) | (3.99e-06) |
| SIZE | 0.001 | 0.010 | -0.001 | 0.017** | 0.002 | 0.008 | 0.002** | 0.006** |
| | (0.002) | (0.006) | (0.003) | (0.008) | (0.002) | (0.005) | (0.001) | (0.002) |
| E_TA | -0.001 | -0.002*** | -0.001 | 2.50e-05 | 2.34e-05 | -0.000 | 0.000 | -0.001 |
| | (0.000) | (0.001) | (0.000) | (0.001) | (5.66e-05) | (0.000) | (0.000) | (0.000) |
| CURRENT | 0.001 | 0.006** | 0.001 | -0.013 | 0.003 | 0.005 | -0.001 | 0.001 |
| | (0.000) | (0.002) | (0.003) | (0.010) | (0.003) | (0.007) | (0.001) | (0.002) |
| FOOD | -0.026 | -0.011 | - | - | -0.006 | -0.028 | - | - |
| | (0.020) | (0.057) | | | (0.011) | (0.030) | | |
| MINING | 0.018 | 0.105** | - | - | -0.029* | 0.070* | - | - |
| | (0.014) | (0.042) | | | (0.015) | (0.038) | | |
| VEHICLES | - | - | -0.000 | 0.075 | - | - | 0.002 | 0.030 |
| | | | (0.029) | (0.089) | | | (0.012) | (0.027) |
| CHEMICAL | - | - | 0.001 | 0.117 | - | - | 0.004 | 0.040 |
| | | | (0.023) | (0.070) | | | (0.010) | (0.025) |
| MACHINERY | - | - | -0.003 | 0.099 | - | - | -0.001 | 0.019 |
| | | | (0.025) | (0.077) | | | (0.010) | (0.023) |
| METAL | - | - | 0.044* | 0.182** | - | - | -0.002 | 0.101*** |
| | | | (0.023) | (0.071) | | | (0.011) | (0.026) |
| COUNTRY FE | - | - | - | - | YES | YES | YES | YES |
| Observations | 67 | 67 | 80 | 79 | 234 | 234 | 349 | 349 |
| Ad. R-squared | 0.110 | 0.306 | 0.135 | 0.182 | 0.093 | 0.128 | 0.046 | 0.150 |

Table 10 shows the results of the regression model run on CARs estimated around the announcement of the referendum date (20 February 2016). The dependent variables are CARs quantified in the event windows showing the highest significance in the event study analysis both for subsamples of UK and EU companies. Independent variables are distinguished between firm-specific and sectorial variables. Firm-specific variables are the following: return on sales (ROS) as proxy of profitability, equity over total assets (E_TA) as measure of capitalization, the natural logarithm of total revenues (SIZE) as proxy of firm size and the liquidity ratio (CURRENT) are proxy of liquidity. In the second group we have a series of dummy variables for each industry: food, mining, vehicles, chemical, machinery and metal. COUNTRY FE is a series of dummy variables for each European country. *, **, *** denote the statistical significance at 10%, 5% and 1% level, respectively.

**Table 11. Regression analysis: investor reaction to the referendum result announcement**

| | UK IMPORT | | UK EXPORT |
|---|---|---|---|
| VARIABLES | EW(0; 5) | EW(-3; -1) | EW(-3; -1) |
| Constant | -0.005 | 0.021 | -0.082** |
| | (0.077) | (0.039) | (0.040) |
| ROS | -2.35e-06* | 1.27e-06** | 1.83e-06 |
| | (1.18e-06) | (5.96e-07) | (5.08e-06) |
| SIZE | 0.009** | -0.003 | 0.005** |
| | (0.004) | (0.002) | (0.002) |
| E_TA | -0.001** | 0.001 | 0.0003 |
| | (0.001) | (0.000) | (0.000) |
| CURRENT | 0.001 | -0.002*** | 0.002 |
| | (0.002) | (0.001) | (0.003) |
| FOOD | 5.56e-05 | 0.004 | - |
| | (0.035) | (0.018) | |
| MINING | 0.057** | -0.021 | - |
| | (0.026) | (0.013) | |
| VEHICLES | - | - | -0.029 |
| | | | (0.026) |
| CHEMICAL | | - | -0.003 |
| | | | (0.019) |
| MACHINERY | - | - | -0.006 |
| | | | (0.021) |
| METAL | - | - | -0.048** |
| | | | (0.020) |
| Observations | 67 | 67 | 78 |
| Ad. R-squared | 0.268 | 0.245 | 0.227 |

Table 11 shows the results of the regression model run on CARs estimated around the announcement of the referendum result (23 June 2016). The dependent variables are CARs quantified in the event windows showing the highest significance in the event study analysis both for subsamples of UK and EU companies. Independent variables are distinguished between firm-specific and sectorial variables. Firm-specific variables are the following: return on sales (ROS) as proxy of profitability, equity over total assets (E_TA) as measure of capitalization, the natural logarithm of total revenues (SIZE) as proxy of firm size and the liquidity ratio (CURRENT) are proxy of liquidity. In the second group we have a series of dummy variables for each industry: food, mining, vehicles, chemical, machinery and metal. COUNTRY FE is a series of dummy variables for each European country. *, **, *** denote the statistical significance at 10%, 5% and 1% level, respectively.

**Table 12. Regression analysis: investor reaction to the appointment of Theresa May announcement**

| | UK IMPORT | UK EXPORT | | NO UK IMPORT | NO UK EXPORT |
|---|---|---|---|---|---|
| VARIABLES | EW(0; +3) | EW(0; +3) | EW(-;3; -1) | EW(0; +3) | EW(0; +3) |
| Constant | 0.111* | -0.049 | -0.032 | -0.034 | -0.076*** |
| | (0.065) | (0.060) | (0.043) | (0.031) | (0.027) |
| ROS | 3.60e-06*** | -3.36E-06 | -4.37E-06 | -4.79e-05** | -1.15E-06 |
| | (9.97E-07) | (7.79E-06) | (5.64E-06) | (2.20E-05) | (2.56E-06) |
| SIZE | -0.004 | 0.006* | 0.0013 | 0.004* | 0.006*** |
| | (0.003) | (0.004) | (0.002) | (0.002) | (0.002) |
| E_TA | -0.001 | 0.000 | -0.000 | -0.0001*** | 0.001 |
| | (0.000) | (0.000) | (0.000) | (6.08E-05) | (0.001) |
| CURRENT | 0.001 | -0.004 | 0.001 | 0.002 | -0.001 |
| | (0.001) | (0.004) | (0.003) | (0.003) | (0.001) |
| FOOD | -0.021 | - | - | -0.019 | - |
| | (0.030) | | | (0.012) | |
| MINING | 0.031 | - | - | -0.022 | - |
| | (0.022) | | | (0.016) | |
| VEHICLES | - | -0.006 | 0.048* | - | 0.012 |
| | | (0.039) | (0.028) | | (0.017) |
| CHEMICAL | - | -0.009 | 0.048** | - | 0.001 |
| | | (0.030) | (0.022) | | (0.016) |
| MACHINERY | - | 2.35E-05 | 0.053** | - | 0.005 |
| | | (0.033) | (0.024) | | (0.015) |
| METAL | - | 0.024 | 0.057** | - | 0.018 |
| | | (0.031) | (0.022) | | (0.016) |
| COUNTRY FE | - | | | yes | Yes |
| Observations | 67 | 80 | 80 | 233 | 349 |
| Ad. R-squared | 0.227 | 0.108 | 0.119 | 0.077 | 0.102 |

Table 12 shows the results of the regression model run on CARs estimated around the announcement of the appointment of Theresa May as Prime Minister (11 July 2016). The dependent variables are CARs quantified in the event windows showing the highest significance in the event study analysis both for subsamples of UK and EU companies. Independent variables are distinguished between firm-specific and sectorial variables. Firm-specific variables are the following: return on sales (ROS) as proxy of profitability, equity over total assets (E_TA) as measure of capitalization, the natural logarithm of total revenues (SIZE) as proxy of firm size and the liquidity ratio (CURRENT) are proxy of liquidity. In the second group we have a series of dummy variables for each industry: food, mining, vehicles, chemical, machinery and metal. COUNTRY FE is a series of dummy variables for each European country. $^{*}$, $^{**}$, $^{***}$ denote the statistical significance at 10%, 5% and 1% level, respectively.

Our results show overall that investor reaction to different events related to Brexit depends more on industry factors than on firm-specific characteristics, both for UK and EU companies. These results lead us to accept Hypothesis 4 both in relation to the UK and other-European countries financial markets. This confirms previous finding by Jacowicz et al. (2017), who show a very low explanatory power of firm fundamentals. The only exception is company size which also positively affects investor reaction in our research. These results suggest that, in the events related to Brexit we investigated, investors reacted uniformly, firm characteristics are less important, and industry factors prevail.

## 5. Robustness checks

To test the robustness of our main analysis, we run our regression model on significant CARs of other event windows examined in the event study analysis.

With regard to the referendum result, these findings, reported in Table 13, generally confirm previous results. Investor reaction is in fact stronger in the case of larger and more liquid companies. Moreover, we identify a negative relationship between cumulative abnormal returns estimated after the referendum date announcement and firm capitalization, as shown in our main analysis. And in line with previous results, the coefficients of firm-specific characteristics are very low and may be considered negligible. On the other hand, although the coefficients of industry dummy variables are not always significant, their magnitude is important.

Results relating to the referendum date announcement, reported in Table 14, also substantially confirm our main findings. In fact, the mining sector shows the highest significant coefficient in case of UK import-oriented firms, while the metallurgical industry is significant in case of UK export-oriented companies. Finally, the robustness checks reported in Table 15 confirm previous findings on the announcement of Theresa May as Prime Minister.

**Table 13. Robustness checks: investor reaction to the referendum result announcement**

| | UK IMPORT | | | UK EXPORT |
|---|---|---|---|---|
| | EW(0; +1) | EW(0; +3) | EW(-5;-1) | EW(-5;-1) |
| Constant | -0.063 | -0.086 | 0.002 | -0.038 |
| | (0.053) | (0.066) | (0.044) | (0.044) |
| ROS | -1.85e-06** | -2.47e-06** | 9.09e-07 | 6.93e-06 |
| | (8.11e-07) | (1.00e-06) | (6.78e-07) | (5.67e-06) |
| SIZE | 0.009*** | 0.011*** | -0.001 | 0.004 |
| | (0.002) | (0.003) | (0.002) | (0.003) |
| E_TA | -0.001* | -0.001** | 0.000 | -9.30e-05 |
| | (0.000) | (0.000) | (0.001) | (0.000) |
| CURRENT | 0.001 | 0.001 | 0.002*** | 0.001 |
| | (0.001) | (0.001) | (0.001) | (0.003) |
| FOOD | -0.000 | -0.002 | -0.006 | |
| | (0.024) | (0.030) | (0.020) | |
| MINING | 0.040** | 0.063*** | -0.035** | |
| | (0.018) | (0.022) | (0.015) | |
| VEHICLES | | | | -0.031 |
| | | | | (0.028) |
| CHEMICAL | | | | -0.030 |
| | | | | (0.022) |
| MACHINERY | | | | -0.032 |
| | | | | (0.024) |
| METALL | | | | -0.060*** |
| | | | | (0.022) |
| COUNTRY FE | | | | |
| Observations | 67 | 67 | 67 | 79 |
| Ad. R-squared | 0.296 | 0.335 | 0.258 | 0.192 |

Table 13 shows the results of the robustness check on CARs estimated around the announcement of the referendum result (23 June 2016). The dependent variables are CARs quantified in the event windows showing significance in the event study analysis both for subsamples of UK and EU companies. Independent variables are distinguished between firm-specific and sectorial variables. Firm-specific variables are the following: return on sales (ROS) as proxy of profitability, equity over total assets (E_TA) as measure of capitalization, the natural logarithm of total revenues (SIZE) as proxy of firm size and the liquidity ratio (CURRENT) are proxy of liquidity. In the second group we have a series of dummy variables for each industry: food, mining, vehicles, chemical, machinery and metal. COUNTRY FE is a series of dummy variables for each European country. *, **, *** denote the statistical significance at 10%, 5% and 1% level, respectively.

## Table 14. Robustness checks: investor reaction to the referendum date announcement

| | UK IMPORT | | | | | UK EXPORT | | | | | NO UK IMPORT | | | | NO UK EXPORT | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | (0,+1) | (0,+3) | (0,+5) | (-5,-1) | (-10,-1) | (0,+1) | (0,+3) | (0,+5) | (-5,-1) | (-10,-1) | (0,+1) | (0,+3) | (0,+5) | (-5,-1) | (0,+1) | (0,+3) | (0,+5) | (-5,-1) |
| Constant | -0.031 | 0.032 | 0.005 | 0.047 | -0.134* | -0.029 | -0.056 | -0.121 | -0.072 | -0.032 | -0.061** | -0.066* | -0.159*** | -0.012 | -0.065** | -0.060** | -0.052 | -0.002 |
| | (0.067) | (0.076) | (0.088) | (0.052) | (0.076) | (0.051) | (0.0651) | (0.0763) | (0.052) | (0.087) | (0.030) | (0.037) | (0.046) | (0.039) | (0.025) | (0.027) | (0.033) | (0.024) |
| ROS | -4.73e-07 | 5.01e-07 | 3.46e-07 | -1.41e-07 | -1.03e-06 | -5.50e-07 | -2.48e-06 | -7.01e-06 | -2.47e-06 | -5.52e-06 | 2.86e-05 | 2.91e-05 | 1.82e-05 | -6.72e-06 | -2.14e-07 | 5.94e-07 | 1.82e-06 | 1.57e-06 |
| | (1.01e-06) | (1.15e-06) | (1.34e-06) | (7.96e-07) | (1.16e-06) | (6.62e-06) | (8.37e-06) | (9.82e-06) | (6.76e-06) | (1.12e-05) | (2.08e-05) | (2.53e-05) | (3.22e-05) | (2.75e-05) | (2.37e-06) | (2.52e-06) | (3.05e-06) | (2.25e-06) |
| SIZE | 0.008** | 0.00293 | 0.006 | 0.001 | 0.010** | 0.003 | 0.005 | 0.009** | 0.006** | 0.007 | 0.004** | 0.005* | 0.010*** | 0.003 | 0.005*** | 0.004*** | 0.005*** | 0.001 |
| | (0.003) | (0.004) | (0.004) | (0.002) | (0.004) | (0.003) | (0.003) | (0.004) | (0.003) | (0.005) | (0.002) | (0.002) | (0.003) | (0.002) | (0.001) | (0.001) | (0.002) | (0.001) |
| E_TA | -0.001** | -0.001** | -0.001** | -0.001 | 7.28e-05 | -0.0005** | 0.000 | 6.42e-05 | 0.001 | -0.001*** | -0.001** | -0.001** | -9.22e-05 | -0.0001** | -0.001 | -0.001 | -7.24e-05 | 5.84e-05 |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (5.75e-05) | (6.99e-05) | (8.92e-05) | (7.60e-05) | (0.000) | (0.000) | (0.000) | (0.000) |
| CURRENT | 0.003** | 0.003** | 0.005** | 0.000 | -7.17e-06 | -0.007* | -0.00433 | -0.004 | 0.000 | 0.000 | 0.002 | 0.001 | 0.007* | -0.000 | 0.001 | 0.001 | 0.001 | -0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.004) | (0.004) | (0.005) | (0.003) | (0.006) | (0.002) | (0.003) | (0.004) | (0.003) | (0.001) | (0.001) | (0.001) | (0.001) |
| FOOD | 0.026 | 0.031 | 0.026 | -0.049** | -0.033 | - | - | - | - | - | -0.008 | -0.010 | -0.014 | -0.004 | - | - | - | - |
| | (0.032) | (0.036) | (0.042) | (0.024) | (0.035) | | | | | | (0.011) | (0.014) | (0.018) | (0.015) | | | | |
| MINING | 0.031 | 0.029 | 0.021 | 0.014 | 0.055** | - | - | - | - | - | 0.002 | -0.006 | 0.005 | -0.054*** | - | - | - | - |
| | (0.023) | (0.025) | (0.029) | (0.017) | (0.025) | | | | | | (0.015) | (0.018) | (0.023) | (0.020) | | | | |
| VEHICLES | - | - | - | - | - | -0.016 | -0.0042 | 0.007 | 0.014 | 0.002 | - | - | - | - | 0.005 | 0.024 | 0.013 | 0.009 |
| | | | | | | (0.033) | (0.041) | (0.049) | (0.033) | (0.056) | | | | | (0.016) | (0.017) | (0.021) | (0.015) |
| CHEMICAL | - | - | - | - | - | 0.006 | 0.028 | 0.051 | -0.002 | -0.001 | - | - | - | - | 0.023 | 0.040** | 0.018 | -0.001 |
| | | | | | | (0.026) | (0.033) | (0.038) | (0.026) | (0.044) | | | | | (0.014) | (0.015) | (0.019) | (0.014) |
| MACHINERY | - | - | - | - | - | 0.003 | 0.010 | 0.015 | -0.010 | -0.029 | - | - | - | - | 0.017 | 0.031** | 0.002 | 0.002 |
| | | | | | | (0.028) | (0.036) | (0.042) | (0.029) | (0.048) | | | | | (0.014) | (0.015) | (0.018) | (0.013) |
| METALL | - | - | - | - | - | -0.023 | -0.001 | 0.015 | -0.009 | 0.141*** | - | - | - | - | 0.026* | 0.044*** | 0.049** | -0.002 |
| | | | | | | (0.026) | (0.033) | (0.039) | (0.027) | (0.045) | | | | | (0.015) | (0.016) | (0.020) | (0.014) |
| COUNTRY FE | - | - | - | - | - | | | | | | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 63 | 65 | 66 | 67 | 67 | 78 | 78 | 79 | 80 | 80 | 232 | 232 | 234 | 234 | 348 | 348 | 349 | 349 |
| Ad. R-squared | 0.276 | 0.164 | 0.194 | 0.127 | 0.180 | 0.135 | 0.071 | 0.109 | 0.079 | 0.405 | 0.154 | 0.165 | 0.156 | 0.142 | 0.144 | 0.079 | 0.131 | 0.052 |

Table 14 shows the results of the robustness check on CARs estimated around the announcement of the referendum date (20 February 2016). The dependent variables are CARs quantified in the event windows showing significance in the event study analysis both for subsamples of UK and EU companies. Independent variables are distinguished between firm-specific and sectorial variables. Firm-specific variables are the following: return on sales (ROS) as proxy of profitability, equity over total assets (E_TA) as measure of capitalization, the natural logarithm of total revenues (SIZE) as proxy of firm size and the liquidity ratio (CURRENT) are proxy of liquidity. In the second group we have a series of dummy variables for each industry: food, mining, vehicles, chemical, machinery and metal. COUNTRY FE is a series of dummy variables for each European country. *, **, *** denote the statistical significance at 10%, 5% and 1% level, respectively.

**Table 15. Robustness checks: investor reaction to the appointment of Theresa May announcement**

| | UK IMPORT | | | UK EXPORT | | | | | NO UK IMPORT | | | NO UK EXPORT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VARIABLES | (0,+1) | (0,+5) | (0,+10) | (0,+1) | (0,+5) | (0,+10) | (-5,-1) | (-10,-1) | (0,+1) | (0,+5) | (0,+10) | (0,+1) | (0,+5) | (0,+10) |
| Constant | 0.099 | 0.191** | 0.271** | -0.028 | -0.059 | -0.124 | -0.056 | -0.141 | -0.098*** | -0.097*** | -0.076* | -0.070*** | -0.074** | -0.157*** |
| | (0.063) | (0.089) | (0.104) | (0.051) | (0.068) | (0.104) | (0.065) | (0.096) | (0.025) | (0.033) | (0.040) | (0.020) | (0.036) | (0.050) |
| ROS | 2.92e-06*** | 4.88e-06*** | 2.08e-06 | -2.87e-06 | -2.23e-06 | -6.74e-06 | -4.64e-06 | -1.51e-05 | -0.0001*** | -6.60e-05*** | -8.16e-05*** | -8.98e-07 | 2.35e-06 | -1.25e-06 |
| | (9.66e-07) | (1.35e-06) | (1.57e-06) | (6.61e-06) | (8.79e-06) | (1.34e-05) | (8.45e-06) | (1.25e-05) | (1.78e-05) | (2.37e-05) | (2.82e-05) | (1.93e-06) | (3.38e-06) | (4.68e-06) |
| SIZE | -0.003 | -0.009* | -0.011** | 0.004 | 0.006 | 0.012* | 0.001 | 0.009 | 0.006*** | 0.006*** | 0.007** | 0.005*** | 0.007*** | 0.011*** |
| | (0.003) | (0.004) | (0.005) | (0.003) | (0.004) | (0.006) | (0.004) | (0.005) | (0.001) | (0.002) | (0.002) | (0.001) | (0.002) | (0.003) |
| E_TA | -0.000 | -0.000 | -0.001 | 0.000 | 0.000 | 0.000 | -0.000 | -0.000 | -9.62e-05* | 2.49e-05 | -0.0001* | 0.0002* | -1.72e-05 | 0.001** |
| | (0.000) | (0.001) | (0.001) | (0.000) | (0.000) | (0.001) | (0.000) | (0.001) | (4.90e-05) | (6.56e-05) | (7.81e-05) | (0.000) | (0.000) | (0.0003) |
| CURRENT | 0.001 | 0.000 | -0.001 | -0.003 | -0.008* | -0.003 | 0.001 | -0.003 | 0.005** | 0.005 | 0.000 | -0.001 | -0.001 | -0.003 |
| | (0.001) | (0.001) | (0.002) | (0.003) | (0.005) | (0.007) | (0.004) | (0.007) | (0.002) | (0.003) | (0.003) | (0.000) | (0.001) | (0.002) |
| FOOD | -0.003 | -0.024 | -0.065 | - | - | - | - | - | -0.004 | -0.033** | -0.038** | - | - | - |
| | (0.029) | (0.041) | (0.048) | | | | | | (0.010) | (0.013) | (0.016) | | | |
| MINING | 0.028 | 0.009 | -0.039 | - | - | - | - | - | -0.014 | -0.042** | -0.052** | - | - | - |
| | (0.021) | (0.030) | (0.035) | | | | | | (0.013) | (0.017) | (0.020) | | | |
| VEHICLES | - | - | - | -0.003 | -0.002 | -0.011 | 0.064 | 0.048 | - | - | - | 0.010 | 0.027 | 0.026 |
| | | | | (0.033) | (0.044) | (0.067) | (0.042) | (0.062) | | | | (0.013) | (0.023) | (0.032) |
| CHEMICAL | - | - | - | -0.003 | 5.41e-05 | 0.007 | 0.072** | 0.069 | - | - | - | -0.008 | 0.013 | 0.005 |
| | | | | (0.026) | (0.034) | (0.053) | (0.033) | (0.049) | | | | (0.012) | (0.021) | (0.029) |
| MACHINERY | - | - | - | -0.003 | -0.003 | 0.009 | 0.067* | 0.054 | - | - | - | -0.001 | 0.016 | 0.005 |
| | | | | (0.028) | (0.038) | (0.058) | (0.036) | (0.054) | | | | (0.011) | (0.020) | (0.027) |
| METALL | - | - | - | 0.020 | 0.016 | -0.032 | 0.136*** | 0.176*** | - | - | - | 0.011 | 0.039* | 0.036 |
| | | | | (0.026) | (0.035) | (0.053) | (0.034) | (0.050) | | | | (0.012) | (0.0223) | (0.030) |
| COUNTRY FE | - | - | - | - | - | - | - | - | YES | YES | YES | YES | YES | YES |
| Observations | 66 | 67 | 67 | 80 | 80 | 80 | 80 | 80 | 230 | 234 | 234 | 348 | 349 | 349 |
| Ad. R-squared | 0.166 | 0.194 | 0.106 | 0.088 | 0.108 | 0.077 | 0.213 | 0.246 | 0.194 | 0.124 | 0.139 | 0.110 | 0.104 | 0.093 |

Table 15 shows the results of the robustness check on CARs estimated around the announcement of the appointment of Theresa May as Prime Minister (11 July 2016). The dependent variables are CARs quantified in the event windows showing significance in the event study analysis both for subsamples of UK and EU companies. Independent variables are distinguished between firm-specific and sectorial variables. Firm-specific variables are the following: return on sales (ROS) as proxy of profitability, equity over total assets (E_TA) as measure of capitalization, the natural logarithm of total revenues (SIZE) as proxy of firm size and the liquidity ratio (CURRENT) are proxy of liquidity. In the second group we have a series of dummy variables for each industry: food, mining, vehicles, chemical, machinery and metal. COUNTRY FE is a series of dummy variables for each European country. *, **, *** denote the statistical significance at 10%, 5% and 1% level, respectively.

## 6. Discussion and conclusions

The European political landscape is currently being shaken up by several unprecedented events, which threaten the future of the European Union. Political uncertainty heavily affects market prices and increases capital market volatility.

In this context, our research tested market reaction to the most outstanding episode of the last few years, i.e. Brexit. We considered several events surrounding the 2016 British referendum, from Cameron's announcement to the election of Theresa May as Prime Minister, which opened up a possible new period of political stability. We focused on UK and other European import- and export-oriented listed companies. Through event studies, we assessed that markets positively priced the referendum date announcement, which shows that the "remain" outcome was considered to be very likely and thus no political uncertainty was expected. We found on the other hand negative CARs before 23 June 2016, due to the high level of uncertainty on the referendum result. This could have been driven by the UK press, which was divided into pro "remain" and pro "exit" camps and stimulated heated debate on the matter. Conversely, once the Brexit result became public knowledge, import- and export-oriented UK companies reacted differently. Exporters' market prices did not show abnormal changes, while importers' prices seemed to be in some way protected by positive political speaking, which communicated that the UK and the EU would eventually negotiate a positive deal. We also found positive CARs for European export- and import-oriented companies, with a few exceptions, which shows that investors selectively and differently priced the information on the referendum outcome, depending on the industry.

Finally, the positive CARs around the election of Theresa May for both UK and other European companies show that the event was interpreted as "good news" by financial markets. This can be explained considering that Prime Minister May was perceived as a trustworthy and credible politician, with a clear view on how to tackle the issue and lead the UK outside the Union. It initially appeared that a new political stability would be achieved.

Our cross sectional analysis shows that investor reaction to different events related to Brexit depends more on industry factors than on firm-specific characteristics, both for UK and EU companies. The only exception is company size which positively affects investor reaction in this and previous studies.

This paper makes several contributions to existing literature. It introduces a new focus on UK sectors which import from or export to the EU and European economic sectors that import from or export to the UK. It describes an event study on the effects of Brexit on the stock market, which considers different events around the referendum result, and thus allows a thorough observation of the stock market reaction to different levels and drivers of political uncertainty.

Our study also has important managerial implications. The results show that political uncertainty is priced differently by investors, depending on the industry and its specific sensitivity to the economic consequences of political change. Conversely, idiosyncratic risk does not represent any specific determinant of abnormal price movements in the case of unexpected events. This may lead to the conclusion that managing political risk within corporate governance and Enterprise Risk Management systems, although important in order to anticipate ambiguity and volatility in the political environment, is not necessarily effective in preserving a company's reputation and economic value. Broader action initiated by industry associations, including enhanced media relations, might further help prevent negative market reaction and its effects on individual companies. Such an approach might be of utmost importance in the light of the current political instability in several European and Extra-European countries.

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