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The Impact of Brexit Related Events on European and US Exchange Rates

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The Impact of Brexit Related Events on European and US Exchange Rates

An Honors Thesis submitted in partial fulfillment of the requirements for Honors in
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ABSTRACT

On June 23rd, 2016, the British public voted to leave the European-Union in a highly contested referendum. The purpose of this thesis is to gain an understanding of whether 'Brexit' associated events and announcements had an impact on the US Dollar/Euro, British Pound/Euro and US Dollar/British Pound exchange rates. 69 Brexit associated events or announcements were identified for the study from 1st January 2013 to 31st December 2017. Using a univariate analysis (two-sample t-test in combination with a Levene-test of equal variance) as well as a multivariate analysis (OLS regression), the study examines exchange rate changes during a three-day window surrounding the Brexit events: the event day (day (0)), one day prior to the event (day (-1)), and one day after the event (day (+1)). The results of the univariate analysis show that the referendum day had a statistically significant impact on the exchange rates. The multivariate analysis, which controls for interest rates as well as stock market returns in the domestic and foreign country, provides some statistically significant evidence that the Brexit events impacted the US Dollar/Euro exchange rate as well as the British Pound/Euro exchange rate. However, when removing the referendum day from the other event days, we find that the Brexit events had only a statistically significant impact on the British Pound/Euro exchange rate, while the actual referendum had a statistically significant impact on all three exchange rates.

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1. Introduction

On June 23rd, 2016, the British public voted to leave the European Union in a bitter, highly contested referendum. The vote came in at 51.9% to 48.1%[1], initiating a multi-year negotiation process. During this process, the United Kingdom will attempt to revise its deal for participation with the EU, otherwise it faces a complete withdrawal. Wide reaching financial, diplomatic and political consequences will likely be seen all around the globe regardless of whether the UK successfully negotiates a deal with the European Union, or leaves empty handed.

This study's aim is to investigate the impact of Brexit related events and announcements on foreign exchange rates. Whilst this study will not see the conclusion of the Brexit negotiations, it will focus on events leading up to and following the United Kingdom European Union referendum, as well as the referendum itself.

The buildup to the referendum had been widely publicized; issues highlighted by the Leave Campaign focused on national autonomy and the inability to stem the flow of immigrants from EU countries.[2] This anti-immigration sentiment seemed at odds with the United Kingdom's reputation as a country "known for the strength of its institutions, the tolerance of its population and an outward looking and measured foreign policy."[3]

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[1] "EU Referendum Results." *Electoral Commission | EU referendum results*, 2016, www.electoralcommission.org.uk/find-information-by-subject/elections-and-referendums/past-elections-and-referendums/eu-referendum/electorate-and-count-information.

[2] Arnorsson, Agust and Gylfi Zoega. "On the Causes of Brexit." *European Journal of Political Economy*, 08 Feb. 2018. EBSCO*host*, doi: 10.1016/j.ejpoleco.2018.02.001.

[3] Arnorsson, Agust and Gylfi Zoega. "On the Causes of Brexit." *European Journal of Political Economy*, 08 Feb. 2018. EBSCO*host*, doi: 10.1016/j.ejpoleco.2018.02.001.

Conversely the Remain Campaign focused on the economic benefits of the Single Market, whilst also focusing their campaign on the British youth. It was also raised by the Remain camp that any future participation in the Single Market through the European Economic Area would require the adoption of EU rules without any input into the making of the rules, whilst also having to pay an annual fee for participation. This would effectively nullify attempts by the UK government to regain autonomy and control of legislation.

1.1. Review of Literature

Following the United Kingdom European Union Referendum, the European Committee on Constitutional Affairs commissioned the Policy Department for Citizen's Rights and Constitutional Affairs to compile "…on a regular basis, academic and scholarly material related to the process of, and the negotiations on, the withdrawal of the UK from the EU." As of January 1st, 2018, this list appears broad in scope of topics, but far from exhaustive. Some of the literature from the list was included in this review, although most sources within the list were determined to be unrelated. The total amount of academic Brexit-related material has grown considerably since the announcement of the referendum and is still expanding. However, it is important to note that the majority of the literature and discussion associated with Brexit is journalistic rather than academic. Our review of current literature examines the current research into historical referendum and Brexit related effects with specific focus on economic outcomes. The time frame for literature is limited to the last 15 years and exclusively academic articles. The headings covered in this review are as follows: historical referendum, future relationship, foreign direct investment, equity and forex markets.

Historical Referendum

Forecasting the effect of Brexit is difficult given the lack of historical precedent. However, there is literature that examines previous referendum and the effect they had on their respective economies. One study to come out of the Quebec Referendum was Beaulieu et al. (2006), *"Political Uncertainty and Stock Market Returns: Evidence from the 1995 Quebec Referendum."* This study found that the effects varied given the political exposure of firms, whilst the stock market was indeed impacted in the short run by the announcement of the referendum result and prior uncertainty. However, these same conclusions may not apply to the case of the United Kingdom European Union Referendum. According to Sampson (2017), even cases such as Algeria's 1962 and Greenland's 1985 departure from the European Commission are too far removed from the current circumstances of UK-EU relations to shed light on Brexit's impact.

UK-EU Future Relationship

Much of the academic literature compiled as a result of the Constitutional Affairs commissioning is theoretical and forward looking. This theme is not limited to the compiled list of literature; most Brexit related academic articles focus on potential future deals and effects. The relationship between the United Kingdom and European Union will undoubtedly change and is the main focus of the literature. However, the literature does not only focus on trade relationships. For example, '*Consequences of Brexit for*

European Union criminal law' (Weyembergh, 2017) looks into the significance of Brexit for "the EU police, judicial cooperation sector in criminal matters and the possibilities for a future relationship between the UK and EU." This 'thematic' paper is of less usefulness than papers such as Owen et al. (2016) and Andreangeli (2017). Andreangeli (2017) stipulates that UK courts' ability to exercise jurisdiction over future competition litigation is under threat. Whilst this may have little to no measurable economic effect post Brexit, there may emerge cases that could cause harm to the UK economy. The disintegration and lack of cooperation across a multitude of disciplines may be lessened should the UK remain part of the Single Market, primarily as the UK would likely be required to abide by EU regulations. Owen et al. examines three potential future UK-EU relationships ranging from one similar to a 'Canada Type' FTA to an agreement such as the EEA. The paper states each side in the negotiation must make a series of critical choices. The UK must choose in its negotiations between access to the Single Market and regulatory control. This will likely shape the resulting agreement to some extent. The paper concludes that a 'bespoke Norway' agreement offers the best access to the Single Market whilst limiting UK regulatory control, however a Canada-type agreement that better meets UK political objectives will limit market access.

The literature is consistent in describing a seemingly negative outlook for future UK trade relations. Comparisons to previous major trade negotiations highlight the difficulties the UK will face in achieving both its political and economic objectives. In a briefing paper, Szyszczak (2017) utilizes the example of Ukraine as a potential model for future UK-EU trade agreements. The research shows that the European Union is able to renegotiate previous Association Agreements trade deals with its partners, although the agreement with Ukraine allows the EU to set the agenda in terms of legal barriers and the European Court of Justice. It is unlikely that the UK will accept similar terms considering autonomy was a major issue raised by the Leave Campaign. In a March 2016 Policy Paper, the British Government identify three alternative trade options for the UK: the Norway model, negotiated bilateral agreements and a WTO only model. In the paper, the huge difficulties in leaving the single market are identified before concluding "It is the assessment of the UK Government that no existing model outside the EU comes close to providing the same balance of advantages and influence that we get from the UK's current special status inside the EU."[4]

Interest Rate Parity

This section examines literature associated with interest rate parity (IP) and its effect on exchange rates. The interest rate parity theorem describes how the interest rate differential between two countries is equal to the differential between the spot exchange rate and the forward exchange rate. IP assumes that capital flows respond to different interest rates in countries, in particular well connected financial centers. However, there is little empirical evidence that follows the IP theorem. Sirichand et al. (2015) states that whilst evidence for the "strong form" of the theorem is lacking, there is much broader support for the "weaker form" that states "real interest rates converge towards real

[4] HM Government. *Alternatives to Membership: Possible Models for the United Kingdom Outside the European Union.* Mar. 2016, www.gov.uk.

interest rate parity."[5] Their paper concludes that it is the reversion of inflation as opposed to nominal interest rates which acts as the primary cause of convergence.

Frachot (1996) also reexamines the uncovered interest rate parity hypothesis. In similar fashion to Sirichand et al., Frachot finds that the simple or "strong" form of the theorem rarely holds under empirical examination. However, a new formulation finds that the expected future spot exchange is equal to the forward exchange rate, albeit multiplied by a term premium.

Equity and Forex Markets

This section examines literature associated with currency and equity markets. Schiereck et al (2016) compares the market's reaction to Brexit with the past reaction to the Lehman Brother's bankruptcy filing in 2008. Schiereck et al demonstrate the magnitude of Brexit as an external financial shock, as short run drops in stock prices were even more pronounced than that following the Lehman Brothers collapse. However, non-European markets saw neither a significant shock nor credit default swap reactions. These findings were consistent across other studies such as Burdekin et al (2017) which found a 5% drop in global equity markets in the days following the referendum, whilst the PIIGS group (Portugal, Ireland, Italy, Greece and Spain) experienced greater negative turns, likely as a result of comparably high levels of debt.

Most of the existing studies tend to focus on the short-term effects of the referendum event or speculate as to the potential effects post negotiation period. For example, Oehler

[5] Sirichand, Kavita, et al. "Examining real interest parity: Which component reverts quickest and in which regime?" International Review of Financial Analysis 23rd January 2015

et al (2016) found that internationalized firms were more likely to experience negative abnormal short run returns on the day after the referendum, but gross internationalization had little to “no relevant pricing effect in the following days.” Their paper “Brexit: Short-term stock price effects and the impact of firm-level internationalization” looked exclusively at the referendum and the followings itself and so is limited in its usefulness. This theme of short run analysis is found across other empirically based studies making analysis over our 5-year time period more difficult. (Burdekin et al 2017, Schiereck et al 2016, Raddant 2016).

Our study is different from prior research in several respects. First, it looks at Brexit related events and announcements over a long period of time (5 years), whereas past studies have focused on a singular event, most commonly the referendum itself. There is a gap in the research looking at the effects of wider associated Brexit events and announcements. Despite a strong focus on financial markets in existing research (Burdekin et al 2017, Raddant 2016, Schiereck 2017) only modest research has been done into the effects on foreign exchange rates. Secondly, our study includes analysis not just of the Pound Sterling to Euro exchange rate but also the US Dollar to Euro and Pound exchange rates. This is different from existing works that mainly focus on the effect on the stock market such as Oehler et al (2016) and Burdekin et al (2017).

The rest of the paper is organized as follows: in Section 2, we describe the History of Brexit and Section 3 the Economic Impact of Brexit. Section 4 describes the data used in the study and Section 5 outlines the multiple regression analysis. Section 6 reports the study’s results and this is followed by concluding remarks in Section 7.

2. Brexit History

This section considers the main events of Brexit so far, split into three sections: pre-referendum, the referendum itself and finally post referendum. A UK House of Commons Briefing Paper written by Nigel Walker, released 18th October 2017, details important Brexit related events, including a Brexit negotiation future timetable. Using this paper and a series of Google searches we have highlighted those events of greatest importance, although they may not necessarily be included in our data due to the events' wider political significance. For a full list of events used in the study please see Section 4.1 'Data'.

2.1 Pre-Referendum (23rd January 2013 – 22nd June 2016)

The first public mention of a potential Brexit made by a person of political position occurred on the 23rd of January 2013, when in a speech at Bloomberg David Cameron declared his support for an in-out EU referendum for the British public at some point in the future. However, not until the UK General Election in 2015 did the reality of a UK-EU referendum re-emerge, when the conservative party pledged to hold such a referendum in their manifesto - released 14th of April 2015.[6]

Later that year, following the Conservative Party victory in the General Election, David Cameron initiated what would become the first step in a negotiation process, setting out his plans for an In-Out Referendum at the European Council meeting on the

[6] "The Conservative Party Manifesto 2015." *Conservatives.com,* 14 Apr. 2015, www.conservatives.com/manifesto2015. "David Cameron has committed that he will only lead a government that offers an in-out referendum. We will hold that referendum before the end of 2017 and respect the outcome"

26th June 2016. However, it wasn't until February 22nd, 2016 that David Cameron announced the EU Referendum date – 23rd June 2016.

Several Euro-sceptic groups emerged in the buildup to the referendum. Clarke et al. (2016) identifies Vote Leave, Leave EU and Grassroots Out as the main progenitors of the Brexit Campaign. Clarke et al (2016) describes how these groups worked to mobilize public anxiety on a number of issues, namely immigration, sovereignty and the perceived economic cost of EU membership. Fears among the British public of the free movement of EU Nationals grew as plans emerged to increase the EU; Albania, Montenegro, Serbia and potentially Turkey were potential candidates for EU inclusion. The idea of control was highlighted time and again by the leave campaign; whether it was control of the UK's borders or of its EU expenditure. Vote Leave ran a campaign which stated (potentially falsely) that the UK would save £350 million a week that could instead be redirected to the National Health Service (NHS).

The official campaign for remaining in the EU was backed by the Prime Minister David Cameron, as well as a multitude of trade unions, businesses and economists. Their campaign emphasized the heavy economic costs associated with leaving the EU, with George Osborne, Chancellor of the Exchequer claiming that Brexit may cause a £30 billion 'black hole' in the UK economy.[7]

[7] Clarke, Harold D, et al. *Why Britain Voted for Brexit: An Individual-Level Analysis of the 2016 Referendum Vote*. 2016.

2.2 The Referendum (23rd June 2016 - 24th June 2016)

The United Kingdom European Union Referendum was held on the 23rd of June 2016, with the British Public voting to leave the European Union by a margin of 51.9% to 48.1% - announced on the 24th of June 2016. David Cameron, who had backed the Remain Campaign, followed the announcement of the result by announcing his resignation, initiating a leadership contest in the Conservative Party for the role of Prime Minister.

2.3 Post Referendum (25th June 2016 – 31st December 2017)

Following a short leadership struggle, Theresa May was appointed as the new Prime Minister and leader of the Conservative Party. One of her first actions as Prime Minister was to appoint David Davis as Secretary of State for Exiting the European Union. The first major step towards exiting the EU following the referendum was to trigger Article 50 of the Lisbon Treaty.[8] This gave the European Union official notice of the United Kingdom's intent to leave the Union. On October 2nd, 2016, in her party conference speech, Theresa May confirmed Article 50 would be triggered before the end of 2017, as well as announcing the 'Great Repeal Bill'.[9]

However, before Article 50 could be triggered, there was a constitutional question to be answered in *R (Miller) v Secretary of State for Exiting the European Union*, as to who could trigger the UK's exit. Gina Miller, the case applicant, brought the case on the basis that a government minister is "not normally entitled to exercise any power they

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[8] "The Lisbon Treaty." *Article 50*, www.lisbon-treaty.org/wcm/the-lisbon-treaty/treaty-on-European-union-and-comments/title-6-final-provisions/137-article-50.html.

[9] May, Theresa. "Speech to the conservative party conference." *Birmingham (5 October), http://www. independent. co. uk/news/uk/politics/theresa-may-speech-tory-conference-2016-in-full-transcript-a7346171. html (accessed 9 March 2017)*. 2016.

might otherwise have if it results in a change in UK domestic law."[10] The court found its judgement in favor of the claimant, both at the original High Court hearing on 3rd November 2016 and at the Supreme Court appeal on 24th January 2017. As such, the decision to leave the European Union and notify its leadership of such a decision by triggering Article 50, must be confirmed by a parliamentary vote.

In response to the Gina Miller case, Parliament voted on and passed the European Union (Withdrawal) Act 2017 - the bill received Royal Assent on the 16th of March 2017. Therefore, on the 29th March 2017, in a letter to European Council President Donald Tusk, Theresa May invoked Article 50. In an immediate response to the letter, the European Council issued a statement claiming that the UK's triggering of Article 50, "creates significant uncertainties that have the potential to cause disruption, in particular in the UK but also in other member states."[11]

Whilst not a direct official result of Brexit, Theresa May called an early General Election on the 18th April 2017. This was then approved by parliament the next day on the 19th of April by a vote of 522 to 13. The election was held on the 8th June 2017, however resulted in a hung parliament. The conservatives won the most seats, and on the 9th of June, Theresa May announced she would form a government, with the conditional support of the Democratic Unionist Party. Prosser (2018) recognized that this election outcome had resulted in a substantial shift in party support, benefitting the two major parties - Conservative and Labour. Despite this, it was a poor result for the Conservative

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[10] *R v. Secretary of State for Exiting the European Union ex parte Miller* [2017] UKSC 5.

[11] See for the letter of the British prime minister: http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/29_03_17_article50.pdf. The answer from the EU: EU Draft Guidelines following the United Kingdom's notification under Article 50 TEU, Council of The European Union, XT 21001/17, Brussels

Party and Theresa May, who had looked to strengthen their position in the House of Commons going into the Brexit Negotiations. The first round of Brexit Negotiations was held on the 19th of June 2017, with negotiations reaching its first ‘breakthrough’ in December, allowing negotiations to progress to their second stage.[12]

3. Economic Impact of Brexit

Understanding the impact of Brexit on the UK-EU economy is an incredibly difficult task. Whilst we are able to forecast various different outcomes, it is impossible to predict the effect of the exact final deal being negotiated as it is yet unknown. As mentioned earlier in this paper, there is also a lack of historical precedent with regards to a situation such as the one the United Kingdom currently finds itself in. Sampson (2017) examines various options for post-Brexit relations between the United Kingdom and European Union and the economic impact they might have. Sampson’s paper among others interprets Brexit as just the final deal itself. However, this study considers Brexit under an extended definition, including the referendum and negotiation period.

Throughout 2016 the UK economy outperformed the Bank of England forecasts which suggested the economy would slow sharply after the referendum whilst avoiding a recession. Rather, the economy continued to grow steadily at an average of 1.8% throughout the year.[13] Michael Saunders, a member of the Bank of England’s monetary policy committee highlights two main factors for the economy’s better than expected performance. Firstly, the sharp spike in uncertainty and lack of business confidence faded

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[12] 'Breakthrough' deal in Brexit talks". 8 December 2017. Retrieved 9 December 2017 – via www.bbc.com.

[13] Office of National Statistics. “United Kingdom Economic Accounts”. Edition 97, 2016

faster than expected and was not accompanied by a major deterioration in the cost and availability of credit. The second reason identified by Mr. Saunders is the fact that the global economy is doing better, giving a boost to asset prices and business confidence as well as export prospects.[14] It was a similar story throughout 2017, as GDP growth averaged the same as the previous year. However, this level of growth was interpreted as 'slow and uneven' by the Office of National Statistics, despite the Chancellor Richard Hammond describing it as "very, very strong." The Office for Budget Responsibility forecast growth to slow to 1.4% in 2018 and 1.3% in 2019. In an interview the chair of the OBR, Robert Chute, said these forecasts reflect weaker household consumption due to higher inflation and increased business uncertainty due to Brexit.[15]

As a well-developed, tertiary sector economy, the United Kingdom has comparative advantage in services, most notably financial services. The economy is heavily reliant on trade with the European Union; in 2015, 44% of UK exports and 53% of UK imports were accounted for by the EU.[16] It is important to note that "Financial Services" and "Other Business Services" accounted for 20% of the UK's exports to the EU. Sampson (2017) confirms that Brexit will lead to a reduction in economic integration between the EU and UK, the effects of which can already be seen. For example, according to the Ernst & Young Financial Services Brexit Tracker, 10500 financial services jobs may be relocated to the European continent by 'Day One' of Brexit. This is as a result of major financial companies forming contingency plans as they potentially face higher barriers to

[14] https://www.bankofengland.co.uk/speech/2017/ten-months-after-the-eu-referendum-how-is-the-economy-doing
[15] https://www.instituteforgovernment.org.uk/Robert-Chote

[16] Office of National Statistics Pink Book (Office of National Statistics 2016a)

entry in EU markets and a loss of passporting rights. In addition to this, nearly a third of financial services companies have confirmed or are now considering relocation of some operations.[17] The effect of this relocation of financial services companies extends beyond a reduction in UK financial services offered to the EU, but may cause potential non-EU clients to look outside of the UK.

Trade is at the center of the UK-EU economic concerns, and is well addressed by Sampson (2017) in the form of an option analysis. Sampson uses a Pessimistic (UK-EU trade conducted under WTO terms) vs Optimistic (UK remains in single market) option analysis to estimate the welfare effect of reduced trade after Brexit. Unsurprisingly it is the UK that suffers the worst, although the European Union will also suffer but to a lesser extent. However, some negative welfare effects due to losses in trade may be offset by potential new trade deals for the UK outside of the European Union. As of yet no such deals have been made, and post-Brexit the UK will find itself with greatly reduced bargaining power having left the single market. In addition to this, the UK will no longer benefit from new trade deals made by non-EU nations with the European Union, such as the EU's now confirmed trade deal with Japan.[18]

Whilst most economic studies of Brexit focus on trade, other areas such as foreign direct investment and immigration will also be affected. An EY report from May 2017 identifies the United Kingdom as Europe's top recipient of Foreign Direct Investment (FDI) throughout 2016. However, 50% of investors surveyed expect the UK to become

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[17] Ernst & Young. "Financial Services Brexit Tracker: Thousands of financial services jobs to be relocated as firms plan for Day One of Brexit." *EY*, 11 Dec. 2017, www.ey.com/uk/en/newsroom/news-releases/17-12-11

[18] http://ec.europa.eu/trade/policy/countries-and-regions/countries/japan/

less attractive in the long term whilst 31% expect its attractiveness as an investment destination to decline in the next three years.[19] Dhingra et al (2016) identify three main reasons the UK is likely to experience a loss of foreign investment. Firstly, no longer will it act as an investment platform with export access to the Single Market, meaning multinationals are likely to experience an increase in tariff and non-tariff barriers. Second is the increased complexity of supply-chain management; namely the increased variation of regulations on component parts and tougher migration controls on staff transfer. The third and final reason identified is the uncertainty surrounding future trade agreements between the UK and EU. The UK motor industry demonstrates clearly the effect on foreign investment of Brexit, as according to Bailey and De Propis (2017) Ford and now Nissan have already identified a potential withdrawal of investment to engine manufacturing sites in the UK. As an industry that currently employs 800,000 people[20], it would be a major hit to see the motor industry suffer. Dhingra et al conclude from their empirical analysis that Brexit is likely to reduce inward FDI flows to the UK by 22%, and estimate that this could in turn lower UK real incomes by 3.4%.

A major argument of the Leave Campaign was the inability to stem the flow of immigrants from the European continent. The campaign argued that this level of immigration lowered wages, whilst increasing unemployment among British nationals, as well as putting a strain on public services such as the NHS. This argument had some strength in that immigrants from other EU countries living in the UK tripled from 0.9

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[19] "EY Attractiveness survey: UK 2017." *EY's Attractiveness survey: UK 2017: Time to act - EY - United Kingdom*, Ernst & Young, May 2017, www.ey.com/uk/en/issues/business-environment/ey-uk-attractiveness-survey.

[20] Bailey, David and Lisa De Propris. "Brexit and the Uk Automotive Industry." *National Institute Economic Review*, no. 242, 2017, p. 51.

million to 3.3 million. However, “There is a huge amount of research examining the effect of immigration on jobs and wages (Wadsworth 2015, Portes 2016, Centre for European Reform 2016, and Dustmann et al 2005). The conclusion of this research is that the large increase in immigration in the UK has not significantly harmed the job and wage prospects of UK-born workers.”[21] If the flow of immigration were to be stemmed following Brexit, the UK may see weaker productivity and lower GDP growth. This is because EU immigrants are more likely to work and pay tax and less likely to use public services as they are younger and better educated than the UK-born (Dhingra et al (2016)).

The final aspect of the economy examined in this section is the effect of Brexit on equity markets. On a global scale, equity values dropped 5% following the news of the referendum result, although have since recovered. Burdekin (2017) found that EU countries with greater levels of debt (PIIGs group – Portugal, Ireland, Italy, Greece and Spain) were worst hit. By comparison the UK has a modest Debt to GDP ratio and so the equity market is better able to recover from such external shocks. However, the long-term effect of the final Brexit result on stock market indices is nigh on impossible to predict given the uncertainty surrounding the negotiations. However, it is not unreasonable to expect abnormal negative returns on companies in the UK should the effect on the economy be as detrimental as predicted.

In summary, the United Kingdom’s exit from the European Union may have particularly adverse effects on the financial sector, and subsequently negatively affect

[21]Dhingra, Swati, et al. *Brexit and the Impact of Immigration on the UK*. The London School of Economics and Political Science, June 2016, www.kenwitsconsultancy.co.uk/wp-content/uploads/2016/09/BREXIT-2016-Policy-Analysis-from-the-Centre-for-Economic-Performance.pdf#page=40.

trade and FDI. Pressure already exists to reduce the relevance of the UK as the main centre for euro-transactions, although the UK's influence on these decisions will be greatly reduced when forfeiting EU membership. As a result of the negative economic consequences and uncertainty associated with the United Kingdom's departure from the EU, we would expect to see a weakening of the British Pound relative to the US Dollar and Euro. Also, likely to be affected by the level of economic uncertainty is the Euro, which will remain strong relative to the pound but may weaken relative to the US Dollar.

4. Data (Including Summary Statistics)

The data spans the time period from (1/1/2013) to (12/31/2017) and sampled at a daily frequency. The main data source for the analysis was drawn from Thomson Reuters Eikon/DataStream. We investigate the impact of Brexit related events on three bilateral exchange rates: the U.S. dollar versus the euro, the U.S. dollar versus the British pound, and the British pound versus the euro. The dollar/euro exchange rate is sourced from the European Central Bank and coded "USECBP" in DataStream. The pound/euro exchange rate is also sourced from the European Central Bank and coded "UKECBSP" in DataStream. The U.S dollar/euro exchange rate is sourced from the Bank of England and coded "STUSBOE". We use the change in the exchange rate, which is calculated as follows:

$$\Delta S_t = \frac{S_t - S_{t-1}}{S_{t-1}}, \qquad [1]$$

where, S_t represents the exchange rate at time t.

The stock market returns for the U.S., the U.K. and the Eurozone are calculated based on the Standard & Poor's 500 index (S&P500), the Financial Times Stock Exchange

100 index (FTSE100) and the STOXX Europe 600 index, respectively. The three stock market indexes are coded "S&PCOMP", "FTSE100", and "DJSTOXX" in DataStream and are quoted in the home country's currency. The stock market returns are calculated as follows:

$$\Delta P_t = \frac{P_t - P_{t-1}}{SP_{t-1}}, \qquad [2]$$

where, P_t represents the value of the respective stock market index t.

The interest rates are based on the U.S. 3-month Treasury bill, the U.K 3-month Treasury bill and the 3-month euro interbank offered rate and are coded, FRTBS3M, UKTBTND, and FIBOR3M in DataStream, respectively.

A UK House of Commons Briefing Paper released 18th October 2017 details important Brexit related events, including a Brexit negotiation future timetable. From this paper 106 events were identified across a 5-year period, running from January 1st, 2013 to December 31st, 2017. Of these 106 events, 37 were removed meaning that a final number of 69 events would be included in the study (Table 13). Events were removed either due to a lack of media coverage, or categorization as a wider political event i.e. beyond the exclusive sphere of Brexit. This final categorization included events such as Theresa May's appointment as Prime Minister and the German general election.

4.1 Summary statistics

Panel A: Exchange rate changes			
	USD/Euro	Pound/Euro	USD/Pound
DataStream	USECBSP	UKECBSP	STUSBOE
Mean	-0.0059%	0.0079%	-0.0120%
STD	0.5275%	0.5382%	0.5782%
MIN	-3.6151%	-2.2370%	-7.9538%
MAX	2.4970%	5.4246%	2.8056%
Panel B: Stock market returns			
	USSTOCK	UKSTOCK	EUROSTOCK
DataStream	S&PCOMP	FTSE100	DJSTOXX
Mean	0.0510%	0.0239%	0.0467%
STD	0.7364%	0.8461%	1.1072%
MIN	-3.9414%	-4.6670%	-6.8233%
MAX	3.9034%	3.5775%	4.9717%
Panel 3: Interest Rates (3-month)			
	US Interest	UK Interest	EURO Interest
DataStream	FRTBS3M	UKTBTND	FIBOR3M
Mean	0.2779	0.3221	-0.0364
STD	0.3630	0.1296	0.2366
MIN	-0.0200	-0.0300	-0.3320
MAX	1.4500	0.4962	0.3470

Table 1: Summary Statistics

5. Methodology

5.1 Univariate Analysis

For each of the 69 Brexit related events, we calculate the series of exchange rate changes for the actual event day (day (0)), the series of exchange rate changes for the one day prior to the event day (day (-1)), as well as the series of exchange rate changes for the one day after the event day (day (+1)). Since the changes in the exchange rates could be driven by the Brexit Referendum day, we also investigate all three-series excluding the window surrounding the referendum day. As a benchmark, we also calculate the series of exchange rate changes excluding the event window (day (-1) to day (+1)). Finally, we calculate the average percent change in the exchange rates for day (-1), day (0), and day (+1) as well as the non-event window days. A two-sample test, in combination with a Levene-Test of equal variance, is then performed to test if the changes before, during or after the Brexit event days are statistically significantly different from the non-event window days.

5.2 Multiple Regression Analysis

In addition to the univariate analysis explained above, we also perform an ordinary least squared (OLS) multiple regression analysis. The multiple regression analysis includes the dummy variables for each event window day, the domestic and foreign interest rates, as well as the foreign and domestic stock market returns. The domestic and foreign interest rates allow us to control for the interest rate parity conditions that may impact exchange rates. Finally, the stock market returns allow us to account for other news events that potentially confound the findings from the univariate analysis. Equations [3] and [4] present the regression model:

$$\Delta S_t = \alpha_0 + \beta_1 DUM(-1) + \beta_2 DUM(0) + \beta_3 DUM(+1) + \gamma_1 DSTMR_t + \gamma_2 FSTMR_t + \gamma_3 DIR_t + \gamma_4 FIR_t + \varepsilon_t \quad [3]$$

$$\Delta S_t = \alpha_1 + \varphi_1 DUMWR(-1) + \varphi_2 DUMWR(0) + \varphi_3 DUMWR(+1) + DUMRO(-1) + DUMRO(0) + DUMRO(+1) + \gamma_5 DSTMR_t + \gamma_6 FSTMR_t + \gamma_7 DIR_t + \gamma_8 FIR_t + \omega_t \quad [4]$$

where:

Dependent variable:

ΔSt	the change in the exchange rate (USD/Euro), USD/Pound, and Pound Euro) quoted as domestic per foreign currency

Independent variables:

DUM(-1)	is a dummy variable that takes the value of one for the days prior to Brexit related events, and zero otherwise
DUM(0)	is a dummy variable that takes the value of one for the days of Brexit related events, and zero otherwise
DUM(+1)	is a dummy variable that takes the value of one for the days after Brexit related events, and zero otherwise
DUMWR(-1)	is a dummy variable that takes the value of one for the days prior to Brexit related events but without the referendum event, and zero otherwise
DUMWR(0)	is a dummy variable that takes the value of one for the days of Brexit related events but without the referendum event, and zero otherwise
DUMWR(+1)	is a dummy variable that takes the value of one for the days after Brexit related events but without the referendum event, and zero otherwise
DUMR0(-1)	is a dummy variable that takes the value of one for the days prior to the Brexit referendum, and zero otherwise
DUMR0(0)	is a dummy variable that takes the value of one for the days of Brexit referendum, and zero otherwise
DUMR0(+1)	is a dummy variable that takes the value of one for the days after the Brexit referendum, and zero otherwise
$DSTMR_t$	represents the domestic stock market return at time t
$FSTMR_t$	represents the foreign stock market returns at time t
DIR_t	represents the domestic interest rates at time t
FIR_t	represents the foreign interest rate at time t
β, φ, and γ	are the coefficients to be estimated
ε_t and ω_t	are the random disturbance terms

7. Results and Discussion

7.1 Event Day Exchange Rate Change

Tables 2-10 summarize the average daily change of the three exchange rates for selected windows for all of the events examined. Table 2 shows an average change for the USD/Euro exchange rate of -0.0918% on all event days (Day (0)). The Euro therefore depreciated relative to the dollar. However, the difference in exchange rate change between event days and non-event days was not statically significant.

Similarly, Table 5 shows the USD/Pound exchange rate had an average change of -0.0915% on event days, meaning a relative depreciation of the Pound as expected. However, the difference in exchange rate change between event days and non-event days was not statically significant.

Table 8 shows the Pound/Euro average exchange rate change was -0.0024% on event days. Again, the difference was not statistically significant. The relative depreciation of the Euro and Pound relative to the Dollar was in line with our hypothesis, however the Pounds appreciation against the Euro was not as expected, albeit not statistically significant. With regards to the referendum day, average change on event days was statistically significant at the 1% level for all three exchange rates (Table 4, 7 and 10).

7.2 Lead and Lag Returns

Next, we examined one day prior to (Day (-1)), and immediately after (Day (+1)) the event days in an effort to measure any expectations before the event as well as any lagged effects. Table 10 shows the Pound/Euro exchange rate change on the day prior to the referendum was -0.2578%. Arnorsson and Gylfi (2018) examine the currency markets in the build-up to the referendum. They suggest that appreciation of the Sterling in the days prior represented the currency market's expectation of a remain-side victory.[22] However, our results show the exchange rate change on the day prior to the referendum was not significantly different from non-event days. Shown on Table 4, the Dollar/Euro exchange rate also experienced statistically significant change on Day (-1); the Euro's appreciation perhaps more evidence for Arnorsson and Gylfi's suggestion. There was however no statistically significant in the average exchange rates for the days prior and after event days.

7.3 Multivariate Analysis

The Multivariate analysis reveals that daily exchange rate changes cannot be fully explained by the occurrence of an event day. Table 12 shows R-Squares of 0.04, 0.19 and 0.18 for the USD/Euro, USD/Pound and Pound/Euro respectively. Therefore, the Brexit related events and announcements better explain exchange rates change for the USD/Pound and Pound/Euro than the USD/Euro. Plankandaras et al. (2017)[23] examine whether the post-referendum depreciation of the Pound is a direct result of the referendum result or has other causes elsewhere. Their study found that most of the depreciation was caused by the Brexit event.

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[22] Arnorsson, Agust and Gylfi Zoega. "On the Causes of Brexit." European Journal of Political (2018)

[23] Plakandaras, Bill & Gupta, Rangan & Wohar, Mark. (2016). "The Depreciation of the Pound Post-Brexit: Could it have been Predicted?" Finance Research Letters.

When removing the referendum from the other event days (Table 12), we find that the events had only a statistically significant impact on the British Pound/Euro exchange rate, whilst the referendum itself had a statistically significant impact on all three exchange rates.

The multivariate analysis, which controls for interest rates as well as stock market returns in the domestic and foreign country, provides some statistically significant evidence that the Brexit events impacted the US Dollar/Euro exchange rate on (Day (0)) as well as the British Pound/Euro exchange rate (Day (+1)). However, when separating the actual referendum day from the other event days as shown on Table 12, we find that events had a statistically significant impact on the British Pound/Euro exchange rate on Day (0). The multivariate analysis results on Table 12 also show the referendum event itself had a statistically significant impact on all three exchange rates.

7. Conclusion

This thesis investigates the effect of Brexit related events and announcements on three foreign exchange rates. We find evidence in both the univariate and multivariate analysis that events had some effect on exchange rates. In line with the existing literature we found strong statistical evidence that the referendum itself had a major impact on exchange rates. The average exchange rate change on event days matched our expectations other than for the Pound/Euro, which showed an appreciation of the pound on event days. The existing literature suggested that negative economic effects for the United Kingdom will result from Brexit, and so we expected to see an average depreciation of the Pound on event days which was not the case.

Whilst the study was able to demonstrate statistically significant exchange rate changes during event windows, the model lacks utility in analyzing direction of change, i.e. appreciation or deprecation of currency. At the basic level, we can look at the average percentage change in the exchange rate; the average change on Day (0) shows depreciation of the Pound relative to the Dollar and Euro, albeit driven by the referendum. One of the most noteworthy results from the multivariate analysis arises when removing the referendum event; the results show statistically significant change in the Pound/Euro exchange rate on event Day (+1) when compared to non-event days. This may reflect some lag effect of Brexit related events on the exchange rate.

An opportunity for further study may be to examine events prior to the referendum and post referendum independently. Differences in average exchange rate change may reflect changing attitudes towards Brexit. Whilst Arnorsson and Gylfi (2018) proposed that appreciation of the Pound in the days leading up to the referendum reflected an expected Remain result, the inclusion of a broad range of events in this study across a longer period of time makes it difficult to make a similar suggestion.

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8. Appendix

USD/EURO

Table 2: USD/Euro exchange rate change all event days

	Day (-1)	Event day (0)	Day (+1)	No Event days
USD to EURO	-0.0741%	-0.0918%	0.0222%	-0.000061%
two sample-test	1.044	1.318	-0.429	

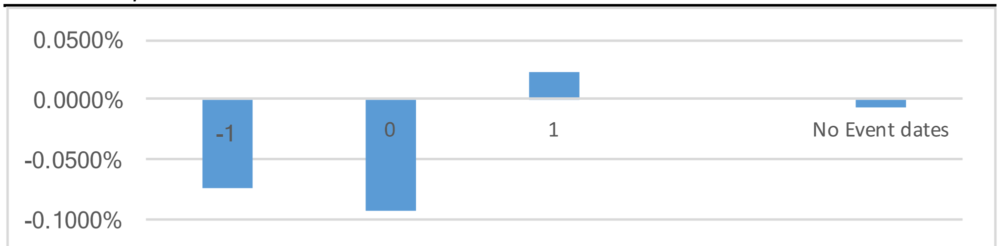


Figure 1: USD/Euro exchange rate change all event days

Table 3: USD/Euro exchange rate change all event days without referendum window

	Day (-1)	Event day (0)	Day (+1)	No Event dates
USD to EURO	-0.0446%	-0.0579%	0.0651%	-0.0061%
two sample-test	0.568	0.768	-1.052	

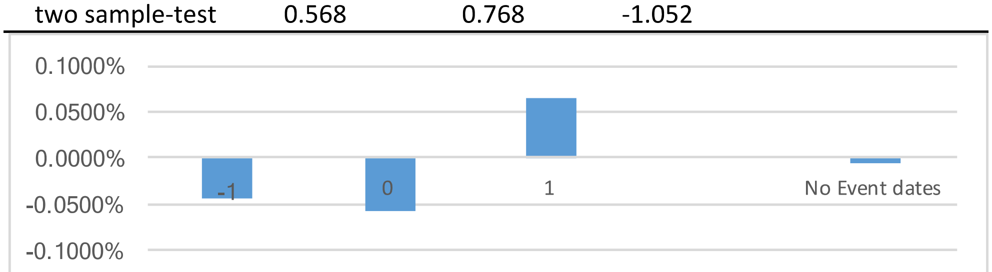
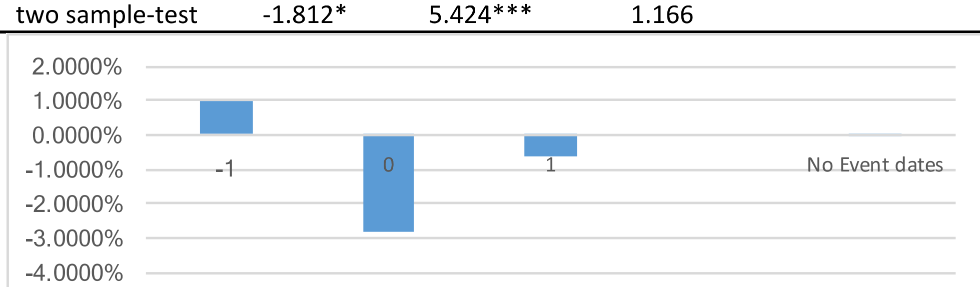


Figure 2: USD/Euro exchange rate change all event days without referendum window

Table 4: USD/Euro exchange rate change only referendum window

	Day (-1)	Event day (0)	Day (+1)	No Event dates
USD to EURO	0.9395%	-2.8361%	-0.6145%	-0.0061%
two sample-test	-1.812*	5.424***	1.166	



USD/POUND

Table 5: USD/Pound exchange rate change all event days

	Day (-1)	Event day (0)	Day (+1)	No Event days
USD to POUND	-0.1008%	-0.0915%	-0.0498%	-0.0166%
two sample-test	-0.538	0.080	-1.239	

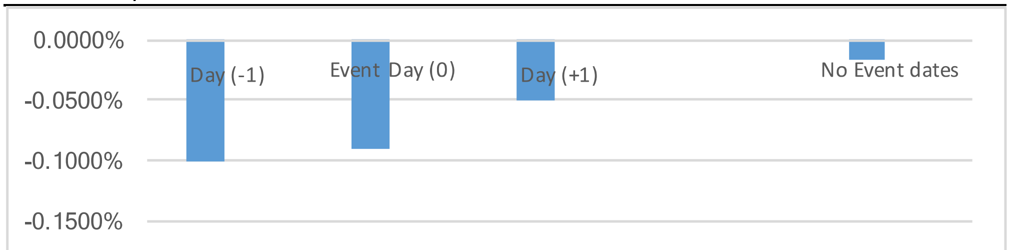


Figure 4: USD/Pound exchange rate change all event days

Table 6: USD/Pound exchange rate change all event days without referendum window

	Day (-1)	Event day (0)	Day (+1)	No Event dates
USD to POUND	0.0020%	0.0656%	0.1010%	-0.0166%
two sample-test	0.313	2.096**	-0.392	

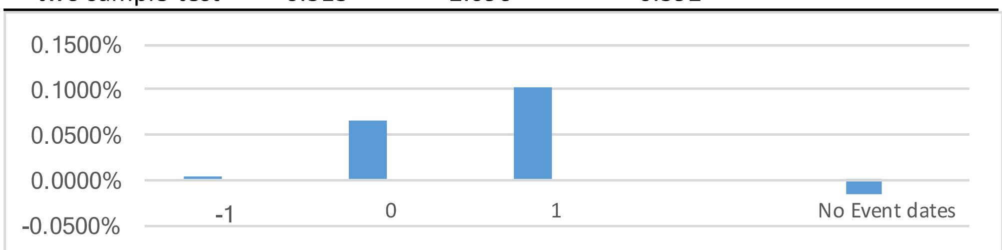
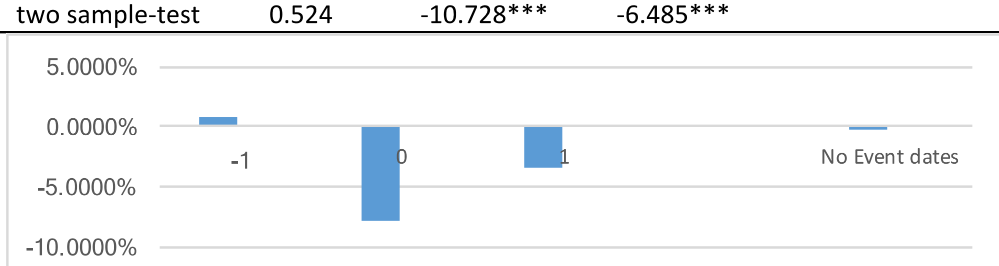


Figure 5: USD/Pound exchange rate change all event days without referendum window

Table 7: USD/Pound exchange rate change only referendum window

	Day (-1)	Event day (0)	Day (+1)	No Event dates
USD to POUND	0.7558%	-7.9538%	-3.4432%	-0.0166%
two sample-test	0.524	-10.728***	-6.485***	



POUND/EURO

Table 8: Pound/Euro exchange rate change all event days

	Day (-1)	Event day (0)	Day (+1)	No Event days
POUND to EURO	0.0628%	-0.0024%	0.1459%	0.0069%
two sample-test	0.620	0.495	0.232	

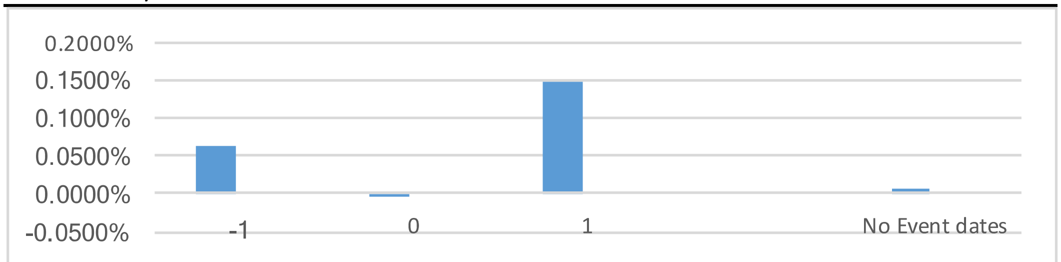


Figure 7: Pound/Euro exchange rate change all event days

Table 9: Pound/Euro exchange rate change all event days without referendum window

	Day (-1)	Event day (0)	Day (+1)	No Event dates
POUND to EURO	-0.0134%	-0.1305%	0.0330%	0.0069%
two sample-test	-0.286	-0.955	-1.767*	

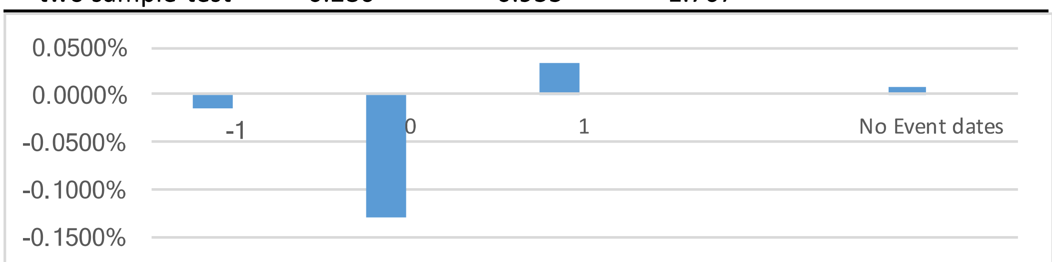
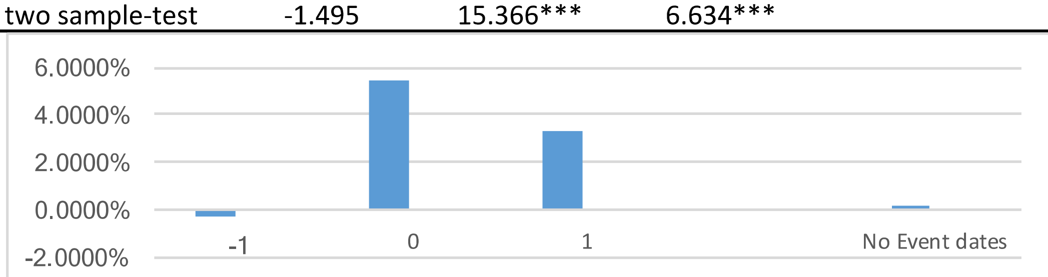


Figure 8: Pound/Euro exchange rate change all event days without referendum window

Table 10: Pound/Euro exchange rate change only referendum window

	Day (-1)	Event day (0)	Day (+1)	No Event dates
POUND to EURO	-0.2578%	5.4246%	3.2817%	0.0069%
two sample-test	-1.495	15.366***	6.634***	



6.2 Multivariate Analysis Results

Table 11: Multiple Regression Event Windows from day(-1) to day(+1)

	USD/Euro			USD/Pound			Pound/Euro		
	Coef.	t-stat.	Prob.	Coef.	t-stat.	Prob.	Coef.	t-stat.	Prob.
C	-0.00025	-1.22	0.22	0.00017	0.28	0.78	0.00004	0.09	0.93
DUM(-1)	-0.00095	-1.40	0.16	-0.00108	-1.47	0.14	0.00030	0.46	0.65
DUM(0)	**-0.00116**	**-1.70**	**0.09**	-0.00096	-1.29	0.20	-0.00043	-0.65	0.51
DUM(+1)	0.00015	0.22	0.83	-0.00045	-0.61	0.54	**0.00117**	**1.77**	**0.08**
DSTMR	0.01808	0.76	0.44	**0.13822**	**5.30**	**0.00**	**0.21359**	**7.74**	**0.00**
FSTMR	**-0.03537**	**-2.25**	**0.02**	**-0.08239**	**-3.63**	**0.00**	**-0.24246**	**-11.48**	**0.00**
DIR	**0.00113**	**1.81**	**0.07**	0.00058	1.05	0.29	0.00008	0.07	0.94
FIR	0.00021	0.22	0.83	-0.00116	-0.77	0.44	-0.00055	-0.81	0.42
R-squared			0.01			0.03			0.10
N			1303			1303			1303

The bold values indicate statistical significance at the 10%, 5%, and 1% level.
DUM(-1) is a dummy variable that takes the value of one for the days prior to Brexit related events, and zero otherwise. DUM(0) is a dummy variable that takes the value of one for the days of Brexit related events, and zero otherwise. DUM(+1) is a dummy variable that takes the value of one for the days after Brexit related events, and zero otherwise. DSTMR represents the Domestic Stock Market Return and FSTMR the Foreign Stock Market Return. DIR represents the Domestic Interest Rate and FIR the Foreign Interest Rate.

Table 12: Multiple Regression Event Windows from day(-1) to day(+1) separating between non-referendum and referendum events.

	USD/Euro			USD/Pound			Pound/Euro		
	Coef.	t-stat.	Prob.	Coef.	t-stat.	Prob.	Coef.	t-stat.	Prob.
C	-0.00022	-1.09	0.28	-0.00001	-0.02	0.98	0.00035	0.84	0.40
DUMWR(-1) without Referendum	-0.00071	-1.04	0.30	-0.00025	-0.37	0.71	-0.00021	-0.32	0.75
DUMWR(0) without Referendum	-0.00084	-1.22	0.22	0.00049	0.72	0.47	**-0.00149**	**-2.31**	**0.02**
DUMWR(+1) without Referendum	0.00054	0.78	0.43	0.00090	1.31	0.19	0.00033	0.50	0.61
DUMRO(-1) Referendum only	**0.01013**	**1.94**	**0.05**	0.00763	1.46	0.15	-0.00141	-0.29	0.77
DUMRO(0) Referendum only	**-0.03126**	**-5.91**	**0.00**	**-0.07896**	**-14.97**	**0.00**	**0.04597**	**9.23**	**0.00**
DUMRO(+1) Referendum only	-0.00741	-1.42	0.16	**-0.03502**	**-6.68**	**0.00**	**0.03139**	**6.38**	**0.00**
USSTOCK	0.00904	0.39	0.70	**0.09898**	**4.14**	**0.00**	**0.20620**	**7.80**	**0.00**
EUROSTOCK	**-0.04743**	**-3.03**	**0.00**	**-0.09933**	**-4.79**	**0.00**	**-0.21235**	**-10.41**	**0.00**
USIR	0.00094	1.52	0.13	0.00017	0.33	0.74	-0.00073	-0.63	0.53
EUROIR	0.00012	0.13	0.90	-0.00049	-0.36	0.72	-0.00068	-1.05	0.29
R-squared			0.04			0.19			0.18
N			1303			1303			1303

The bold values indicate statistical significance at the 10%, 5%, and 1% level.
DUMWR(-1) is a dummy variable that takes the value of one for the days prior to Brexit related events but without the referendum event, and zero otherwise. DUMWR(0) is a dummy variable that takes the value of one for the days of Brexit related events but without the referendum event, and zero otherwise. DUMWR(+1) is a dummy variable that takes the value of one for the days after Brexit related events but without the referendum event, and zero otherwise. DUMR0(-1) is a dummy variable that takes the value of one for the days prior to the Brexit referendum, and zero otherwise. DUMR0(0) is a dummy variable that takes the value of one for the days of Brexit referendum, and zero otherwise. DUMR0(+1) is a dummy variable that takes the value of one for the days after the Brexit referendum, and zero otherwise. DSTMR represents the Domestic Stock Market Return and FSTMR the Foreign Stock Market Return. DIR represents the Domestic Interest Rate and FIR the Foreign Interest Rate.

Table 13: Event Date and Description

Date	Event Description
1/23/13	In a speech at Bloomberg, Prime Minister David Cameron discusses the future of the European Union and declares he is in favor of an in-out referendum in the future on the basis of a new settlement for the UK in the EU.
4/14/15	Launch of the Conservative Party Manifesto for the 2015 General Election. This pledges "Real change in our relationship with the European Union" and commits to "hold an in-out referendum on our membership of the EU before the end of 2017."
6/25/15	Meeting of the European Council. Here, the Prime Minister sets out his plans for an in-out referendum. It is the first step in the negotiation process and the European Council agrees to return to the issue in December.
10/15/15	European Council meeting.
10/19/15	The Prime Minister makes a statement to Parliament on the previous week's European Council meeting. He sets out the four things he needs to achieve for the UK's renegotiation package in the areas of economic governance, competitiveness, sovereignty and social benefits and free movement
11/10/15	David Cameron delivers a speech on Europe to Chatham House, setting out the case for EU reform and reaffirming his commitment to an EU referendum before the end of 2017.
12/17/15	The European Union Referendum Act receives Royal Assent. This provides for the holding of a referendum in the UK and Gibraltar on whether the UK should remain a member of the EU
2/2/16	Donald Tusk writes to Members of the European Council on his proposal for a new settlement for the UK within the EU. The European Council publishes its Draft Decision concerning a 'New Settlement for the United Kingdom within the European Union'.
2/3/16	The Prime Minister gives a statement to the House of Commons on the progress made regarding the UK-EU renegotiation.
2/19/16	Following the meeting of the European Council, David Cameron gives a statement outlining his negotiations to secure a deal giving the UK special status in the EU.
2/22/16	The Prime Minister announces the EU referendum date – 23 June 2016 – after securing a deal on Britain's membership of the EU. The government publishes The best of both worlds: the United Kingdom's special status in a reformed European Union. In the House of Commons, David Cameron makes a statement on the UK's new special status in the EU and announces the date of the referendum
6/23/16	The UK holds a referendum on its membership of the EU. The question posed to the electorate: "Should the United Kingdom remain a member of the European Union or leave the European Union?"
6/24/16	Result of the referendum is announced, with the majority of voters choosing to leave the EU. The referendum results are: Remain: 16,141,241 (48.1%) Leave: 17,410,742 (51.9%) In a statement outside 10 Downing St, Prime Minister David Cameron announces his resignation, though will stay in office until a new leader is in place, which should be by the Conservative Party Conference in October. EU leaders and the Netherlands EU Presidency release a statement on the outcome of the UK referendum.
6/27/16	David Cameron gives a statement to the House of Commons on the outcome of the EU Referendum.
7/20/16	Speaking to the President of the European Council, Theresa May suggests that the UK relinquishes the rotating Presidency of the Council, scheduled for the second half of 2017.
8/13/16	Chancellor Philip Hammond guarantees EU funding beyond the date the UK leaves the EU
9/5/16	David Davis makes a statement to the House of Commons, explaining the work of the Department for Exiting the European Union.
10/2/16	In her speech to the Conservative Party Conference, the Prime Minister announces a 'Great Repeal Bill' to repeal the European Communities Act 1972. In the same speech the Prime Minister confirms that she will trigger Article 50 before the end of March 2017 and declares: "It is not up to the House of Commons to invoke Article 50, and it is not up to the House of Lords. It is up to the Government to trigger Article 50 and the Government alone".
10/4/16	The High Court of Justice in Northern Ireland hears a legal challenge to Brexit. The question for the court is whether the UK Government needs the consent of the Northern Ireland Assembly to leave the EU.
10/18/16	The High Court hears the Gina Miller case: judicial review proceedings challenging the legality of the UK Government's proposed use of prerogative powers to give notice of intention to leave the EU under Article 50.

10/21/16	European Council meeting. At the end of the session, Theresa May gives a statement regarding the subjects covered in the meeting and takes questions.
10/28/16	The High Court in Northern Ireland rules in favor of the UK Government, following the court case heard on 4 October
11/3/16	The High Court gives its judgment in R (Gina Miller & Dos Santos) v Secretary of State for Exiting the European Union. The Court finds in favor of the claimants and rules the Government cannot, according to the UK's constitutional law, use prerogative powers to give the notice required by Article 50 TEU to withdraw from the European Union. The Government says it will appeal against the decision and is granted permission to "leapfrog" the Court of Appeal and go directly to the Supreme Court. The Government maintains its intention to stick to the March 2017 timetable for Article 50 to be invoked.
11/7/16	David Davis gives a Statement to the House of Commons on the process for invoking Article 50
11/24/16	Alex Ellis, the current British Ambassador to Brazil, is appointed Director General at the Department for Exiting the European Union and will take up his position in January 2017.
12/8/16	The UK's Supreme Court hears the Government's appeal against the High Court ruling that Parliament must vote on whether Article 50 can be triggered. For the first time ever, the Supreme Court sits en banc, meaning that all sitting justices hear the case. (7th December) The House of Commons vote on respecting the outcome of the referendum is passed by a large majority.
1/3/17	Sir Ivan Rogers, the UK Permanent Representative to the EU, resigns.
1/4/17	Sir Tim Barrow is appointed as UK Permanent Representative to the EU, taking up the role the following week.
1/17/17	In a speech at Lancaster House the Prime Minister sets out the government's 'Plan for Britain' – the plan for leaving the EU – which includes 12 priorities that the UK Government will use to negotiate Brexit: The government's negotiating objectives for exiting the EU.
1/24/17	The Supreme Court rejects (by a majority of 8 to 3) the Government's appeal against the November 2016 High Court ruling and states that Ministers "require the authority of primary legislation" in order to give the Article 50 notice. On the devolution questions raised, the Court unanimously holds that the UK Parliament is not legally required to seek consent from the devolved legislatures. Responding to the Supreme Court's ruling, the Government issues the following statement: "The British people voted to leave the EU, and the government will deliver on their verdict – triggering Article 50, as planned, by the end of March. Today's ruling does nothing to change that. It's important to remember that Parliament backed the referendum by a margin of 6 to 1 and has already indicated its support for getting on with the process of exit to the timetable we have set out. We respect the Supreme Court's decision, and will set out our next steps to Parliament shortly". David Davis gives a statement to the House of Commons on Article 50, in response to the judgment by the Supreme Court.
1/26/17	With legislation, a requirement following the Supreme Court's ruling, the Government publishes a draft Bill that will allow the UK to start the process of leaving the EU: The European Union (Notification of Withdrawal) Bill.
2/1/17	The European Union (Notification of Withdrawal) Bill passes its Second Reading in the House of Commons by 498 votes to 114.
2/2/17	The Government publishes its Brexit White Paper, formally setting out its strategy for exiting the EU: The United Kingdom's exit from, and new partnership with, the European Union. Following publication of the Brexit White Paper, David Davis gives a statement to the House of Commons.
2/8/17	The European Union (Notification of Withdrawal) Bill passes its Third Reading in the House of Commons, by 494 votes to 122. The Bill now moves to the House of Lords.
3/13/17	Parliament passes the European Union (Notification of Withdrawal) Bill.
3/14/17	Theresa May gives a statement to Parliament on the March European Council meeting and the next steps in preparing to trigger Article 50.
3/16/17	In receiving Royal Assent, the European Union (Notification of Withdrawal) Act gives the Government the legal power to notify the European Council of the UK's intention to leave the EU, formally beginning the Brexit process.
3/20/17	Sir Tim Barrow, the UK's Permanent Representative to the European Union, informs Donald Tusk of the UK's intention to invoke Article 50 of the Lisbon Treaty on 29 March 2017.

3/29/17	Theresa May writes to European Council President Donald Tusk to notify him of the UK's intention to leave the EU: Prime Minister's letter to Donald Tusk triggering Article 50. The Prime Minister makes a statement to Parliament on Article 50.
3/30/17	The Government publishes the Great Repeal Bill White Paper. David Davis gives a statement to Parliament: Legislating for UK Withdrawal from the EU.
3/31/17	The President of the European Council publishes draft negotiation guidelines for the 'EU 27' (the EU members excluding the UK).
4/29/17	EU-27 leaders meet at the first summit since the UK officially triggered Article 50. In this Special European Council (Article 50), meeting, the EU-27 nations unanimously adopt guidelines for the Brexit negotiations ahead.
5/18/17	The Conservative Party launches its manifesto for the upcoming General Election.
6/17/17	The government confirms that Parliament will sit for two years instead of the usual one, to give MPs enough time to fully consider the laws required to make Britain ready for Brexit.
6/19/17	The first round of EU exit negotiations begins. The UK and the European Commission, representing the EU, agree the Terms of reference for the Article 50 negotiations between the UK and the EU. Later, David Davis gives a statement following this opening round of the talks.
6/21/17	State Opening of Parliament. The Queen's Speech includes a 'Great Repeal Bill' in the Government's legislative program and other Brexit-related Bills.
6/23/17	The Prime Minister gives a press statement on a number of subjects covered at the European Council June 2017 meeting, including giving reassurance to EU citizens living in the UK.
7/13/17	The Government introduces the European Union (Withdrawal) Bill. Ahead of the second round of exit negotiations the following week, the Government also publishes position papers laying out the UK's approach on: Ongoing Union Judicial and Administrative Proceedings, Nuclear materials and safeguards issues, Privileges and Immunities. The Government publishes a technical note considering how the UK's withdrawal agreement with the EU should be implemented in UK law.
7/14/17	The second round of EU exit negotiations begins.
7/20/17	At the conclusion of the second round of talks, David Davis makes a statement.
8/15/17	In the first of a series of papers on the UK's future partnership with the EU, the Government sets out proposals for a future customs relationship.
8/16/17	The Government publishes a position paper on Northern Ireland and Ireland, proposing no physical infrastructure at the border.
8/21/17	Ahead of the third round of exit negotiations, the Government publishes position papers outlining the UK's negotiating approach to goods on the market and to confidentiality and access to the official documents.
8/22/17	The Government publishes a future partnership paper outlining the UK's position on providing a cross-border civil judicial cooperation framework.
8/28/17	The third round of UK-EU negotiations begins. The Government publishes a series of Technical Notes on functionality and Protocol 7, on existing contracts for the supply of nuclear material, and on spent fuel and radioactive waste.
8/31/17	At the conclusion of the third round of exit talks, David Davis gives a statement.
9/5/17	David Davis gives a statement to the House of Commons on EU exit negotiations, updating Members on the July and August negotiating rounds.
9/12/17	The EU Withdrawal Bill passes Second Reading in the House of Commons. Following the vote, the Prime Minister says: "Earlier this morning Parliament took a historic decision to back the will of the British people and vote for a bill which gives certainty and clarity ahead of our withdrawal from the European Union. Although there is more to do, this decision means we can move on with negotiations with solid foundations and we continue to encourage MPs from all parts of the UK to work together in support of this vital piece of legislation." The Government publishes its latest future partnership paper, outlining the UK's objectives on foreign policy, defense and development.
9/22/17	The Prime Minister delivers a key Brexit speech in Florence, setting out the UK's position on how to move the Brexit talks forward and offering a transition period after the UK formally leaves the EU in March 2019.
9/25/17	The fourth round of UK-EU Brexit negotiations begins.

9/28/17	David Davis gives a statement following the conclusion of the fourth round of talks. The Government publishes the latest (September) edition of the technical note on the comparison of EU-UK positions on citizens' rights.
10/3/17	The European Parliament adopts a Resolution on the state of play of negotiations with the United Kingdom.
10/9/17	The fifth round of negotiations begins in Brussels. The Prime Minister updates the House of Commons on UK plans for leaving the EU. The Government publishes two White Papers on preparing for our future UK trade policy and the Customs Bill: legislating for the UK's future customs, VAT and excise regimes.
10/12/17	Following the fifth round of UK-EU negotiations, David Davis gives a statement.
10/16/17	A joint statement is issued by the Prime Minister and President of the European Commission Jean-Claude Juncker, following their working dinner in Brussels.
10/17/17	David Davis, Secretary of State for Exiting the European Union, gives a statement to Parliament on the fifth round of negotiations with the EU.
10/20/17	European Council meeting, including EU27 considering whether 'sufficient progress' has been made on phase 1 of the Brexit negotiations
11/9/17	Sixth Round of Brexit Negotiations Begins
11/16/17	David Davis said in his Berlin speech on 16 November "we have made a great deal of progress in the negotiations to date – far more than is understood by most people"
11/22/17	In his autumn budget report on 22 November Chancellor Philip Hammond announced that to prepare for leaving the EU and ensure a smooth transition, the Government was setting aside an additional £3 billion.