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ARTICLE



## The Brexit effect: the case of UK ADR performance one year later

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### ABSTRACT

In an unexpected outcome, UK voters decided that it was time to exit the European Union based on the results of a vote held on 23 June 2016. Studies of the affects and implication of Brexit include a study showing that the vote was met with a negative short-term wealth effect for UK American depository receipts (ADRs). This study examines the one-year anniversary holding period returns of these ADRs along with the British Pound and the FTSE 100 to discover any lingering effects from the historical vote. Results indicate that the one-year holding period returns for the ADRs averaged 5.8% for the year while the FTSE gained 4.8%, the S&P 500 gained 15.4% and the Pound lost 13.2% of its value.

### KEYWORDS

Brexit; American depository receipts; portfolio diversification; wealth effects; event studies

### JEL CLASSIFICATION

G11; G12; G14; G15

### I. Introduction

American depository receipts (henceforth ADRs) allow foreign companies to raise capital in US markets by offering equity shares with values translated into dollars. Usually large firms with much capitalization and value trade their shares on the New York Stock Exchange in this manner. A preliminary study by Schaub (2017c) found that these ADRs encountered short-term equity losses as a result of the Brexit vote on 23 June 2016. This study seeks to follow up on that study to determine if these losses lingered or whether the share prices bounced back by the one-year anniversary of the vote.

Sections follow that provide a short literature review, the holding period return methodology, ADR returns and excess returns results and concluding remarks. This study brings a longer focus on the effects of the Brexit vote into view.

### II. Literature review

Many event studies have been conducted that examine how news releases highlighting positive and negative occurrences affect the value of publically traded companies and other asset prices. A good brief summary of how different announcements affect security prices can be found in Schaub

(2017b). Table 1 below gives the summary from that study with updated results based on the recent outcomes of the 2016 Brexit vote and that of the 2016 US Presidential election.

In the Schaub (2017c)'s study, an examination was conducted to determine the short-term effects of the Brexit vote on UK ADRs listed on the New York Stock Exchange. The sample consisted of 25 global UK firms. The day after the vote, when the results were made public, these firms lost over 10% of their stock value and more than 5% the next day as well. The FTSE lost 3.15% the first day and 2.55% the second day. The S&P 500 lost 5.4% for the two days and the Great Britain Pound (GBP) depreciated over 11% versus the dollar. All of these results taken together showed that a large short-term reaction by investors occurred as a result of the vote outcome. This study builds upon the Schaub (2017c)'s article to ask the following question: did these short-term results persist or was this just another case of short-term investor overreaction to 'bad' news as suggested by DeBondt and Thaler (1985, 1987)?

### III. Methodology

Monthly and annual holding period returns are computed for each UK ADR as well as for the FTSE 100, the S&P 500 and the GBP for comparative purposes. These are reported by month for the first 12 months

**Table 1.** Effects of certain announcements on security prices.

Harkavy (1953)	One of the first major studies of market efficiency found stock prices react to dividend announcements
Ohlson (1995)	Dividend and earning announcements have short-run effects on stock prices
DeBondt and Thaler (1985) and DeBondt and Thaler (1987)	Investors tend to overreact to bad news about publically traded companies (but not to good news)
Loughran and Ritter (1995)	Stock prices go down when firms announce new stock issues that dilute ownership in the firm
Ikenberry, Lakonishok, and Vermaelen (1995)	Firms that announce buy-backs of their stock have positive stock price affects in the short term
Dopuch, Holthausen, and Leftwich (1986)	Stock prices are affected by negative audit opinions, especially when announced in the financial media
Bhagat, Bizjak, and Coles (1998)	News of lawsuits against firms cause those firms to have reductions in their stock values
Johnson et al. (1985)	Upon the death of a CEO, firms' stock prices decrease in the short term
Schaub (2017c)	Values of UK ADRs decreased in value upon the announcement of the Brexit vote results
Schaub (2017a)	Values of Mexican ADRs decreased in value upon the announcement of the 2016 US Presidential vote results
Schaub (2017b)	Large energy firms lost short-term value after the Brexit vote results but did not suffer from the US Presidential vote

following the Brexit vote. Also, the annual holding period returns show the one-year overall results.

Equation 1 below shows how the holding period return for each ADR, index and currency are computed on a monthly basis and as an annual return.

$$HPR = \frac{P_{x+1} - P_x}{P_x} \quad (1)$$

where

$HPR$  is the monthly or annual holding period return,  
 $P_{x+1}$  is the ending price for the month or year and  
 $P_x$  is the opening price for the month or year.

These holding period ADR returns are averaged for the sample and tested for significance.

Using Equation 2 below, the average excess holding period returns are computed by subtracting the

corresponding holding period return of the FTSE 100, the GBP and the S&P 500 index from the average ADR holding period returns.

$$XR_{ADR} = HPR_{ADR} - HPR_{index} \quad (2)$$

where

$XR_{ADR}$  is the excess return for the monthly or annual holding period,

$HPR_{ADR}$  is the average monthly or annual holding period return for the ADRs and

$HPR_{index}$  is the monthly or annual holding period return for the index or currency.

The ADRs listed in Table 2 below are the same as used in the Schaub (2017c)'s study. They represent the UK-headquartered firms with equity publically listed and traded on the New York Stock Exchange (NYSE) as ADRs. These were taken from the NYSE list of

**Table 2.** NYSE-listed UK ADRs at the time of the Brexit vote with one-year holding period returns.

Ticker	Company name	Industry	One-year HPR (%)
AMFW	Amec Foster Wheeler plc	Oil Equip	-11.77
AV	Aviva PLC	Nonlife Insurance	6.21
AZN	AstraZeneca PLC	Pharmaceutical	25.36
BBL	BHP Billiton plc	Mining & Metals	16.87
BCS	Barclays PLC	Banks	-8.82
BP	BP p.l.c.	Oil & Gas	7.96
BT	BT Group plc	Telecomm.	-41.48
BTI	British American Tobacco P.L.C.	Tobacco	15.33
CUK	Carnival plc	Travel & Leisure	32.68
DEO	Diageo plc	Beverage	11.66
GSK	GlaxoSmithKline plc	Pharmaceutical	9.25
HSBC	HSBC Holdings plc	Banks	37.09
IHG	InterContinental Hotels Group plc	Travel & Leisure	33.49
LXFR	Luxfer Holdings PLC.	Gen. Industrial Svcs	1.35
LYG	Lloyds Banking Group plc	Banks	-16.31
NGG	National Grid plc	Electric Utilities	-16.58
PSO	Pearson Plc	Publishing	-26.73
PUK	Prudential Public Limited Company	Insurance	16.29
RBS	The Royal Bank of Scotland Group plc	Banks	-16.29
RDSA	Royal Dutch Shell plc	Oil & Gas	2.44
RELX	Relx PLC	Media	19.62
RIO	Rio Tinto Plc	Mining & Metals	31.32
SNN	Smith & Nephew plc	Medical Products	3.51
UL	Unilever PLC	Food Producers	18.38
VOD	Vodafone Group Plc	Telecomm.	-5.85

foreign stocks traded on the exchange. Table 2 also reports the one-year holding period return for each company.

#### IV. Results

As shown in Table 2, the UK ADR with the highest one-year holding period return was HSBC Holdings which had a 37% return. Three other firms had HPRs over 30% as well. The worst performer was BT Group which lost over 41% of its value for the year. All in all, there were 17 UK ADRs with positive returns and 8 with negative returns for an average of

5.8%. The median HPR was 7.96% represented by BP.

The results shown in Table 3 mimic those of Schaub (2017c); however, returns are monthly and annual holding period returns rather than daily cumulative returns. The first panel compares the UK ADR monthly and annual holding period returns to the FTSE 100 to determine how the ADRs tracked with the respective UK index. The returns by month show that the first month of average holding period losses were a highly significant 7.24% for the ADR portfolio. Monthly results afterwards are mixed with more months of positive returns than negative. The one-year average holding

**Table 3.** BREXIT vote effects on UK ADRs 1 year later.

Month	UK ADRs (%)	<i>p</i> -Value	FTSE Ret (%)	XR ADR – FTSE (%)	<i>p</i> -Value
<b>Panel 1. UK ADRs versus the FTSE 100 Index</b>					
+1	-7.24	<b>0.00</b>	-6.12	-1.12	0.32
+2	3.76	<b>0.01</b>	3.70	0.06	0.48
+3	-0.95	0.16	-1.05	0.10	0.46
+4	-4.59	<b>0.00</b>	-4.20	-0.39	0.38
+5	1.19	0.29	-0.88	2.07	0.17
+6	3.12	<b>0.00</b>	2.64	0.48	0.28
+7	2.05	<b>0.08</b>	3.18	-1.13	0.22
+8	3.20	<b>0.01</b>	2.93	0.27	0.42
+9	2.28	<b>0.01</b>	1.00	1.28	<b>0.08</b>
+10	1.88	<b>0.01</b>	-0.84	2.72	<b>0.00</b>
+11	5.64	<b>0.00</b>	7.47	-1.83	<b>0.01</b>
+12	-2.79	<b>0.00</b>	-2.36	-0.43	0.34
<b>One-year HPR</b>	<b>5.80</b>	<b>0.07</b>	<b>4.79</b>	<b>1.01</b>	0.40
Month	UK ADRs (%)	<i>p</i> -Value	S&P 500 Ret (%)	XR ADR – S&P 500 (%)	<i>p</i> -Value
<b>Panel 2. UK ADRs versus the S&amp;P 500 Index</b>					
+1	-7.24	<b>0.00</b>	2.92	-10.16	<b>0.00</b>
+2	3.76	<b>0.01</b>	0.55	3.21	<b>0.02</b>
+3	-0.95	0.16	-1.02	0.07	0.47
+4	-4.59	<b>0.00</b>	-0.62	-3.97	<b>0.00</b>
+5	1.19	0.29	2.48	-1.29	0.28
+6	3.12	<b>0.00</b>	2.68	0.44	0.30
+7	2.05	<b>0.08</b>	0.06	1.99	<b>0.09</b>
+8	3.20	<b>0.01</b>	4.35	-1.15	0.19
+9	2.28	<b>0.01</b>	-0.76	3.03	<b>0.00</b>
+10	1.88	<b>0.01</b>	1.20	0.68	0.20
+11	5.64	<b>0.00</b>	1.02	4.62	<b>0.00</b>
+12	-2.79	<b>0.00</b>	1.66	-4.45	<b>0.00</b>
<b>One-year HPR</b>	<b>5.80</b>	<b>0.07</b>	<b>15.38</b>	<b>-9.58</b>	<b>0.01</b>
Month	UK ADRs (%)	<i>p</i> -Value	\$/GBP Chg (%)	XR ADR – \$/GBP (%)	<i>p</i> -Value
<b>Panel 3. UK ADRs versus the change in the value of the GBP relative to the USD</b>					
+1	-7.24	<b>0.00</b>	-10.49	3.25	<b>0.08</b>
+2	3.76	<b>0.01</b>	0.18	3.58	<b>0.01</b>
+3	-0.95	0.16	-0.30	-0.65	0.25
+4	-4.59	<b>0.00</b>	-6.48	1.89	<b>0.06</b>
+5	1.19	0.29	1.55	-0.37	0.43
+6	3.12	<b>0.00</b>	-1.48	4.60	<b>0.00</b>
+7	2.05	<b>0.08</b>	1.91	0.14	0.46
+8	3.20	<b>0.01</b>	0.50	2.70	<b>0.02</b>
+9	2.28	<b>0.01</b>	-0.18	2.46	<b>0.00</b>
+10	1.88	<b>0.01</b>	2.32	-0.45	0.29
+11	5.64	<b>0.00</b>	1.24	4.40	<b>0.00</b>
+12	-2.79	<b>0.00</b>	-1.98	-0.81	0.22
<b>One-year HPR</b>	<b>5.80</b>	<b>0.07</b>	<b>-13.16</b>	<b>18.96</b>	<b>0.00</b>

Notes: The returns listed above are the average holding period returns for each month and for the first year for the UK ADRs following the Brexit vote. XR is the average excess holding period returns of the ADRs and the respective index or currency. *p*-Values in bold italics show significance at the 0.10 alpha level or better.

period return for the UK ADRs was 5.8% and was significant at the 10% level.

When compared to the monthly and annual FTSE 100 returns, there were very few months with significant excess holding period returns for the ADRs. These large UK firms had returns that seemed to track closely with the FTSE with only a few exceptions. The overall one-year return of the FTSE was 4.8% as compared to 5.8% for the ADRs (showing only a small 1% excess holding period return for the year versus the FTSE). This may indicate that the negative initial performance of the ADRs did not persist for the year.

In the second panel, the UK ADR returns are compared to those of the US market returns as proxied by the S&P 500 index. The S&P 500 returns were more favourable than those of the FTSE and resulted in an overall significant negative excess holding period return for the UK ADRs of 9.58%. The negative excess returns for the first month of trading was the worst as the ADRs lost over 7% of value while the S&P 500 was up nearly 3% creating an excess return of -10.16%. While the UK firms' returns did not significantly deviate from the UK index, they did provide a poor performance for US investors versus the US index.

The third panel compares the UK ADR returns to the change in value of the GBP versus the USD (US dollar). For the first month after the Brexit vote, the GBP lost over 10% of its value in dollars. By the end of the year, the GBP had depreciated over 13%. In effect, the UK ADRs significantly outperformed the pound by nearly 19% for the year.

## V. Conclusions

Because DeBondt and Thaler (1985, 1987) suggested that investors tend to overreact to bad news in the short term, this study was undertaken to determine if this was in fact the case for the early losses of UK ADRs show by Schaub (2017c) resulting from the Brexit vote. Results indicate that there was indeed a significant one-month decline in value for the ADRs, the FTSE 100 Index and the British Pound versus the dollar. However, a year later, the average UK ADR was up in value by nearly 6% and the FTSE had gained nearly 5%. In this regard, a case could be made that the effects of investor overreaction did not persist.

However, although the ADRs and the FTSE found positive ground, the much better performance of the S&P 500 Index for the year and the overall depreciation of the GBP versus the USD for the year still point to some potential lingering effects from the vote. The S&P 500 increased over 15% versus the only 6% increase for the ADRs and the 5% increase for the FTSE. Also, the GBP depreciated by over 13% versus the USD for the year. Therefore, while some results suggest a large overreaction initially, others indicate that there may be some lingering underperformance of the UK ADRs a year later.

## Disclosure statement

No potential conflict of interest was reported by the author.

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