# The Impact of Economic Policy Uncertainty and Financial Stress in the United Kingdom on Bilateral Exports of Goods: Pre-Brexit Evidence

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**Abstract** Brexit was a wake-up call for the UK and the EU. There is a growing body of evidence that the referendum results contributed to an increase in economic policy uncertainty and financial stress (including systemic stress) in the UK. In this chapter, I present the findings of a panel study designed to estimate the impact of economic policy uncertainty and financial stress in the UK on bilateral exports of goods. Using the panel data gravity model of international trade, I found that economic policy uncertainty in the UK negatively affects bilateral exports of goods, which is consistent with my expectations. The results for financial and systemic stress are not statistically significant.

**Ključne besede:** • Brexit • composite indicator of systemic stress • economic policy • financial stress • gravity model of international trade • systemic stress

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## 1 Introduction

The UK, which became a member of the EC, now the EU, in 1973, is at the crossroads. On 23 June 2016, it held an in-out referendum, in which 51.9% of British voters voted for Brexit, i.e., the withdrawal of the UK from the EU. As of 1 February 2020, the UK is no longer a member of the EU. (The transition period lasted from 1 February 2020 to 31 December 2020.) Recent studies show that Brexit will negatively affect the British economy (see Faccini & Palombo, 2021; HM Government, 2016). Following the in-out referendum, 'Brexit uncertainty' has become a buzz phrase in the British press. There is a growing body of literature on the impact of Brexit uncertainty on the British economy (see Born et al, 2019; Nilavongse et al., 2020). This chapter contributes to the debate about the impact of economic policy uncertainty on the British economy (see Bloom et al., 2019a, 2019b; Faccini & Palombo, 2021).

In this chapter, I estimate the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on bilateral exports of goods. To my knowledge, this chapter is the first to study the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on bilateral exports of goods using the gravity model of international trade in goods. This study will help British policymakers to understand the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on bilateral exports of goods. Since Graziano et al. (2021) found that Brexit uncertainty negatively affects bilateral exports of goods; I expect that economic policy uncertainty and financial stress (including systemic stress) in the UK also negatively affect bilateral exports of goods.

The rest of this chapter is divided into five sections. Section 2 reviews the literature on the impact of economic policy uncertainty and financial stress (including systemic stress) on the economy, Section 3 gives the materials and methods of the panel study, Section 4 gives the result of the panel study, Section 5 discusses the results of the panel study and Section 6 concludes this chapter.

## 2 Literature review

This chapter adds to the growing body of literature on the impact of economic policy uncertainty and financial stress (including systemic stress) on the economy. Most of this literature focuses on the US (see Al Thaqeb & Algharabali, 2019; Al Thaqeb et al., in press). This is understandable given its role in the world economy (Zhang et al., 2019). In contrast, most of this section focuses on the UK and the US.

### 2.1 The impact of economic policy uncertainty on the economy

Economic policy uncertainty can be defined as uncertainty about the economic policy felt by households, companies, etc. According to Baker et al. (2016a), economic policy

uncertainty can also be defined as uncertainty about who will make economic policy decisions, who will take economic policy actions, what economic policy decisions will be made, what economic policy actions will be taken, when economic policy decisions will be made, when economic policy actions will be taken, what will be the effects of economic policy decisions and what will be the effects of economic policy actions.

In recent years, there has been a growing interest among policymakers and researchers in the impact of economic policy uncertainty on the economy. The main reason for this was the Great Recession, which led to the need for action by the affected countries. Recent studies show that economic policy uncertainty negatively affects the economy. However, we do not know whether and how economic policy uncertainty in the UK affects bilateral exports of goods. The main aim of this paper is to determine whether and how the economic policy uncertainty in the UK affects bilateral exports of goods. Recent studies show that economic policy uncertainty negatively affects bilateral trade in goods (see Graziano et al., 2021; Steinberg, 2019).

Past events, such as the China–US trade war, have led to the need to monitor economic policy uncertainty. For this purpose, Baker et al. (2016a) developed a newspaper-based index of economic policy uncertainty for the US, which is popular among policymakers and researchers. It shows the share of newspaper articles in ten American newspapers, namely The Boston Globe, The Chicago Tribune, The Dallas Morning News, The Houston Chronicle, The Los Angeles Times, The Miami Herald, The San Francisco Chronicle, The Washington Post, The Wall Street Journal and USA Today, that contain the terms ‘economic’ or ‘economy’, ‘uncertain’ or ‘uncertainty’, and ‘Congress’, ‘deficit’, ‘Federal Reserve’, ‘legislation’, ‘regulation’ or ‘White House’. Later, they developed similar indices for Australia, Brazil, Canada, China, France, Germany, India, Italy, Mexico, Russia, etc. Karnizova and Li (2014) found that the newspaper-based index of economic policy uncertainty for the US is a predictor of recessions in the US for a period of less than five quarters.

In this chapter, I use the newspaper-based index of economic policy uncertainty for the UK. It shows the share of newspaper articles in eleven British newspapers, namely The Daily Express, The Daily Mail, The Evening Standard, The Financial Times, The Guardian, The Mirror, The Northern Echo, The Sun, The Sunday Times, The Telegraph, The Times, that contain the terms ‘economic’ or ‘economy’, ‘uncertain’ or ‘uncertainty’, and ‘Bank of England’, ‘budget’, ‘deficit’, ‘policy’, ‘regulation’, ‘spending’ or ‘tax’. Before the in-out referendum, Baker, Bloom and Davis also developed a newspaper-based index of Brexit-related economic policy uncertainty for the UK, which is not used in this paper. It shows the share of newspaper articles in two British newspapers, namely The Financial Times and The Times, that contain the terms ‘economic’ or ‘economy’, ‘uncertain’ or ‘uncertainty’, ‘Bank of England’, ‘budget’, ‘deficit’, ‘policy’, ‘regulation’, ‘spending’ or ‘tax’ and ‘Brexit’, ‘EU’ or ‘European Union’ (Baker et al., 2016b).

There is a growing body of literature on the impact of economic policy uncertainty on the economy. Baker et al. (2016a) studied the impact of economic policy uncertainty on the economy in the US. They found that economic policy uncertainty negatively affects the economy, which is consistent with previous evidence (see Colombo, 2013). Caggiano et al. (2017) studied the impact of economic policy uncertainty on unemployment in the US in recession and non-recession regimes. They found that the positive impact of economic policy uncertainty on unemployment is larger in recession regimes than in non-recession regimes, which is consistent with their previous evidence (see Caggiano et al., 2014). Prüser and Schlösser (2020) studied the impact of economic policy uncertainty on the economy in the US. They found that the negative impact of economic policy uncertainty on the economy was larger during the Great Recession than during the Great Inflation or the Great Moderation. Colombo (2013) studied the impact of economic policy uncertainty in the US on the industrial production in the euro area. She found that economic policy uncertainty in the US negatively affects the industrial production in the euro area. She also found that the negative impact of economic policy uncertainty in the US on industrial production is larger than that of the economic policy uncertainty in the euro area. Prüser and Schlösser (2021) studied the impact of economic policy uncertainty on the economy in eleven members of the euro area, namely Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal and Spain. They found that economic policy uncertainty negatively affects GDP growth in all of them.

Caggiano et al. (2020) studied the impact of economic policy uncertainty in the US on industrial production in the UK. They found that the negative impact of economic policy uncertainty in the US on industrial production in the UK is larger in recession regimes than in non-recession regimes. They also studied the impact of economic policy uncertainty in the US on unemployment in the UK. They found that the positive impact of economic policy uncertainty in the US on unemployment in the UK is larger in recession regimes than in non-recession regimes. Klößner and Sekkelb (2014) studied the international transmission of economic policy uncertainty shocks. They found that the UK and the US are the main transmitters of these shocks. Bahmani-Oskooee et al. (2015) studied the impact of economic policy uncertainty on the demand for money in the UK. They found that economic policy uncertainty positively affects the demand for money, which is consistent with recent evidence (see Bahmani-Oskooee & Maki Nayeri, 2020). Altig et al. (2020) studied economic policy uncertainty in the UK and the US before and during the Covid-19 pandemic. They found that the Covid-19 pandemic has contributed to an increase in economic policy uncertainty in both countries.

## 2.2 The impact of financial stress on the economy

Financial stress can be defined as stress in the financial market (Hakkio & Keeton, 2009), while systemic stress can be defined as stress in the financial system (Holló et al., 2012). Today, we know that disruptions in the functioning of the financial market or

the financial system can negatively affect the economy. There is a growing body of evidence on the impact of financial stress (including systemic stress) on the economy. Hakkio and Keeton (2009) studied the impact of financial stress on the economy in the US. They found that financial stress negatively affects the economy. Davig and Hakkio (2010) studied the impact of financial stress on the economy in the US in stress and non-stress regimes. They found that the negative impact of financial stress on the economy is larger in stress regimes than in non-stress regimes. Holló et al. (2012) studied the impact of systemic stress on the industrial production in the euro area in stress and non-stress regimes. They found that the negative impact of systemic stress on the industrial production is larger in stress regimes than in non-stress regimes.

Chatterjee et al. (2017) studied the impact of financial stress on GDP growth in the UK in stress and non-stress regimes. They found that the negative impact of financial stress on GDP growth is larger in stress regimes than in non-stress regimes. They also studied the impact of financial stress on GDP growth in the UK in recession and non-recession regimes. They found that the negative impact of financial stress on GDP growth is larger in recession regimes than in non-recession regimes.

## 3 Materials and methods

In this chapter, I use the gravity model of international trade in goods, developed by Tinbergen (1962), to test three hypotheses. Hypothesis 1 is that (an increase in) economic policy uncertainty in the UK negatively affects bilateral exports (of goods), Hypothesis 2 is that (an increase in) financial stress in the UK negatively affects bilateral exports (of goods) and Hypothesis 3 is that (an increase in) systemic stress in the UK negatively affects bilateral exports (of goods). To date, there is little or no evidence to conclude that (an increase in) economic policy uncertainty or financial stress (including systemic stress) in the UK negatively affects bilateral exports of goods. This means that this chapter fills a gap in the literature on the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on trade in goods. In recent years, there has been a growing debate between policymakers and researchers over whether economic policy uncertainty and financial stress (including systemic stress) negatively affect the economy. Two earlier studies found that (an increase in) systemic stress in the euro area and the US negatively affects bilateral exports of goods (see Romih et al., 2017; Romih et al., 2018). These two studies suggest that policymakers and researchers need to monitor financial stress (including systemic stress) in the euro area and the US as it can negatively affects trade in goods. The novelty of this chapter is that it studies the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on bilateral exports of goods. Figure A.1 in Appendix 1 shows bilateral exports of goods in 2018 in the case of the UK.

In recent years, following the referendum debate between Brexiters and pro-Europeans in the UK and (the rest of) the EU there has been a growing interest between policymakers and researchers in the gravity model of international trade in goods. International economists have used the gravity model of international trade in goods to estimate the impact of 'soft' and 'hard' Brexit on bilateral exports of goods (Oberhofer & Pfaffermayr, 2021). Their studies show that Brexit will negatively affect bilateral exports (of goods).

In this chapter, I use balanced panel data to study the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on bilateral exports of goods. The panel consists of 78 country pairs for the period from 2000 to 2014. Each country pair consist of the UK and another country. In my case, these are Australia, Austria, Belgium, Brazil, Canada, China, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Iceland, India, Ireland, Israel, Italy, Japan, Latvia, Lithuania, Luxembourg, Malta, Mexico, the Netherlands, New Zealand, Norway, Portugal, Russia, Slovakia, Slovenia, South Africa, South Korea, Spain, Sweden, Switzerland, and the US.

To study the impact of economic policy uncertainty and financial stress (including systemic stress) in the UK on bilateral exports of goods, I use the newspaper-based index of economic policy uncertainty for the UK, developed by Baker at al. (2016a), the NEW CISS for the UK, developed by the ECB, and the CLIFS for the UK, developed by Duprey et al. (2017). In the first case, in which I study the impact of economic policy uncertainty in the UK on bilateral exports of goods, the regression equation is:

$$X_{ijt} = \exp[\beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln E_{jt} + \beta_3 \ln POP_{it} + \beta_4 POP_{jt} + \beta_5 \ln AREA_{it} + \beta_6 \ln AREA_{jt} + \beta_7 \ln DIST_{ij} + \beta_8 \ln EPU_t + \beta_9 CNTN_{ij} + \beta_{10} CNTG_{ij} + \beta_{11} LANG_{ij} + \beta_{12} TA_{ijt} + \beta_{13} LNDL_i + \beta_{14} LNDN_j + \beta_{15} ISLN_i + \beta_{16} ISLN_j + \beta_{17} \ln REM_{it} + \beta_{18} \ln REM_{jt}] \times \varepsilon_{ijt}$$
$$i = 1, \dots, N, j = 1, \dots, N, i \neq j, j = 1, \dots, T, \quad (1)$$

where $X_{ijt}$ is the value of exports of goods from country $i$ to country $j$ at time $t$ in current USD; $\ln Y_{it}$ is the natural logarithm of the value of the GDP of country $i$ at time $t$ in current USD; $\ln E_{jt}$ is the natural logarithm of the value of the GDP of country $j$ at time $t$ in current USD; $\ln POP_{it}$ is the natural logarithm of the population of country $i$ at time $t$; $\ln POP_{jt}$ is the natural logarithm of the population of country $j$ at time $t$; $\ln AREA_{it}$ is the natural logarithm of the land area of country $i$ at time $t$ in square kilometres; $\ln AREA_{jt}$ is the natural logarithm of the land area of country $i$ at time $t$ in square kilometres; $\ln DIST_{ij}$ is the natural logarithm of the distance between the capitals of countries $i$ and $j$; $\ln EPU_t$ is the natural logarithm of the value of the newspaper-based index of economic policy uncertainty for the UK at time $t$; $CNTN_{ij}$ is a dummy

variable, the value of which is 1, if countries $i$ and $j$ lie on the same continent, otherwise 0; $CNTG_{ij}$ is a dummy variable, the value of which is 1, if countries $i$ and $j$ share a common land border, otherwise 0; $LANG_{ij}$ is a dummy variable, the value of which is 1, if countries $i$ and $j$ share a common language, otherwise 0; $TA_{ijt}$ is a dummy variable, the value of which is 1, if countries $i$ and $j$ are signatories of the same trade agreement at time $t$, otherwise 0; $EA_{ijt}$ is a dummy variable, the value of which is 1, if countries $i$ and $j$ are members of the euro area, otherwise 0; $LNDL_i$ is a dummy variable, the value of which is 1, if country $i$ is a landlocked country, otherwise 0; $LNDL_j$ is a dummy variable, the value of which is 1, if country $j$ is a landlocked country, otherwise 0; $ISLN_i$ is a dummy variable, the value of which is 1, if country $i$ is an island country, otherwise 0; $ISLN_j$ is a dummy variable, the value of which is 1, if country $j$ is an island country, otherwise 0; $\ln REM_{it}$ is the remoteness index for country $i$ at time $t$, $\ln REM_{it}$ is the remoteness index for country $j$ at time $t$ and $\varepsilon_{ijt}$ is the error term.

In the second case, in which I study the impact of financial stress in the UK on bilateral exports of goods, the regression equation is:

$$X_{ijt} = \exp[\beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln E_{jt} + \beta_3 \ln POP_{it} + \beta_4 POP_{jt} + \beta_5 \ln AREA_{it} + \beta_6 \ln AREA_{jt} + \beta_7 \ln DIST_{ij} + \beta_8 \ln CLIFS_t + \beta_9 CNTN_{ij} + \beta_{10} CNTG_{ij} + \beta_{11} LANG_{ij} + \beta_{12} TA_{ijt} + \beta_{13} LNDL_i + \beta_{14} LNDN_j + \beta_{15} ISLN_i + \beta_{16} ISLN_j + \beta_{17} \ln REM_{it} + \beta_{18} \ln REM_{jt}] \times \varepsilon_{ijt} \quad (2)$$
$$i = 1, \dots, N, j = 1, \dots, N, i \neq j, j = 1, \dots, T,$$

where $\ln CLIFS_t$ is the natural logarithm of the CLIFS for the UK at time $t$.

In the third case, in which I study the impact of systemic stress in the UK on bilateral exports of goods, the regression equation is:

$$X_{ijt} = \exp[\beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln E_{jt} + \beta_3 \ln POP_{it} + \beta_4 POP_{jt} + \beta_5 \ln AREA_{it} + \beta_6 \ln AREA_{jt} + \beta_7 \ln DIST_{ij} + \beta_8 \ln NCISS_t + \beta_9 CNTN_{ij} + \beta_{10} CNTG_{ij} + \beta_{11} LANG_{ij} + \beta_{12} TA_{ijt} + \beta_{13} LNDL_i + \beta_{14} LNDN_j + \beta_{15} ISLN_i + \beta_{16} ISLN_j + \beta_{17} \ln REM_{it} + \beta_{18} \ln REM_{jt}] \times \varepsilon_{ijt} \quad (3)$$
$$i = 1, \dots, N, j = 1, \dots, N, i \neq j, j = 1, \dots, T,$$

where $\ln NCISS_t$ is the natural logarithm of the NEW CISS for the UK at time $t$.

In this chapter, I use the Poisson Pseudo-Maximum Likelihood (PPML) estimator, developed by Gourieroux (1984a, 1984b) and recommended by Santos Silva and Tenreyro (2006), to estimate the impact of economic policy uncertainty, financial stress and systemic stress in the UK on bilateral exports of goods. In doing so, I follow the

recommendations in the literature (e.g., Santos Silva & Tenreyro, 2006; Yotov et al., 2016). I use the Ramsey Regression Equation Specification Error Test (RESET), developed by Ramsey (1969) and recommended by Santos Silva and Tenreyro (2006), to test the regression equations for specification errors.

I obtained data from different public sources: the value of the GDP in current USD by country and year from the World Bank, the value of exports of goods in current USD by country and year from the UN, the population by country and year from the UN, the land area in square kilometres by country and year from the World Bank, the coordinates of the capitals by country from latlong.net, the value of the CISS and the NEW CISS for the euro area by date from the ECB, the value of the VSTOXX by date from Qontigo, trade agreements and their signatories from the WTO, and languages by country from Eberhard et al. (2021). I obtained other data from other public sources. Other data was obtained from other public sources.

## 4 Results

Table 1 shows correlations for three study variables, while Table 2 shows descriptive statistics for all study variables.

**Table 1:** Correlations for study variables

| Variable | 1 | 2 | 3 |
|---|---|---|---|
| 1. CISS for the UK | 1.0000 | | |
| 2. CLIFS for the UK | .8016* | 1.0000 | |
| 3. (Newspaper-based) index of economic policy uncertainty for the UK | .2867* | .1488* | 1.0000 |

Note: * p < .05.
Source: Own calculations.

As you can see from Table 1, CISS for the UK is positively correlated with CLIFS for the UK and the EPU Index for the UK. You can also see that CLIFS for the UK is positively corelated with the EPU Index for the UK.

**Table 2:** Descriptive statistics for study variables

| Variable | Number of observations | Mean | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| $X_{ijt}$ | 1,170 | 1.04E+10 | 1.53E+10 | 1.11E+08 | 1.05E+11 |
| $\ln Y_{it}$ | 1,170 | 27.4572 | 1.6473 | 22.1833 | 30.4871 |
| $\ln E_{jt}$ | 1,170 | 27.4572 | 1.6473 | 22.1833 | 30.4871 |
| $\ln POP_{it}$ | 1,170 | 17.1841 | 1.5839 | 12.5469 | 21.0377 |
| $\ln POP_{jt}$ | 1,170 | 17.1841 | 1.5839 | 12.5469 | 21.0377 |

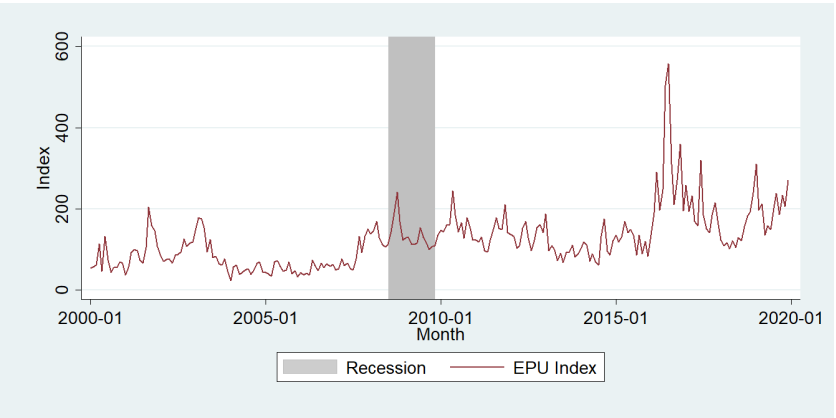
| Variable | Number of observations | Mean | Standard deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| $\ln AREA_{jt}$ | 1,170 | 12.2271 | 1.7645 | 5.7683 | 16.6117 |
| $\ln AREA_{it}$ | 1,170 | 12.2271 | 1.7645 | 5.7683 | 16.6117 |
| $\ln DIST_{ij}$ | 1,170 | 7.7129 | 1.0985 | 5.7732 | 9.8419 |
| $\ln CLIFS_{t}$ | 1,170 | .3068 | .5736 | –.5341 | 1.5628 |
| $\ln NCISS_{t}$ | 1,170 | –2.6086 | 1.046 | –4.1509 | –.8009 |
| $\ln EPU_{t}$ | 1,170 | 4.5526 | .3729 | 3.9051 | 5.0808 |
| $CNTN_{ij}$ | 1,170 | .6410 | .4799 | 0 | 1 |
| $CNTG_{ij}$ | 1,170 | .0256 | .1581 | 0 | 1 |
| $LANG_{ij}$ | 1,170 | .2308 | .4215 | 0 | 1 |
| $TA_{ijt}$ | 1,170 | .7145 | .4518 | 0 | 1 |
| $LNDL_{i}$ | 1,170 | .0513 | .2207 | 0 | 1 |
| $LNDL_{j}$ | 1,170 | .0513 | .2207 | 0 | 1 |
| $ISLN_{i}$ | 1,170 | .5769 | .4943 | 0 | 1 |
| $ISLN_{j}$ | 1,170 | .5769 | .4943 | 0 | 1 |
| $\ln REM_{it}$ | 1,170 | 14.2363 | 3.7086 | 8.4905 | 18.0810 |
| $\ln REM_{jt}$ | 1,170 | 14.2363 | 3.7086 | 8.4905 | 18.0810 |

Source: Own calculations.

### 4.1 The impact of economic policy uncertainty in the UK on bilateral exports of goods

In this subsection, I test the hypothesis that (an increase in) economic policy uncertainty in the UK negatively affects bilateral exports (of goods). Figure 1 shows economic policy uncertainty in the UK from January 2000 to December 2019.

**Figure 1:** Economic policy uncertainty in the UK from January 2000 to December 2019

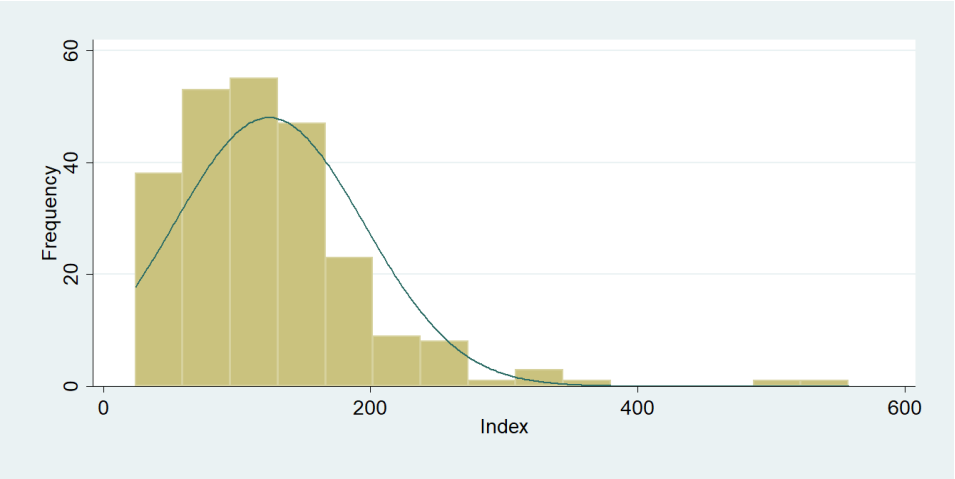



Source: https://www.policyuncertainty.com/.

There is a growing body of evidence that Brexit contributed to an increase in economic policy uncertainty in the UK (see Bloom et al., 2019a, 2019b; Lipinska & Orak, 2020; Nilavongse et al., 2020). As you can see from Figure 1, economic policy uncertainty in the UK increased before the Brexit referendum in June 2016 (i.e., during the referendum debate). By July 2016, economic policy uncertainty in the UK was at its peak in recent memory. The referendum results were a shock for pro-Europeans on both sides of the Chanel (i.e., in Brussels and London).

Figure 2 shows the frequency distribution of the newspaper-based index of economic policy uncertainty for the UK from January 2000 to December 2019.

**Figure 2:** Frequency distribution of the newspaper-based index of economic policy uncertainty for the UK from January 2000 to December 2019




Source: Own calculations based on data from https://www.policyuncertainty.com.

Before I estimated the impact of economic policy uncertainty in the UK on bilateral exports of goods, I had estimated the basic (panel data) gravity model of international trade in goods with controlling for multilateral resistance (with remoteness indices) (the regression equation can be found in Appendix 1). In doing so, I found that the results listed in columns (1) and (2) of Table 3 are quite similar, which is a good sign. However, there are some differences. For example, the regression coefficient for distance is lower in column (2) than in column (1).

Estimating equation (1), I found that if the value of the newspaper-based index of economic policy uncertainty for the UK increases by 1%, the value of bilateral exports of goods in current USD decreases by .2%; see column (2) of Table 3. This means that

economic policy uncertainty in the UK negatively affects bilateral exports of goods, which is consistent with my expectations.

**Table 3:** PPML estimates of equations (A.1) and (1)

| | (1) | (2) |
|---|---|---|
| | PPML | PPML |
| $\ln Y_{it}$ | .7599*** | .7742*** |
| | (.1174) | (.1189) |
| $\ln E_{jt}$ | .8317*** | .8494*** |
| | (.0695) | (.0685) |
| $\ln POP_{it}$ | .0063 | 0.0020 |
| | (.1760) | (.1774) |
| $\ln POP_{jt}$ | –.0480 | –.0587 |
| | (.0685) | (.0680) |
| $\ln AREA_{jt}$ | –.1442* | –.1468* |
| | (.0773) | (.0413) |
| $\ln AREA_{it}$ | –.1466*** | –.1495*** |
| | (.0415) | (.0413) |
| $\ln DIST_{ij}$ | –.5056*** | –.7325*** |
| | (.1424) | (.1326) |
| $\ln EPU_t$ | | –.1965*** |
| | | (.0422) |
| $CNTN_{ij}$ | .3025 | .3103 |
| | (.3037) | (.3025) |
| $CNTG_{ij}$ | 1.0850** | 1.1295** |
| | (.4869) | (.4916) |
| $LANG_{ij}$ | .4515* | .4368* |
| | (.2573) | (.2578) |
| $TA_{ijt}$ | –.1374 | –.1447 |
| | (.2103) | (.2098) |
| $LNDL_i$ | –.6830** | –.6753** |
| | (.3072) | (.3106) |
| $LNDL_j$ | –1.0846*** | –1.0754*** |
| | (.2264) | (.2287) |
| $ISLN_i$ | –.7535** | –.7749** |
| | (.3156) | (.3161) |
| $ISLN_j$ | –.4288 | –.4492 |
| | (.3085) | (.3122) |
| $\ln REM_{it}$ | .0904 | .3244*** |
| | (.0674) | (.0753) |
| $\ln REM_{jt}$ | .0835 | .3173*** |
| | (.0631) | (.0749) |
| Constant | –15.2335*** | –19.7107*** |
| | (3.5036) | (4.0158) |
| Number of observations | 1,170 | 1,170 |
| R-squared | .7909 | .7939 |

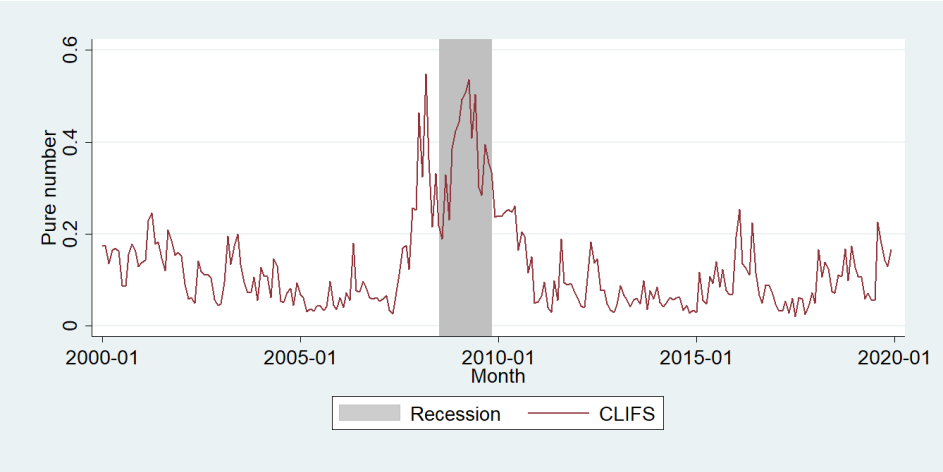
| | (1) | (2) |
|---|---|---|
| | PPML | PPML |
| RESET (p-value) | .1826 | .2033 |

Notes: Regression equation (A.1) is given in Appendix 2. *** p < .01, ** p < .05, * p < .10.
Source: Own calculations.

### 4.2 The impact of financial stress in the UK on bilateral exports of goods

In this subsection, I test the hypothesis that (an increase in) financial stress in the UK negatively affects bilateral exports (of goods). Figure 3 shows financial stress in the UK from January 2000 to December 2019.

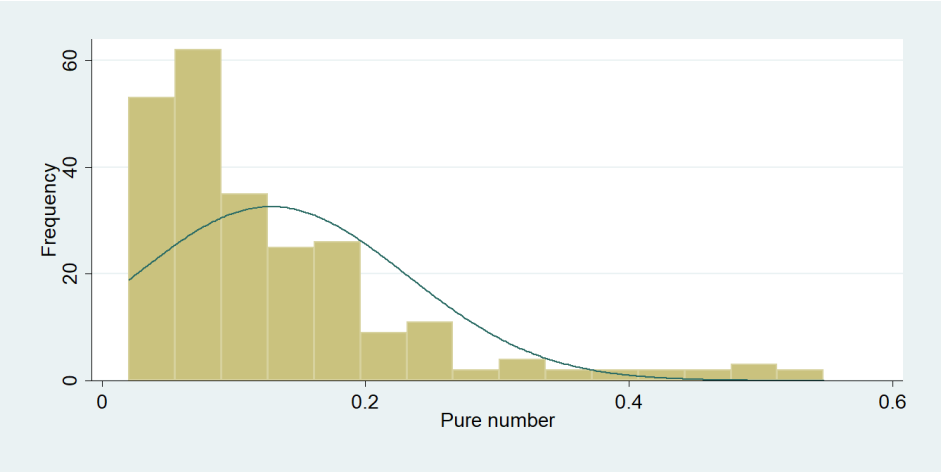
**Figure 3:** Financial stress in the UK from January 2019 to February 2019




Source: ECB (2021a).

As you can see from Figures 3, financial stress in the UK also increased before the Brexit referendum. By June 2016, financial stress in the UK was at its new peak after the global financial crisis and the Great Recession. Figure 4 shows the frequency distribution of the CLIFS for the UK from January 2000 to December 2019.

**Figure 4:** Frequency distribution of the CLIFS for the UK from January 2000 to December 2019




Source: Own calculations based on data from the ECB (2021a).

Estimating equation (2), I found that if the value of the CLIFS for the UK increases by 1%, the value of bilateral exports of goods in current USD decreases by .01%; see Table 4. However, the regression coefficient for financial stress is statistically not significant.

**Table 4:** PPML estimates of equation (2)

| | PPML |
|---|---|
| $\ln Y_{it}$ | .7596*** |
| | (.1174) |
| $\ln E_{jt}$ | .8312*** |
| | (.0696) |
| $\ln POP_{it}$ | .0066 |
| | (.1760) |
| $\ln POP_{jt}$ | –.0476 |
| | (.0685) |
| $\ln AREA_{jt}$ | –.1442** |
| | (.0773) |
| $\ln AREA_{it}$ | –.14662*** |
| | (.0415) |
| $\ln DIST_{ij}$ | –.5041*** |
| | (.1421) |
| $\ln CLIFS_{t}$ | –.0119 |
| | (.0145) |

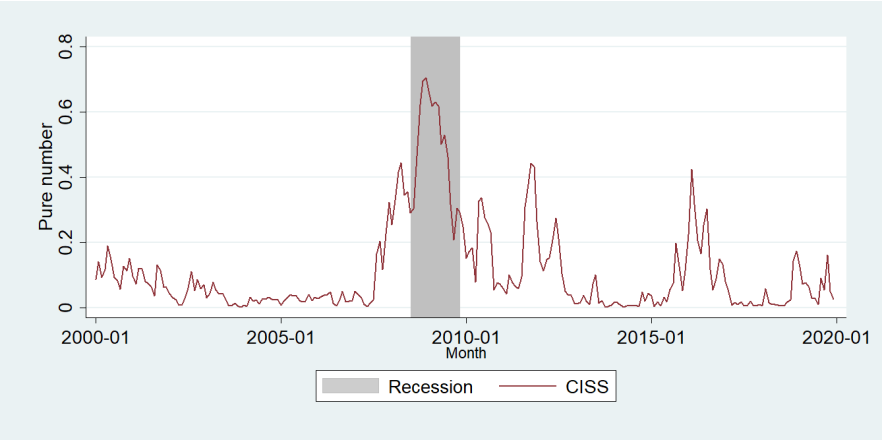
| | PPML |
|---|---|
| $CNTN_{ij}$ | .3030 |
| | (.3038) |
| $CNTG_{ij}$ | 1.0840** |
| | (.4865) |
| $LANG_{ij}$ | .4518* |
| | (.2572) |
| $TA_{ijt}$ | –.1377 |
| | (.2103) |
| $LNDL_i$ | –.6831** |
| | (.3072) |
| $LNDL_j$ | –1.0847*** |
| | (.2264) |
| $ISLN_i$ | –.7530** |
| | (.3156) |
| $ISLN_j$ | –.4282 |
| | (.3082) |
| $\ln REM_{it}$ | .0887 |
| | (.0670) |
| $\ln REM_{jt}$ | .0817 |
| | (.0622) |
| Constant | –15.1833*** |
| | (3.4890) |
| Number of observations | 1,170 |
| R-squared | .7910 |
| RESET (p-value) | .1821 |

Notes: *** p < .01, ** p < .05, * p < .10.
Source: Own calculations.

### 4.3 The impact of systemic stress in the UK on bilateral exports of goods

In this subsection, I test the hypothesis that (an increase in) systemic stress in the UK negatively affects bilateral exports (of goods). Figure 5 shows systemic stress in the UK from January 2000 to December 2019.

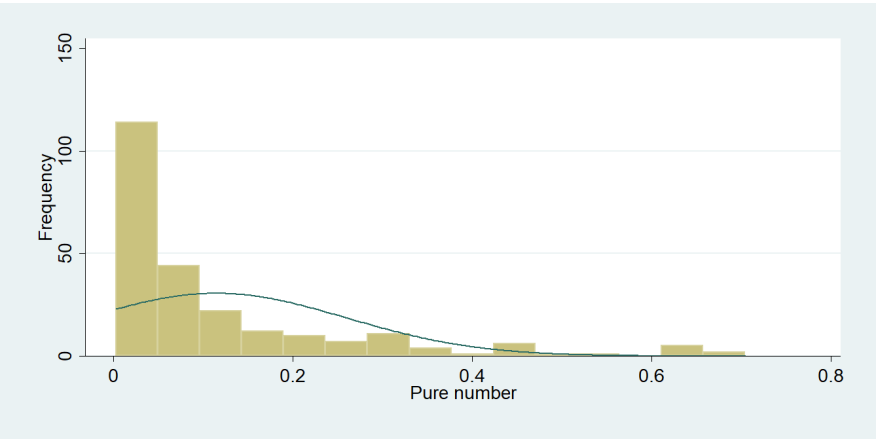
**Figure 5:** Systemic stress in the UK from January 2019 to February 2019




Source: ECB (2021b).

As you can see from Figure 5, Brexit, which caused political chaos in Britain and on the Continent (mainly in Brussels), contributed to the increase in systemic stress in the UK. Even before the polling stations opened, City analysts were bearish. Figure 6 shows the frequency distribution of the NEW CISS for the UK from January 2000 to December 2019.

**Figure 6:** Frequency distribution of the NEW CISS for the UK from January 2000 to December 2019




Source: Own calculations based on data from the ECB (2021b).

Estimating equation (3), I found that if the value of the NEW CISS for the UK increases by 1%, the value of bilateral exports of goods in current USD decreases by .01%; see column (1) of Table 5. However, the regression coefficient for systemic stress is statistically not significant. As you can see from Tables 4 and 5, the use of the CLIFS and the NEW CISS for the UK gives quite similar results, which is consistent with my expectations.

**Table 5:** PPML estimates of equation (3)

| | (1) | (2) |
|---|---|---|
| | PPML | PPML |
| | Evidence for the UK | Evidence for the US (Romih et al., 2018) |
| $\ln Y_{it}$ | .7606*** | .7693*** |
| | (.1176) | (.1168) |
| $\ln E_{jt}$ | .8324*** | .7769*** |
| | (.0693) | (.0885) |
| $\ln POP_{it}$ | .0061 | .2732 |
| | (.1760) | (.1688) |
| $\ln POP_{jt}$ | –.0481 | .2000** |
| | (.0685) | (.1007) |
| $\ln AREA_{jt}$ | –.1444* | –.2017** |
| | (.0774) | (.0986) |
| $\ln AREA_{it}$ | –.1469*** | –.2065*** |
| | (.0416) | (.0621) |
| $\ln DIST_{ij}$ | –.5158*** | –.3544 |
| | (.1422) | (.2361) |
| $\ln NCISS_{t}$ | –.0142 | –.03271*** |
| | (.0095) | (0.0080) |
| $CNTN_{ij}$ | .3044 | 1.4374** |
| | (.3039) | (.5950) |
| $CNTG_{ij}$ | 1.0870** | |
| | (.4867) | |
| $LANG_{ij}$ | .4509* | .3123 |
| | (.2571) | (.2077) |
| $TA_{ijt}$ | –.1389 | .4346** |
| | (.2103) | (.2204) |
| $LNDL_{i}$ | –.6825** | –.9598*** |
| | (.3075) | (.3154) |
| $LNDL_{j}$ | –1.0840*** | –1.2092*** |
| | (.2266) | (.2193) |
| $ISLN_{i}$ | –.7544** | –.0841 |
| | (.3156) | (.3354) |

| | | |
|---|---|---|
| $ISLN_j$ | –.4293<br>(.3085) | –.2144<br>(.1825) |
| $\ln REM_{it}$ | .1009<br>(.0678) | –.0688<br>(.0553) |
| $\ln REM_{jt}$ | .0939<br>(.0647) | .0040<br>(.0333) |
| Constant | –15.5125***<br>(3.5622) | –19.7002***<br>(4.2309) |
| Number of observations | 1,170 | 1,201 |
| R-squared | .7911 | .8742 |
| RESET (p-value) | .1827 | .4512 |

Notes: *** p < .01, ** p < .05, * p < .10. In the case of the US, the CISS, developed by Kremer (2016), was used.
Source: Own calculations.

The evidence for the US (see Romih et al., 2018) shows that if the value of the CISS for the US increases by 1%, the value of bilateral exports of goods in current USD decreases by .03%. In contrast to the regression coefficient for systemic stress in the UK, the regression coefficient for systemic stress in the US is statistically significant at the 1% level. This suggests that systemic stress in the US negatively affects bilateral exports of goods.

## 5 Discussion

In the first part of this chapter, I studied the impact of economic policy uncertainty in the UK on bilateral exports of goods. Using the panel data gravity model of international trade in goods, I found that economic policy uncertainty in the UK negatively affects bilateral exports of goods. Since the result is statistically significant, I can accept Hypothesis 1. This has important implications for policymakers.

First, they need to monitor economic policy uncertainty in the UK. Recent research shows that economic policy uncertainty influences the decisions of households and companies (see Bloom et al. 2019a, 2019b; Kellard et al., in press).

Second, they need to prevent economic policy uncertainty in the UK. Recent research shows that economic policy uncertainty negatively affects the economy (see Lipinska & Orak, 2020; McGrattan and Waddle, 2020; Steinberg, 2019). Nilavongse et al. (2020) found that economic policy uncertainty in the UK after the in-out referendum led to the depreciation of the British pound.

In the second and third part of this chapter, I studied the impact of financial and systemic stress in the UK on bilateral exports of goods. I found that financial and

systemic stress in the UK negatively affect bilateral exports of goods. Since both results are not statistically significant, I can reject Hypotheses 2 and 3.

## 6 Conclusions

Brexit was a wake-up call for the UK and the (rest of the) EU. There is a growing body of evidence that the referendum results contributed to an increase in economic policy uncertainty and financial stress (including systemic stress) in the UK, which is heavily dependent on trade with the Continent. The referendum debate between pro-Europeans and Brexiters has shown that the British society is more divided than ever. In this context, it is important to study the impact of economic policy uncertainty and financial stress (including systemic stress) on the economy. The Covid-19 recession has shown that the UK is not immune from shocks, which is logically given the role of the UK in the world.

During the referendum debate, concerns were raised about the impact of Brexit on UK's trade. After all, the UK sends two fifths of its exports to the (rest of the) EU. The referendum results also contributed to an increase in trade policy uncertainty in the UK and the (rest of the) EU, including Slovenia. The main question after the in-out referendum was whether there would be a 'no-deal' Brexit. Many economists have argued that this scenario would be detrimental to the UK. Under it, the UK would withdraw from the EU without a withdrawal agreement. The policy debate following the in-out referendum has been intense and has given rise to speculation. This chapter adds to the growing body of evidence on the negative impact of economic policy uncertainty on the economy.

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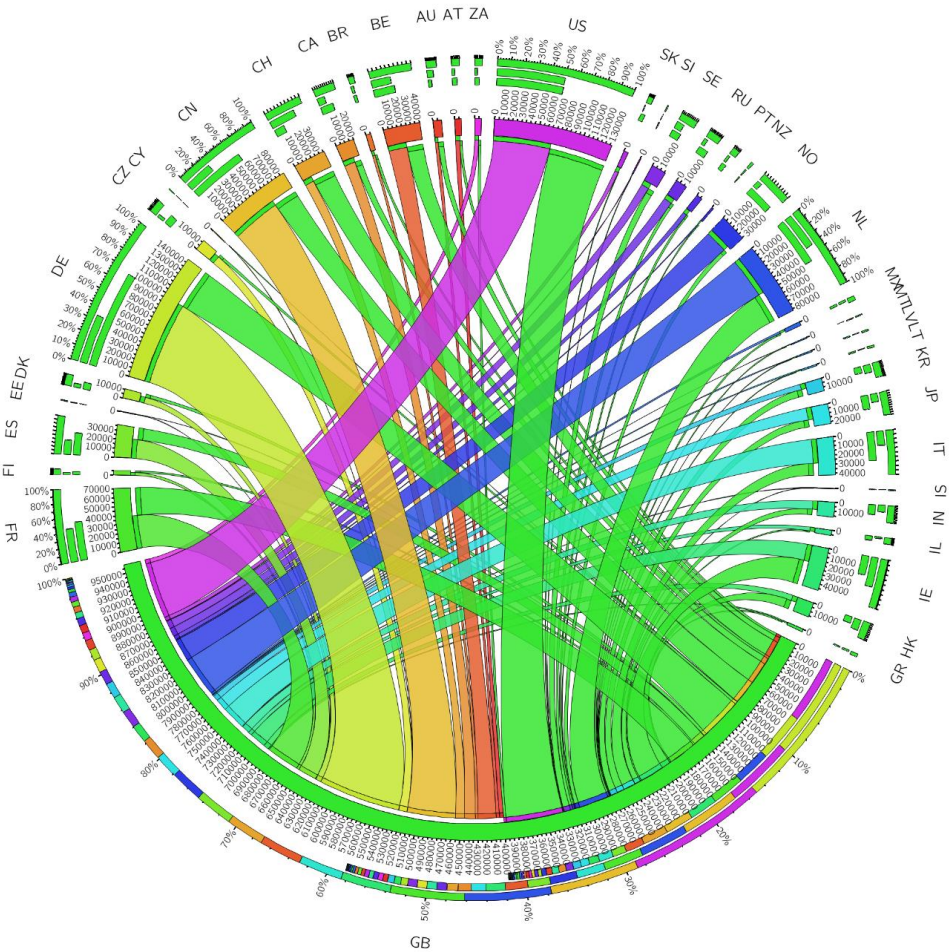
## Appendices

### Appendix 1

**Figure A.1:** Bilateral exports of goods in million USD in the case of the UK, 2018




Notes: AT = Austria, AU = Australia, BE = Belgium, BR = Brazil, CA = Canada, CH = Switzerland, CN = China, CY = Cyprus, CZ = Czechia, DE = Germany, DK = Denmark, EE = Estonia, ES = Spain, FI = Finland, FR = France, GB = UK, GR = Greece, HK = Hong Kong, IE = Ireland, IL = Israel, IN = India, IS = Iceland, IT = Italy, JP = Japan, KR = South Korea, LT = Lithuania, LV = Latvia, MT = Mata, MX = Mexico, NL = Netherlands, NO = Norway, NZ =

New Zealand, PT = Portugal, RU = Russia, SE = Sweden, SI = Slovenia, SK = Slovakia, ZA = South Africa. Data for Luxembourg were not available.
Source: https://comtrade.un.org/data/

**Appendix 2**

The basic regression equation is:

$$X_{ijt} = \exp\left[\beta_0 + \beta_1 \ln Y_{it} + \beta_2 \ln E_{jt} + \beta_3 \ln POP_{it} + \beta_4 POP_{jt} + \beta_5 \ln AREA_{it} + \beta_6 \ln AREA_{jt} + \beta_7 \ln DIST_{ij} + \beta_8 CNTN_{ij} + \beta_9 CNTG_{ij} + \beta_{10} LANG_{ij} + \beta_{11} TA_{ijt} + \beta_{12} LNDL_i + \beta_{13} LNDN_j + \beta_{14} ISLN_i + \beta_{15} ISLN_j + \beta_{16} \ln REM_{it} + \beta_{17} \ln REM_{jt}\right] \times \varepsilon_{ijt} \quad (A.1)$$

$, i = 1, \ldots, N, j = 1, \ldots, N, i \neq j, j = 1, \ldots, T.$