

# Impact of Brexit on Economic Sentiment in Euro Area and European Union

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## Abstract

The economic sentiment reflects the economic units' feeling about the prospects of economic performance. This study investigated the impact of Brexit on economic sentiment in Eurozone and European union over the period of January 2010-March 2021 through Kapetanios (2005) unit root test with multiple breaks. The empirical analysis respectively revealed the structural breaks of July and Augusts 2016 for Eurozone and European Union. In other words, leave decision from EU by the UK led a structural change in the economic sentiment of Eurozone and EU.

**Keywords:** Economic sentiment, Eurozone, European Union, unit root analysis

**JEL Classification:** C32, F40, F43, N14

## 1. Introduction

The Brexit is a portmanteau of the words "British" and "exit" and is used to refer to the UK's (United Kingdom) leave decision from the EU (European Union) by 23 June 2016 referendum. The UK informed the EU about its exit from the EU on 29 March 2017 and thus, Brexit process officially begun and the Brexit process finished on 31 January 2020 with the UK exit from the EU. The UK was one of the three largest economies together with Germany and France in the EU and also the economic relations of the EU and the United Kingdom have had a long history. However, the UK's withdrawal from the EU, the Single Market and the Customs Union led barriers over the trade, capital flows and labor. Therefore, many scholars have explored the possible impacts of the Brexit on both the EU and the UK.

In this context, Felbermayr et al. (2017) analyzed the economic effects of Brexit under different scenarios and predicted that the considerable decreases in the trade between the EU states and the UK would emerge and the UK would experience relatively more decrease in real GDP per capita when compared with the EU. On the other side, the EU states would worse off when income losses compared with fiscal costs. Kee and Nicita (2017) also analyzed the short-run effect of Brexit on the UK's goods export through overall trade restrictiveness index and discovered that the Brexit may lead a 2% decrease in the UK's exports to the EU. Berthou et al. (2019) analyzed the economic impacts of the Brexit through trade and migration channels through gravity model and predicted that there would exist the decreases in the trade and GDP of the UK under various scenarios.

Chen et al. (2018) also predicted the possible effects of the Brexit and reached that the real GDP and employment in the EU relative to no-Brexit would respectively decrease about 1.5% and 0.7% in case both EU and the UK obey the WTO rules. Furthermore, the countries with higher trade with the UK would experience relatively more decreases in their output. Pandzic (2021) also analyzed the impacts of Brexit on trade between EU and the UK under different scenarios (comparative methodology, no-deal and trade relations under WTO rules, computable general

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equilibrium model) and revealed that the Brexit would negatively affect the trade between EU and the UK.

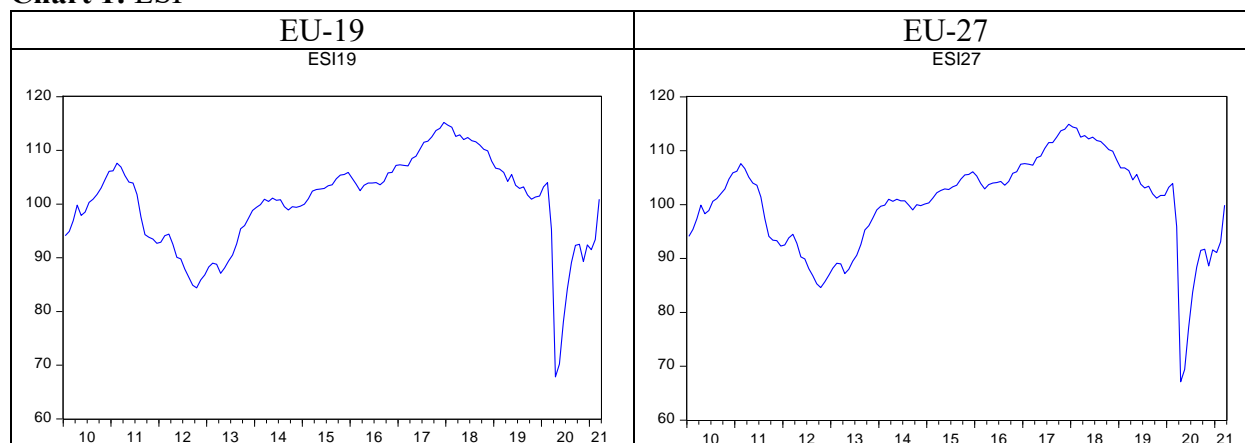
In this study, we analyzed the effect of Brexit on economic sentiment given the related literature. Economic sentiment indicates how businesses and consumers feel about the economy. Therefore, economic sentiment indicator is important for the economies, because it gives clue about the future of the economy (by Nowzohour and Stracca, 2017). However, economic sentiment has been disregarded by mainstream macroeconomics, but John Maynard Keynes and Hyman Minsky used the concept of sentiment and explained the business cycles through the sudden changes in sentiment (van Aarle and Kappler, 2012). In this sense, it is evaluated that determination of the Brexit on economic sentiment in the EU also will be important to predict the possible economic impacts of Brexit. The next section summarized the dataset and method, and then empirical analysis was conducted. The study lasted with the Conclusion.

## 2. Dataset and Method

The study analyzed the impact of Brexit on economic sentiment in Eurozone (EU-19: Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia, and Spain) and European Union (EU-27) over the period of January 2010-March 2021 through Kapetanios (2005) unit root test with multiple structural breaks. The economic sentiment was proxied by economic sentiment indicator (ESI) of Eurostat (2021). The ESI is a weighted average of five indicators including industrial confidence indicator (40%), construction confidence indicator (5%), services confidence indicator (30%), consumer confidence indicator (20%), retail trade confidence indicator (5%).

The econometric analyses were conducted with the help of Gauss 10.0 and Eviews 10.0 software packages. The course and main characteristics of ESI during the study period for EU-19 and EU-27 were respectively shown in Chart 1 and Table 1.

**Chart 1: ESI**



**Table 1: Summary Characteristic of the Dataset**

Statistics	ESI (EU-19)	ESI (EU-27)
Mean	100.2133	100.2356
Median	101.7000	101.7000
Maximum	115.2000	114.9000
Minimum	67.80000	67.10000
Std. Dev.	8.676911	8.775258
Skewness	-0.852019	-0.903756
Kurtosis	4.200799	4.322891

Kapetanios (2005) unit root test allows multiple structural breaks and endogenously determines the dates of structural breaks. The model of the test is as following:

$$y_t = \alpha_0 + \alpha_1 t + \beta y_{t-1} + \sum_{i=1}^p \gamma_i \Delta y_{t-i} + \sum_{i=1}^m \varphi_i DU_{i,t} + \sum_{i=1}^m x_i DT_{i,t} + \epsilon_t \quad (1)$$

$$DU_{i,t} = \begin{cases} 1 & t > T_{b,i} \\ 0 & t \leq T_{b,i} \end{cases} \quad \text{and} \quad DT_{i,t} = \begin{cases} t - T_{b,i} & t > T_{b,i} \\ 0 & t \leq T_{b,i} \end{cases}$$

DU denotes the structural break in the constant term, and DT denotes the structural break in the trend term. In the test; each period is evaluated as a possible structural break date, and the date specified by the dummy variable in the model with the minimum sum of squares of the error terms is taken as the first break date. The second structural break date is investigated along with the first break date added to the model. The process continues until the m structural break date and the number and date of the structural break of the model that gives the minimum t statistic is reported (Capistrán and Ramos-Francia, 2009). The null hypothesis of the test is that the series is stationary under the structural breaks.

#### 4. Empirical Analysis

The impact of Brexit on economic sentiment in Eurozone and European Union was analyzed by way of Kapetanios (2005) unit root test with multiple breaks and reported in Table 2. The critical values were derived from bootstrapping with 1.000 simulations. The test determined the structural breaks in economic sentiment index of Eurozone as February 2011, July 2016, December 2018, August 2019, and February 2020. On the other side, the structural breaks of economic sentiment index of EU-27 were found to be February 2011, September 2014, August 2016, December 2017, and February 2020.

The test specified a structural break corresponding to June 2016 when the UK made a decision to leave the EU in the referendum on June 23, 2016. We could not evaluate the structural break of February 2020 whether it was resulted from Brexit finalization or COVID-19 pandemic. However, we could say that it was probably from Brexit finalization considering that the COVID-19 pandemic became widespread in the EU after February 2020, and its effects began to appear as of March 2020.

**Table 2:** Kapetanios (2005) unit root test results

Variables	$\tau$ - statistic	Critical Values			Dates of Structural Breaks
		%1	%5	%10	
<i>ESI19</i>	-4.741	-5.376	-4.482	-4.119	2011.02, 2016.07, 2018.12, 2019.08, 2020.02
<i>ESI27</i>	-5.682	-5.247	-4.365	-4.252	2011.02, 2014.09, 2016.08, 2017.12, 2020.02

\* It is significant 5% significance level

#### 5. Conclusion

The EU process began with 6 members (Belgium, Germany, France, Italy, Luxembourg, the Netherlands) in 1951 and experienced a rapid enlargement especially with the collapse of the Soviet Bloc and reached 28 members with join of Croatia on 1 July 2013. However, the UK's withdrawal decision from the EU by 23 June 2016 referendum was realized and the UK, one of the largest three economies in the EU, is no longer part of the EU as of 1 February 2020. During the exit process, the scholars have generally tried to predict the economic impacts of the Brexit on both the EU and the UK which have had strong financial and trade relations and migration flows due to a long integration history and they have generally predicted that both parties would experience trade and output decreases.

In this study, we analyzed the impact of Brexit on economic sentiment in Eurozone and EU-27 through Kapetanios (2005) unit root test with structural breaks and the findings disclosed the structural breaks on exit decision and exit finalization. So, the Brexit led the structural changes in both consumers and producers. However, the COVID-19 pandemic also broke out immediately after the Brexit finalization. Therefore, we evaluate that we can analyze the possible economic effects of Brexit over time.

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