REM WORKING PAPER SERIES

The effect of Brexit on British workers living in the EU

Ana Venâncio, João Pereira dos Santos

REM – Research in Economics and Mathematics
Rua Miguel Lúpi 20,
1249-078 Lisboa,
Portugal

REM – Research in Economics and Mathematics

Rua Miguel Lupi, 20
1249-078 LISBOA
Portugal

Telephone: +351 - 213 925 912
E-mail: rem@iseg.ulisboa.pt

https://rem.rc.iseg.ulisboa.pt/

https://twitter.com/ResearchRem

https://www.linkedin.com/company/researchrem/

https://www.facebook.com/researchrem/

The effect of Brexit on British workers living in the EU

Ana Venâncio[*]
ISEG and ADVANCE/CSG
Universidade de Lisboa

João Pereira dos Santos[†]
Nova School of Business and Economics
Universidade NOVA de Lisboa

June 2021

Abstract

The effect of Brexit is an important topic in the European and British political agendas. This study examines the perspective of the EU countries, with regards how British citizens working in an EU country reacted to the end of free movement of workers. Employing synthetic control methods and using data from Portugal, we estimate how the behaviour of UK citizens working in Portugal would have evolved if the Remain vote had won the referendum. Our results suggest that the Brexit referendum reduced the number of UK citizens working in Portugal, particularly in the case of non-university educated, male individuals with temporary employment contracts. This reduction is explained by the decrease in the number of incomers. We also find that those UK citizens who were already working in Portugal before Brexit are less likely to leave the country.

Keynotes: Brexit, employment, migration
JEL codes: J10, J61, J68

---

[*]E-mail: avenancio@iseg.ulisboa.pt
[†]E-mail: joao.santos@novasbe.pt.

1   Introduction

On 23rd June 2016, the United Kingdom (UK) voted to leave the European Union (EU). Labour mobility and European immigration weighed heavily in the UK's decision to leave the EU (Becker et al., 2017; Dennison and Geddes, 2018). After Brexit, the British labour market became less open to EU workers, resulting in a decline in the immigration flows from the EU to the UK. In fact, the UK Office for National Statistics (ONS) (2019) reported that the post referendum net migration to UK from the EU decreased by 5.5% in 2017.

Several studies have evaluated the migration implications after Brexit on the UK economy (Portes and Forte, 2017; Campos and Timini, 2019; Boubtane et al., 2016; Jafari and Britz, 2017; Parker, 2017; Portes and Forte, 2017; Portes, 2021), however knowledge regarding the impact of Brexit on the remaining EU countries is scarce. This lack of attention is striking, considering that 1.2 million British citizens were living in an EU country in 2015 (United Nations and Social Affairs, 2019). After the Brexit referendum, major uncertainty existed regarding what rules that would regulate EU migration from the UK (Hassan et al., 2020). Accordingly, it is crucial to understand how these individuals reacted to Brexit, namely whether they returned to the UK or remained in their host countries and also to understand what type of individuals were most affected by Brexit. In this study, we address these issues and evaluate the consequences of Brexit on British citizens living and working in an EU country, by looking at the specific case of Portugal.

Portugal provides an excellent context for evaluating the effects Brexit on its labour market, for several reasons. First, UK workers play a vital role in the Portuguese labour market. In 2000, they accounted for approximately 15% of the total number of EU citizens working in Portugal, however this percentage has been decreasing and by 2008, they only accounted for 8%. Furthermore, in 2019, Portugal hosted approximately 19,000 British citizens (see Figure 1), and this number has increased steadily up until 2015. Nowadays, Portugal constitutes a favourite place for leisure and for spending holidays for British citizens. Second, the UK is one of the major trade partners of Portugal. Between 2000 and 2018, the UK accounted for approximately 7% and 4% of total goods and services exported and imported, respectively. Third, Portugal is one of the advanced economies to have experienced a large boost in productivity due to migration. According to Boubtane et al. (2016), in the case of Portugal, a 1 percentage point increase in the migrant share of the working-age population leads to a 0.6 percent increase in productivity. Therefore, understanding the effects of Brexit has important consequences for the Portuguese economy. Fourth, we have access to a detailed mandatory matched employer-employee database, which possesses comprehensive information on all EU citizens working in the private sector in Portugal. From this data, we compute nationality-level data for the period between 2000 and 2018 and combine it with macroeconomic data from the World Bank databases.

The unpredictability of the EU referendum vote in the UK provides a unique opportunity to

study the impact of this idiosyncratic event on the labour market. As mentioned by Sampson (2017) and Born et al. (2019a), the outcome of the referendum was mostly unexpected. The Remain faction was ahead in the voter polls for most of time. In fact, on the night of the referendum, the UK's most prominent polling firms and the exit poll results all predicted a victory for the Remain vote.

We find that the referendum reduced the number of UK citizens working in Portugal, particularly for non-college, male individuals with temporary employment contracts. We estimate that in 2018, the last year of our sample, UK citizens working in Portugal would have been 970 more (approximately 40% more) if the UK had not left the EU. This reduction is explained by the decrease on the number of incomers. We also find that UK citizens who were already working in Portugal were less likely to return to their home country.

Our study refers to the literature that investigates the impact of Brexit on other European economies. Previous literature has mostly studied the economic impact on the UK economy, with very studies evaluating the effects on the EU countries through the migration channel. The great majority of the studies suggest that the UK exit from the EU has had a potential economic impact in both regions and that the effects extend beyond the trade in goods and services to, for example, the labour market. However, while the direction of the change is clear, the exact magnitude remains uncertain. It is of vital importance, therefore, for European and British policymakers, to understand how UK citizens working in an EU country reacted to Brexit in order to introduce appropriate policies and regulations. Our results suggest that the UK might consider implementing programmes to repatriate skilled emigrants from the EU countries. In addition, our paper implements a recent methodology, the synthetic control method (SCM). This methodology, which introduced by Abadie et al. (2010), provides a data-driven approach in which the control units are systematically chosen as a weighted average of all the relevant units that best fit the characteristics of the treatment unit. More specifically, SCM enables a comparison between a synthetic doppelganger, built through the weighting of other EU citizens working in Portugal. By the use of this method, we also try to disentangle the contribution of different channels (new entries, exits, and incumbents) from the overall impact of the Brexit on UK citizens working in Portugal.

The rest of the paper is structured as follows. The next section provides a brief overview of the economic effects of Brexit on the UK and EU countries. Next, the main events that occurred before the 2016 referendum are summarised. Our data sources, variables, and empirical methodology are presented next. Section 6 presents our main results, together with several robustness checks, then we present the main conclusions in the final section, as well as the implications and limitations of the study.

2   Literature Review

Several studies have quantified the potential impact of Brexit through a multitude of channels, namely: foreign direct investment (FDI), trade, financial services, industrial policies, fiscal involvement and migration (Booth et al., 2015; Portes, 2016; Tetlow and Stojanovic, 2018; Bloom et al., 2019; Jafari and Britz, 2017; Portes, 2021). The majority of the studies estimate that the economic costs from Brexit, measured in terms of outputs, range from between -1% to -10% (Bisciari, 2019; Dhingra et al., 2017; Begg and Mushövel, 2016). The wide range of estimates is due to the diversity of methodologies, scenarios and channels that were considered. These studies examined the effect of Brexit on UK's gross domestic product (Born et al., 2019a), inflation and real wages (Breinlich et al., 2020), exchange rate and consumer prices (Breinlich et al., 2018, 2019), firms investments and productivity (Bloom et al., 2019), trade (Crowley et al., 2018; Graziano et al., 2021, 2020; Ahmad et al., 2020), migration (Booth et al., 2015; Portes and Forte, 2017; Jafari and Britz, 2017), medium-sized enterprises (SMEs) (Brown et al., 2019), loan issuances (Berg et al., 2021), and financial markets (Breinlich et al., 2018).

In terms of migration, the studies suggest that Brexit restrictions are likely to lead to a labour shortage[1] and to a marginal increase in wages for low-skill workers, but, most importantly, it is likely to have a significant reduction on GDP per capita and productivity (Portes and Forte, 2017; Campos and Timini, 2019), particularly in sectors that rely on EU highly skilled workers, such as in the financial sector (Sampson, 2017). Some studies even suggest that the economic impacts of migration are higher than the economic impacts of FDI or trade, mostly due to the relevance of intellectual capital and the skill composition of UK migration (Boubtane et al., 2016; Booth et al., 2015; Portes and Forte, 2017).

Another stream of research examined the Brexit spillover effects to EU countries (Suciu et al., 2018; Begg and Mushövel, 2016; Fernandes and Winters, 2018; Bisciari, 2019; Chen et al., 2018; Felbermayr et al., 2017) or on the US (Campello et al., 2020). These papers suggest that the negative economic impact of Brexit is more limited for the EU countries, with smaller open economies that are closely related to the UK being more severely affected than others. Considering only the trade channel, GDP is estimated to reduce by on average 0.6 percentage points for EU countries (Bisciari, 2019). The most risk-exposed EU regions are the Irish Republic and southern Germany, while regions in southern and eastern Europe are expected to be less affected by Brexit (Chen et al., 2018). In terms of immigration, Suciu et al. (2018) find that the EU countries will be positively influenced by the increase in the labour force, even though the impact is considerably different across countries.

Based on the literature review, we conclude that several studies assessed the implications of

---

[1]Brexit restricts access to labour inputs not only for firms with low-skilled sectors, but also in medium- and high-skilled sectors (Tiwasing, 2021). To overcome the labour shortage, Brown et al. (2019) suggest employing EU migrants, especially in the growth-oriented and high-skilled sectors.

Brexit on migration for the UK economy, but that fewer assess the EU countries. In our study, we evaluate the effects of Brexit on the UK citizens working and living in an EU country.

3   The 2016 Referendum

The relationship between the UK and the EU has always been complex. The UK joined the European Economic Community (EEC), the precursor of the EU, in 1973. Two years later, the UK held its first "in or out" referendum. The Remain faction won the referendum with a two-thirds majority. However, since then, the EEC has evolved into the European Union and further steps towards European integration were taken. Although the UK had supported the single market policy, it never joined the single currency, nor followed the route to proceed towards a closer union.

Over the last two decades, the clash between the lack of European identity and the intensification of European immigration triggered Euroscepticism amongst the British. While in government, the Labour Party supported EU free movement, however many in the Labour party and the Conservative Party became critical of the decision to give new member states' citizens access to labour markets following the enlargements of the EU in 2004 and 2007 and the EU refugee crises (Parker, 2017). This criticism paved the way for the anti-EU and anti-immigration discourse, which subsequently led David Cameron to promise to hold a referendum on EU membership in 2013, should the Conservative Party win the 2015 general elections.

The Conservative Party won the election and the referendum occurred on the 23rd of June 2016. A key pillar of the official Leave campaign was to promise to control immigration by restricting the free movement of labour from other EU countries. The "take back control" theme of the Leave campaign also extended to the free movement of goods and services. Those leading the campaign to Leave promised lower levels of immigration, while at the same time the maintenance of access to the EU single markets.[2] The Leave campaign suggested that the UK would retain the benefits of EU membership without meeting any of its obligations. For example, it advocated that there was little concern about the legal status of UK nationals living and working in EU countries as the "EU would be obliged to grant permanent settlement rights to Britons living in Ireland and mainland Europe" (Voteleave.eu). A further central topic of the referendum campaign was the fiscal burden of EU membership (Dennison and Geddes, 2018; Becker et al., 2017).

Although the outcome was expected to be tight, during the days before the referendum bookmakers and pollsters predicted that the Remain side would win (Born et al., 2019a). On the night of the referendum, the UK's most prominent polling firms and the exit poll results predicted 52% for Remain, and 48% for Leave. In fact, the frequency of Google search incidents for "Brexit Leave" increased only after the referendum (Born et al., 2019a). The result came as surprise with 51.9%

---

[2]The anti-immigration rhetoric was present in the official Leave campaign and to a larger extent in the unofficial Leave.EU.

of citizens of voting age deciding that the UK should leave the EU. The referendum turnout was 71.8%. While voters in England and Wales voted to leave (with about 53%, on average), Scotland and Northern Ireland voted to remain in the EU.

Various studies have enumerated several reasons to explain the referendum result, namely: scepticism about the benefits of globalisation, the feel of overregulation by or losing control to the EU Parliament, discontent about the handling of the migration crises by the EU (Jafari and Britz, 2017), the introduction of austerity measures and the growing importance of UK Independence Party - UKIP (Fetzer, 2019). Importantly, the macroeconomic context was largely irrelevant for the decision to hold a referendum and its outcome. In addition, the voting behaviour varied systematically in terms of sociodemographic and educational characteristics, as well as regional and industry structures (Becker et al., 2017).

On the 29th of March 2017, the UK government notified its intention to leave the EU, which came into force, after several extensions, on the 31st of January, 2020. During this period, there was major uncertainty regarding which rules would regulate EU migration to and from the UK, with these becoming an important topic for the negotiations between the UK and the EU (Vargas-Silva, 2016). It is therefore important to understand how UK citizens working and living in the EU reacted to the uncertainty caused by Brexit.

4   Data and Variables

Our data come from *Quadros de Pessoal* (QP). The QP is based on a mandatory survey which is submitted annually to the Portuguese Ministry of Employment and Social Security by firms with at least one employee. These data include information on an average of 2 million individuals each year, covering virtually all workers in the Portuguese private sector. At the worker level, the database contains information on gender, age, education, nationality, occupation, type of contract, working hours, and earnings for the month of October.

From the QP, we select all EU citizens employed in the private sector between 2000 and 2018. Accordingly, we exclude from our analysis non-European workers and workers with missing information on gender, age, type of contract and nationality. With the QP data, we compute the number of workers by European nationalities for the period from 2000 to 2018. Note that our data does not include information on unemployment, inactivity, retirement, self-employment, or employment as a public employee.

Figure 3 plots the evolution of the number of workers separately for the UK and the remaining EU nationalities. The figure depicts an increasing pattern of the number of workers up until 2009, followed by downward trend onwards until 2014. After 2014, the number of EU and UK workers increased, with a larger increase for the EU workers.

We complement these data with a set of socioeconomic predictor variables from World Bank

Database for the same period, namely: GDP per capita, unemployment rate, life expectancy at birth, and age dependency ratio.

5   Empirical Strategy

5.1   Synthetic control method

To investigate the impact of Brexit referendum on UK citizens working in Portugal, we use the synthetic control method (SCM), which was pioneered by Abadie and Gardeazabal (2003), Abadie et al. (2010) and Abadie et al. (2015). The SCM has been widely used to assess the impacts of political and economic decisions. See for example, Campos et al. (2019), Billmeier and Nannicini (2013) and Born et al. (2019b).

The SCM matches the outcome's predictors to ensure that the outcome variables imitate both the levels and the trend of the outcome before the event occurs. It therefore requires an appropriate comparison group: a counterfactual benchmark. In our analysis, the counterfactual is constructed using time series from a donor pool formed by the remaining EU citizens working in Portugal. We focus on EU countries, in order to ensure that countries are sufficiently homogenous to begin with. Next, we maintain all EU citizens for which data on all relevant macroeconomic variables and QP data are available. In this step, we eliminate citizens from Bulgaria, Croatia, Cyprus, Malta, and Luxembourg, as data for them was unavailable.

The combination of optimal weights assigned to the control countries is chosen to minimise the pre-referendum differences (i.e., from 2000 to 2015 in our sample) between the UK and its artificial "doppelganger" in terms of a set of predictors of the outcome during the pre-treatment period. Our predictor vector comprises GDP per capita, unemployment rate, life expectancy at birth, age dependency ratio, and the outcome variable (number of citizens working in Portugal) lagged for 2000 and 2010. Table 1 displays the country weights that define the doppelganger. Our approach leave us with 3 to 4 donor countries and annual observations for the period from 2000 to 2015. Workers from France, the Netherlands, and Germany are assigned the largest weights. In fact, France and the Netherlands account for 97% of the doppelganger dynamics when assessing the number of UK citizens working in Portugal in our baseline specification. There are also smaller contributions from Denmark and Romania in other specifications.[3]

Our identification assumption hinges on the notion that Brexit is a quasi-natural experiment and that the number of UK citizens working in Portugal would have evolved just as the doppelganger would, had it not been for the referendum. This assumption is plausible, as the vote was largely unanticipated and was unrelated to the macroeconomic performance of the domestic and host

---

[3]We conduct robustness analysis in order to assess the extent to which our results depend on individual countries being included in the donor pool and at the time of the treatment.

countries. Furthermore, we assume that the donor pool countries are not affected by the treatment.[4]

The outcome variable of interest is the number of UK citizens working in Portugal. In addition, we also consider several separations of this data in order to be able to properly take into consideration the heterogeneity in our sample regarding gender, education, and type of contract.

6   Results

We present the baseline results in Figure 4. The series represented by the continuous line shows the real number of UK citizens working in Portugal and the dashed line shows the estimated synthetic counterfactual. One needs to remember that the synthetic counterfactual represents the situation where Brexit did not take place. The difference between real and synthetic represents the treatment effect. The figure shows that the number of UK citizens working in Portugal would have been significantly higher in a counterfactual world, was the Remain vote to have won.[5] The effect seems to be increasing as the uncertainty related with the Brexit process continues to increase.

We now can quantify the effect of the referendum shock on the number of UK workers in Portugal. Table 2 presents the estimated reduction on the number of UK citizens living in Portugal. While the number of UK citizens working in Portugal in 2016, the year of the referendum, would have been 177 more if Brexit had not taken place. In the last year of our sample, this would have been 972 more, i.e., 40% more than what occurred in 2018. Following Andrews (2003) and by applying the end-of-sample instability test, the results show that the effect of Brexit on UK citizens working in Portugal is statistically significant for all the years after the referendum (p-value of 0.00, 0.05 and 0.05 for the years 2016, 2017 and 2018, respectively).

At this point, it is important to evaluate the match between UK workers and the donor pool. For one needs to remember that the synthetic counterfactual relies on three country weights (France, Netherlands and Germany) to match the 18 observations. In addition, Table 3 presents the average of the covariates for the real UK values, as well as the estimated values for the UK (synthetic UK) and for the donor pool for the pre-referendum period. We can infer from these results that before the referendum covariates average are matched well. The real and estimated series display a very high degree of co-movement, where the donor pool provides a meaningfully counterfactual to evaluate the effect of Brexit on UK citizens working in Portugal.

Another important issue concerns the causality of the effects, more specifically to evaluate whether the doppelganger gap is indeed caused by the Brexit vote. For this purpose, we provide a number of placebo experiments. First, we move the treatment date backwards and consider

---

[4]The SCM requires that the performance of the donor countries should track the actual UK citizens working in Portugal as closely as possible prior to the referendum and at the same time, it must be unaffected by Brexit. However, in a globalised world, such spillovers cannot be fully excluded.

[5]Our results are robust to using the number of employees in logarithms. Figure A1 in Appendix presents the results.

the dates of 2010 and 2014. For both instances we construct a new doppelganger using a similar approach to that used in the baseline specification. Figure A2 in the Appendix shows the results with the series for the real number of the UK citizens working in Portugal, and also the estimated benchmark obtained for the 2010 and 2014 placebo treatment in Panel (a) and (b), respectively. The placebo synthetic controls are parallel to the baseline doppelganger series and diverge from the real UK citizens after the Brexit referendum. Therefore, when we relax the assumption that the treatment effect materialises in 2015, we still continue to obtain similar results. Second, we estimate the synthetic controls while excluding the main donor countries of France and Netherlands, exposing both of them to a placebo treatment in 2015. Figure A3 in the Appendix presents the results. Once again, we continue to find that the placebo synthetic counterfactual are parallel to the baseline doppelganger series before the Brexit date and diverge from real number of UK citizens working in Portugal during the most recent years.[6] Lastly, we assess the contribution of each individual donor pool countries with non-zero weights by iteratively re-estimating the doppelganger gaps for all those countries that account for all the weights in our baseline synthetic control. Figure A4 shows that the UK doppelganger gap stands out in terms of size and declining trend for the post-Brexit period. Reassuringly, the results do not change: Brexit caused a substantial decline in the number of UK citizens working in Portugal.

Next, we evaluate whether this reduction arises from less new workers moving from the UK to Portugal, or as a result of more UK citizens returning to the UK after the referendum. To address this issue, we separate the effects by entry of UK workers in Panel (a), and by exit of UK workers in Panel (b), with incumbent UK workers being represented in Panel (c) of Figure 4. Incumbent UK workers are workers who neither entered nor exited Portugal during the period under analysis. Our findings suggest that mobility reduced, as both entry and exit were affected. More specifically, the number of UK workers moving to Portugal would have been significantly higher in a counterfactual world where the Remain vote would have won. Similarly, the number of exiting UK workers would also have been higher. In contrast, the number of incumbent workers would have been lower. Importantly, prior to Brexit, all flows behave similarly for both the UK citizens and the doppelganger citizens.

To evaluate which type of UK citizens are more likely to be affected by the Brexit, we divide our sample by gender in Figure 5. As we can see in this figure, the Brexit shock impacted males slightly more than females, although both were affected. We further divide the UK citizens working in Portugal according to their educational level into college and non-college educated workers in Figure 6. College workers are those that report possessing a Bachelor's degree or a more advanced degree. Our findings highlight the dramatically different pattern among these two groups: where college educated employees do not seem to be affected by Brexit in Panel (a), whereas non-college

---

[6]When we exclude France workers, the divergence from the real number of UK citizens working in Portugal occurs one year prior to the date of the referendum possibly anticipating the anti-EU sentiment and the growing importance of UK Independence Party.

workers, in Panel (b), were significantly hit by the shock.

Regarding the type of contract, we split our sample between workers with a permanent contract in Panel (a) and workers with a temporary contract in Panel (b) of Figure 7. Temporary employment includes workers with a fixed term contract. Consistent with the previous result, less-educated workers have jobs with less secure contracts, with temporary workers being more impacted by Brexit. The negative effect seems to have increased during the two years post-referendum.

7   Concluding remarks

The effect of Brexit remains one of most important issues on both the UK and EU political agendas. Labour mobility and immigration were major issues invoked by the UK to motivate its decision to leave the EU. In this study, we examine the effects of Brexit on the EU labour market, by specifically examining the cases of UK citizens. The unanticipated result of the referendum offers a quasi-natural experiment to study the impact of Brexit on UK citizens working in the EU, using Portugal as an example.

Using data from a mandatory matched employer-employee database, we find that the number of UK citizens working in Portugal reduced after the referendum, particularly for non-college, male workers with temporary contracts. This reduction is explained by a decrease in the number of new UK citizens moving to Portugal. We also find that those UK citizens who were working in Portugal previous to the referendum are less likely to leave Portugal.

This study has limitations, which in turn represent avenues for future research. Firstly, due to data limitations, only the short-term effects of Brexit are examined. Future research would benefit from a longer longitudinal analysis in order to better understand the long-term impact of Brexit. Similarly, we stress that in this study we focus on the consequences of the Brexit vote. When new data becomes available, it would be interesting to address the consequences of the actual Brexit process, rather than just the first effects of the referendum. Secondly, our data is restricted to just one country and, although this mitigates the cross-country effects, it also limits the generalisation of the results to other countries. Future studies need to unravel these results for a wider population of UK citizens working in different EU countries. It would also be instructive to further examine the consequences of Brexit in labour markets that are less restricted than Portugal, or to consider different types of labour markets. Given the unknown effects of Brexit in the EU labour, there is a clear and compelling case for carrying out much more empirical research on this phenomenon.
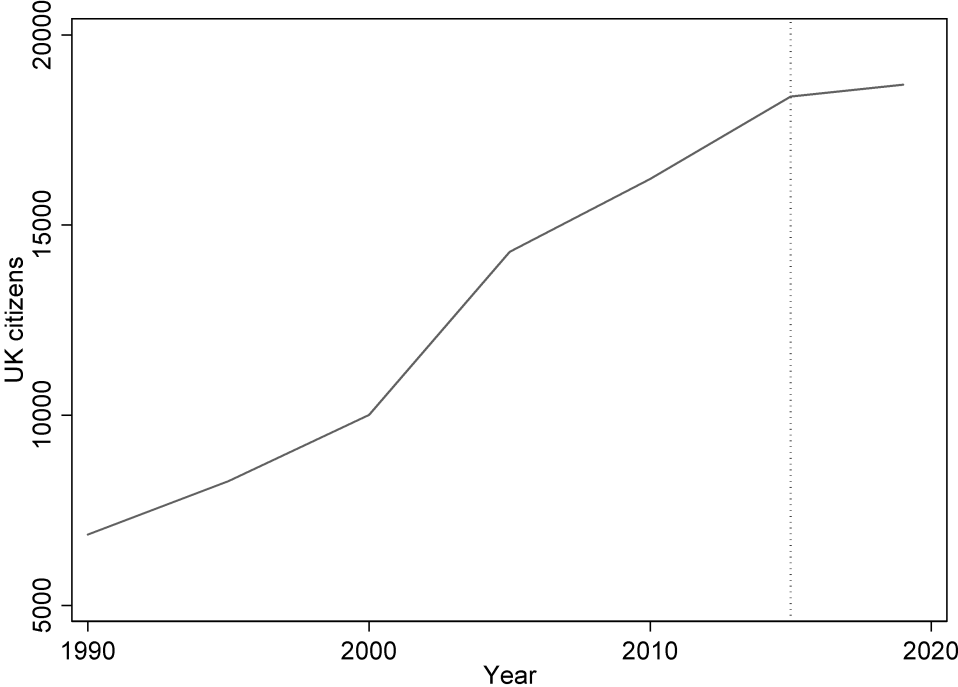
References

Abadie, A., Diamond, A., and Hainmueller, J. (2010). Synthetic control methods for comparative case studies: Estimating the effect of california's tobacco control program. *Journal of the American statistical Association*, 105(490):493–505.

Abadie, A., Diamond, A., and Hainmueller, J. (2015). Comparative politics and the synthetic control method. *American Journal of Political Science*, 59(2):495–510.

Abadie, A. and Gardeazabal, J. (2003). The economic costs of conflict: A case study of the basque country. *American Economic Review*, 93(1):113–132.

Ahmad, S., Limão, N., Oliver, S., and Shikher, S. (2020). Brexit uncertainty and its (dis) service effects. Technical report, National Bureau of Economic Research.

Andrews, D. W. (2003). End-of-sample instability tests. *Econometrica*, 71(6):1661–1694.

Becker, S. O., Fetzer, T., and Novy, D. (2017). Who voted for brexit? a comprehensive district-level analysis. *Economic Policy*, 32(92):601–650.

Begg, I. and Mushövel, F. (2016). The economic impact of brexit: jobs, growth and the public finances.

Berg, T., Saunders, A., Schäfer, L., and Steffen, S. (2021). Brexit and the contraction of syndicated lending. *Journal of Financial Economics*.

Billmeier, A. and Nannicini, T. (2013). Assessing economic liberalization episodes: A synthetic control approach. *Review of Economics and Statistics*, 95(3):983–1001.

Bisciari, P. (2019). A survey of the long-term impact of brexit on the uk and the eu27 economies. NBB Working Paper 366, Brussels.

Bloom, N., Bunn, P., Chen, S., Mizen, P., Smietanka, P., and Thwaites, G. (2019). The impact of brexit on uk firms. Technical report, National Bureau of Economic Research.

Booth, S., Howarth, C., Ruparel, R., and Swidlicki, P. (2015). What if...?: The consequences, challenges & opportunities facing britain outside eu.

Born, B., Müller, G. J., Schularick, M., and Sedláček, P. (2019a). The costs of economic nationalism: evidence from the brexit experiment. *The Economic Journal*, 129(623):2722–2744.

Born, B., Müller, G. J., Schularick, M., and Sedlacek, P. (2019b). Stable genius? the macroeconomic impact of trump. Technical report, CEPR Discussion Paper No. DP13798.

Boubtane, E., Dumont, J.-C., and Rault, C. (2016). Immigration and economic growth in the oecd countries 1986–2006. *Oxford Economic Papers*, 68(2):340–360.

Breinlich, H., Leromain, E., Novy, D., and Sampson, T. (2019). Exchange rates and consumer prices: Evidence from brexit.

Breinlich, H., Leromain, E., Novy, D., and Sampson, T. (2020). Voting with their money: Brexit and outward investment by uk firms. *European Economic Review*, 124:103400.

Breinlich, H., Leromain, E., Novy, D., Sampson, T., and Usman, A. (2018). The economic effects of brexit: Evidence from the stock market. *Fiscal Studies*, 39(4):581–623.

Brown, R., Liñares-Zegarra, J., and Wilson, J. O. (2019). The (potential) impact of brexit on uk smes: regional evidence and public policy implications. *Regional Studies*, 53(5):761–770.

Campello, M., Cortes, G. S., d'Almeida, F., and Kankanhalli, G. (2020). Global effects of the brexit referendum: Evidence from us corporations. Technical report, National Bureau of Economic Research.

Campos, N. F., Coricelli, F., and Moretti, L. (2019). Institutional integration and economic growth in europe. *Journal of Monetary Economics*, 103:88–104.

Campos, R. G. and Timini, J. (2019). An estimation of the effects of brexit on trade and migration. *Banco de Espana Occasional Paper*, (1912).

Chen, W., Los, B., McCann, P., Ortega-Argilés, R., Thissen, M., and van Oort, F. (2018). The continental divide? economic exposure to brexit in regions and countries on both sides of the channel. *Papers in regional science*, 97(1):25–54.

Crowley, M., Exton, O., and Han, L. (2018). Renegotiation of trade agreements and firm exporting decisions: evidence from the impact of brexit on uk exports. In *Society of International Economic Law (SIEL), Sixth Biennial Global Conference*.

Dennison, J. and Geddes, A. (2018). Brexit and the perils of 'europeanised' migration. *Journal of European Public Policy*, 25(8):1137–1153.

Dhingra, S., Huang, H., Ottaviano, G., Paulo Pessoa, J., Sampson, T., and Van Reenen, J. (2017). The costs and benefits of leaving the eu: trade effects. *Economic Policy*, 32(92):651–705.

Felbermayr, G., Fuest, C., Gröschl, J. K., and Stöhlker, D. (2017). Economic effects of brexit on the european economy. Technical report, EconPol Policy Report.

Fernandes, A. and Winters, L. A. (2018). The effect of exchange rate shocks on firm-level exports: evidence from the brexit vote.

Fetzer, T. (2019). Did austerity cause brexit? *American Economic Review*, 109(11):3849–86.

Graziano, A. G., Handley, K., and Limão, N. (2020). Brexit uncertainty: Trade externalities beyond europe. In *AEA Papers and Proceedings*, volume 110, pages 552–56.

Graziano, A. G., Handley, K., and Limao, N. (2021). Brexit uncertainty and trade disintegration. *The Economic Journal*, 131(635):1150–1185.

Hassan, T. A., Hollander, S., van Lent, L., and Tahoun, A. (2020). The global impact of brexit uncertainty. Technical report, National Bureau of Economic Research.

Jafari, Y. and Britz, W. (2017). Brexit–an economy-wide impact assessment looking into trade, immigration, and foreign direct investment.

Parker, O. (2017). Critical political economy, free movement and brexit: Beyond the progressive's dilemma. *The British journal of politics and international relations*, 19(3):479–496.

Portes, J. (2016). Immigration after brexit. *National Institute Economic Review*, 238(1):R13–R21.

Portes, J. (2021). Immigration and the uk economy after brexit.

Portes, J. and Forte, G. (2017). The economic impact of brexit-induced reductions in migration. *Oxford Review of Economic Policy*, 33(suppl_1):S31–S44.

Sampson, T. (2017). Brexit: the economics of international disintegration. *Journal of Economic perspectives*, 31(4):163–84.

Suciu, M.-C., Cristea, M., and NOJA, G. G. (2018). Immigration effects within the eu-brexit framework: An empirical analysis. *Economic Computation & Economic Cybernetics Studies & Research*, 52(4).

Tetlow, G. and Stojanovic, A. (2018). Understanding the economic impact of brexit. *Institute for government*, pages 2–76.

Tiwasing, P. (2021). Brexit and skill shortages: An empirical analysis of uk smes. *Economics and Business Letters*, 10(1):9–15.

United Nations, D. o. E. and Social Affairs, P. D. (2019). International migrant stock 2019. (united nations database, pop/db/mig/stock/rev.2019).

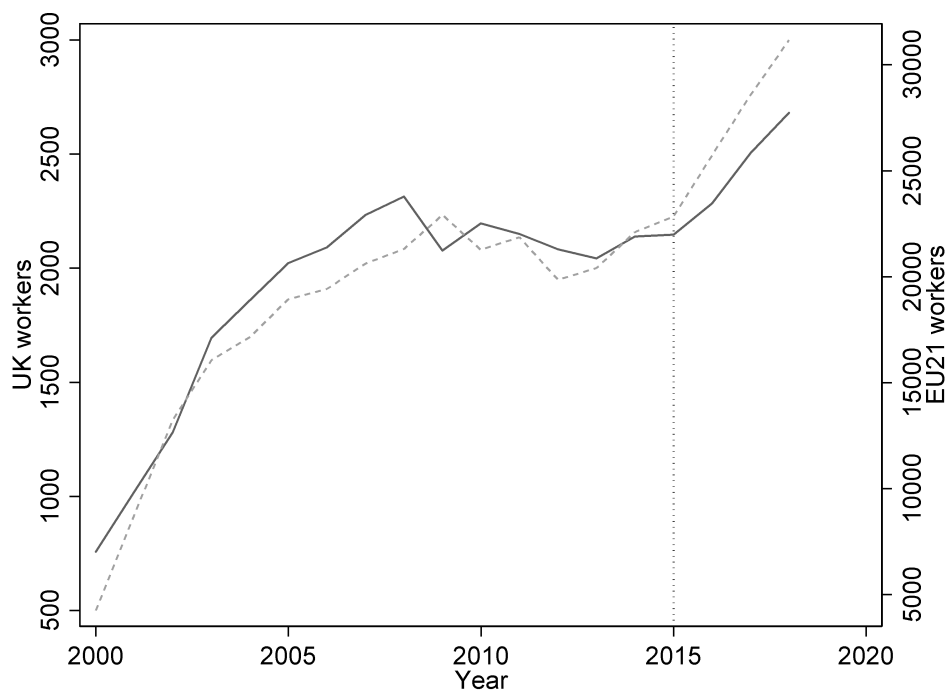Vargas-Silva, C. (2016). Eu migration to and from the uk after brexit. *Intereconomics*, 51(5):251–255.

Figures

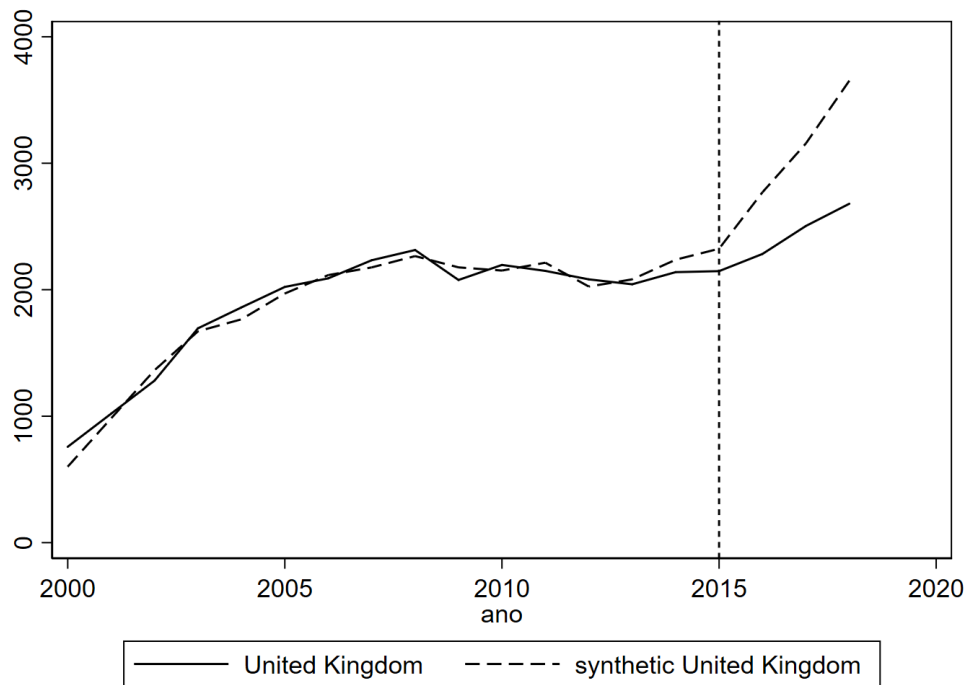Figure 1: UK citizens in Portugal

Note: The figure plots the evolution of UK citizens in Portugal. Retrieved from the United Nations and Social Affairs (2019).

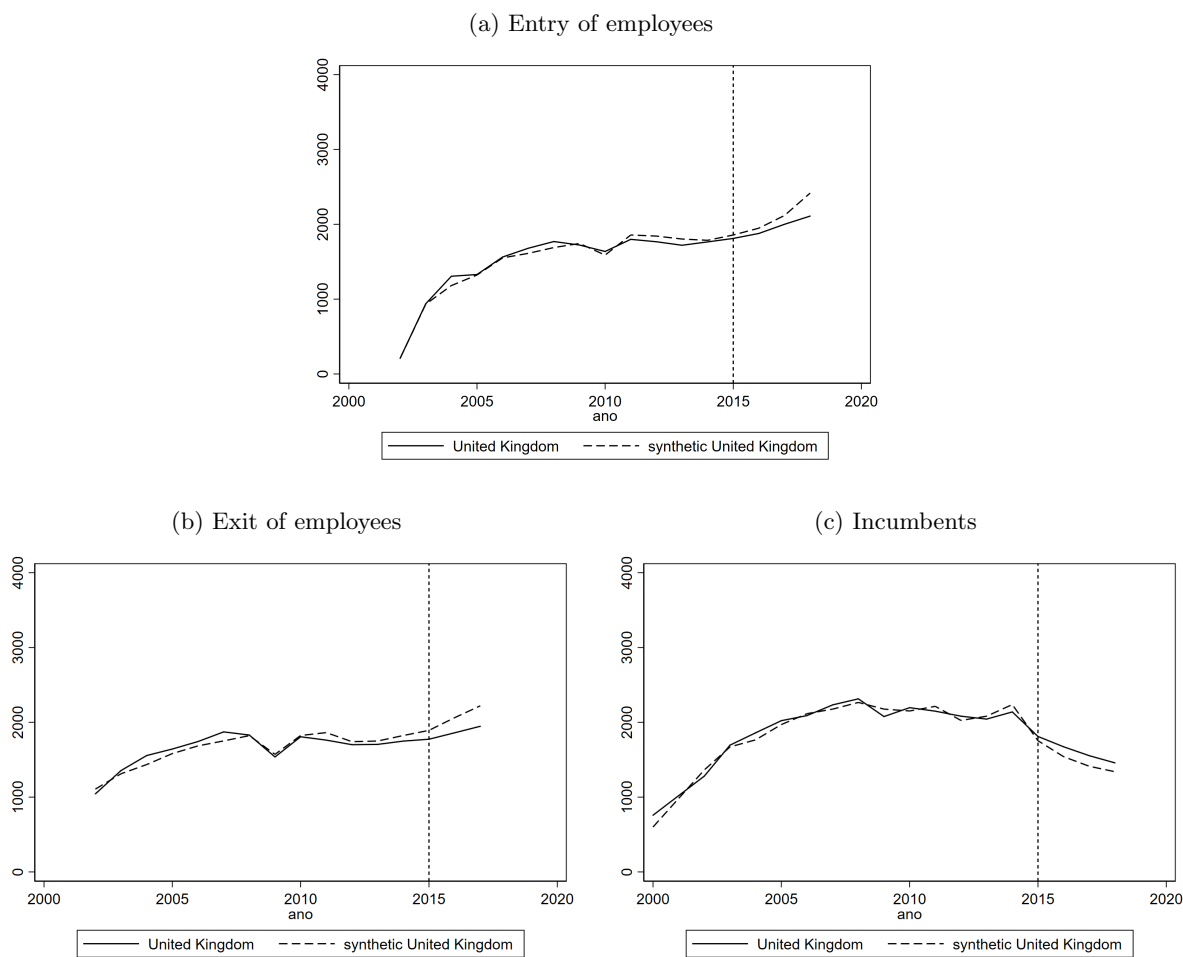Figure 2: Descriptive Statistics: Workers by Nationality

Note: The figure plots the evolution of the number of workers from QP data separately for UK citizens, in the left hand side (solid line), and the other European nationalities (dashed line) in the right hand-side (Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, the Netherlands, Poland, Romania, Slovak Republic, Slovenia, Spain and Sweden).
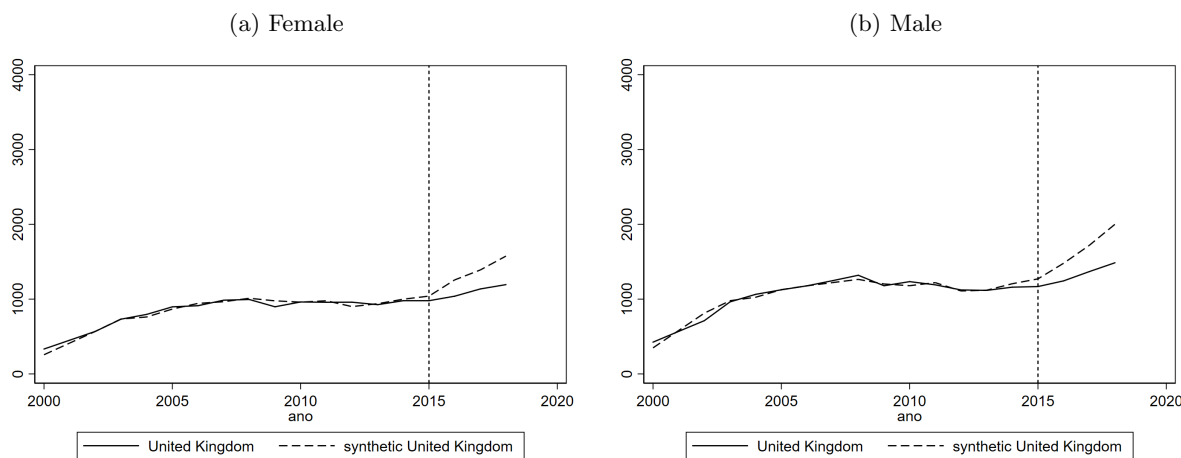
Figure 3: Baseline SCM Results

Note: The figure plots the evolution of the real number of UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line).

Figure 4: SCM – Entry, Exit, and Incumbents

(a) Entry of employees

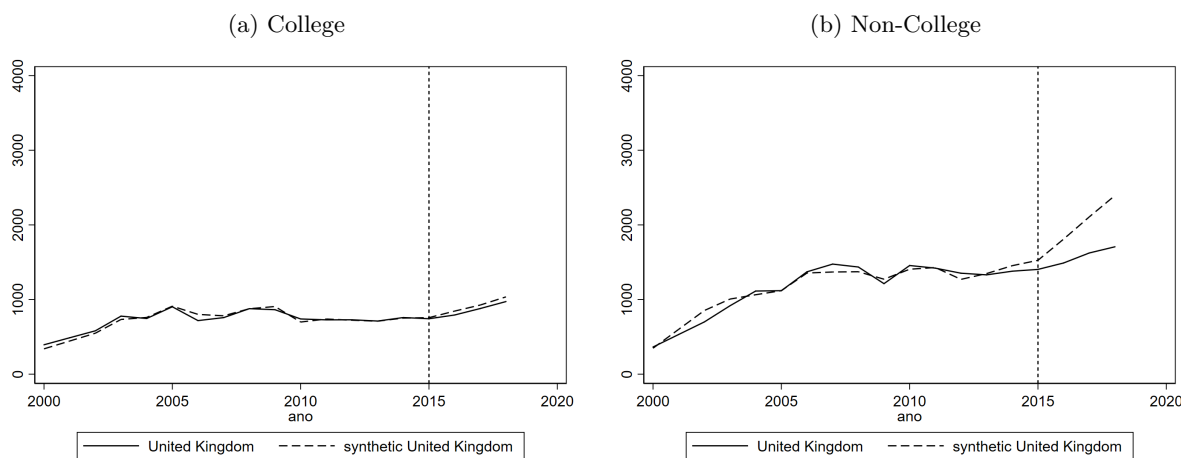(b) Exit of employees

(c) Incumbents

Note: The figure plots the evolution of the real number of UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line) separately for the entry of UK workers in Panel (a), the exit of UK workers in Panel (b), and incumbent UK workers in Panel (c).

Figure 5: SCM – Gender

(a) Female

(b) Male

Note: The figure plots the evolution of the real number of UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line) separately for female and male UK workers in Panel (a) and (b), respectively.

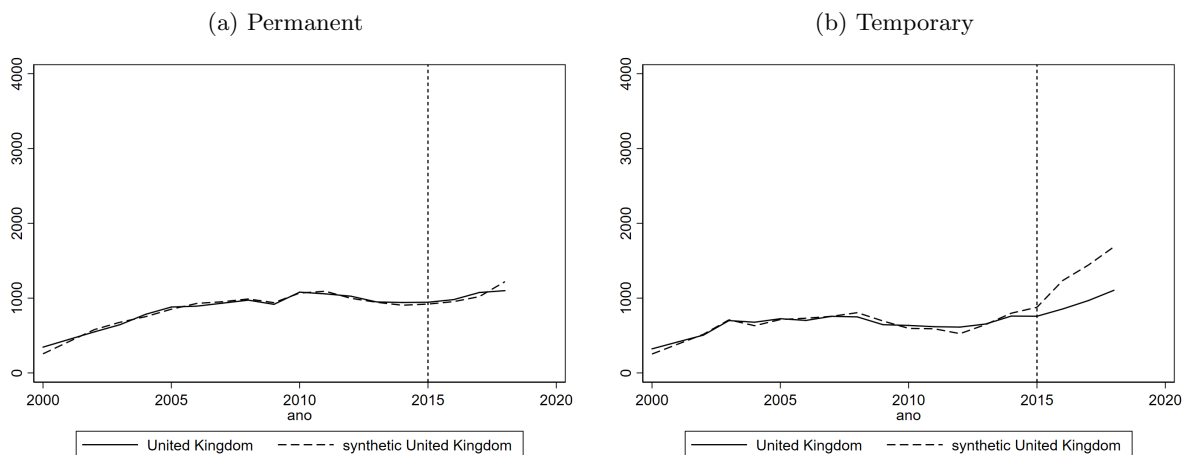Figure 6: SCM – Education

(a) College

(b) Non-College

Note: The figure plots the evolution of the real number of UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line) separately for college and non-college UK workers in Panel (a) and (b), respectively. College workers are those that report having a Bachelor's degree or a more advanced degree.

Figure 7: SCM – Type of contracts

(a) Permanent

(b) Temporary

Note: The figure plots the evolution of the real number of UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line) separately for permanent and temporary contracts in panel (a) and (b), respectively. Temporary employment includes workers whose job has a fixed term contract.

Tables

Table 1: Donor Pool Weights

Donor	Employees	Female	Male	College	Non-college	Permanent	Temporary
Austria	0	0	0	0	0	0	0
Belgium	0	0	0	0	0	0	0
Czech Republic	0	0	0	0	0	0	0
Denmark	0	0	0	0	0	0.027	0
Estonia	0	0	0	0	0	0	0
Finland	0	0	0	0	0	0	0
France	0.598	0.472	0.606	0.249	0.54	0.459	0.389
Germany	0.033	0.202	0.012	0.723	0	0	0.374
Greece	0	0	0	0	0	0	0
Hungary	0	0	0	0	0	0	0
Ireland	0	0	0	0	0	0	0
Italy	0	0	0	0	0	0	0
Latvia	0	0	0	0	0	0	0
Lithuania	0	0	0	0	0	0	0
Netherlands	0.369	0.327	0.376	0.028	0.456	0.515	0.233
Poland	0	0	0	0	0	0	0
Romania	0	0	0.006	0	0.004	0	0.003
Slovak Republic	0	0	0	0	0	0	0
Slovenia	0	0	0	0	0	0	0
Spain	0	0	0	0	0	0	0
Sweden	0	0	0	0	0	0	0

Note: The table presents the country weights that define the doppelganger.
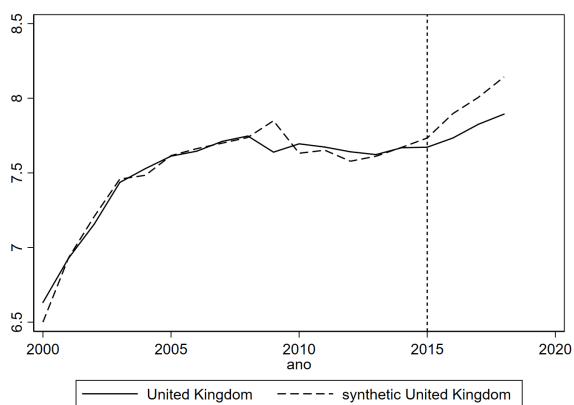
Table 2: Baseline SCM – Estimates and Inference

Year	Estimates	Standardized p-values
2016	-487.68	0.00
2017	-652.33	0.05
2018	-972.93	0.05

Table 3: Predictor Means for the Pre-treatment Period (2000-2014)

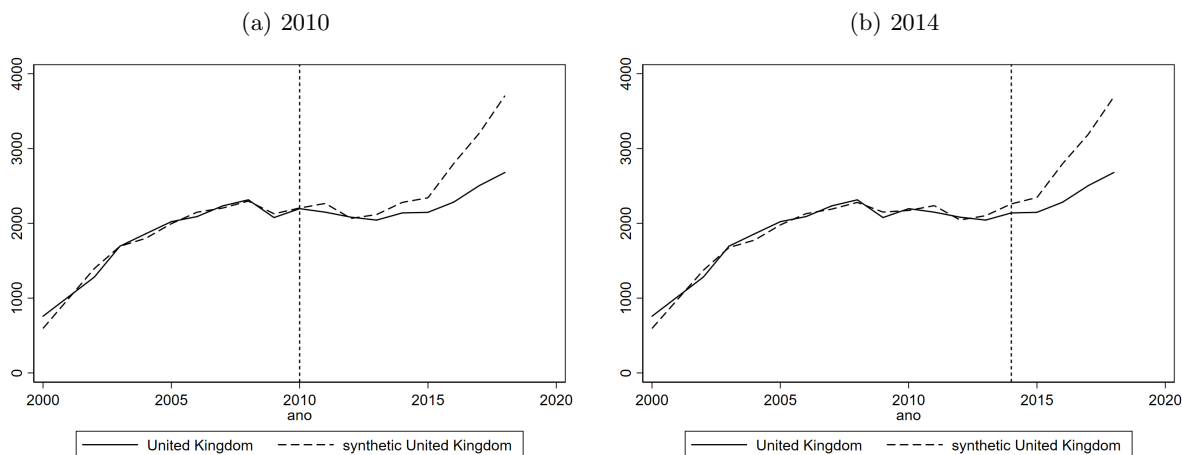|	United Kingdom	Synthetic United Kingdom	Donor Pool
GDP per capita	39100.56	43756.47	30441.66
Unemployment rate (%)	6.04	7.10	9.15
Life expectancy	79.54	80.41	77.57
Age dependency ratio	52.42	52.42	48.20

Online Appendices

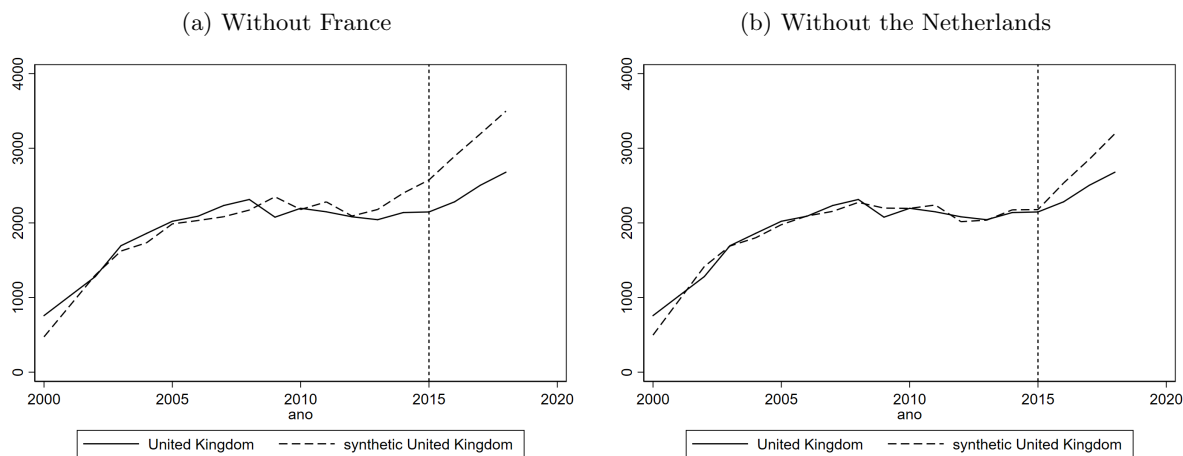Figure A1: SCM Robustness – number of employees in logarithms

Note: The figure plots the evolution of the real number of UK citizens working in Portugal in logarithm (solid line) and the estimated synthetic counterfactual (dashed line).

Figure A2: SCM Robustness – time placebos

(a) 2010   (b) 2014

Note: The figure plots the evolution of the real number of the UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line) considering the dates of 2010 and 2014 as treatment data in Panel (a) and (b), respectively.

Figure A3: SCM Robustness – without main donors

(a) Without France

(b) Without the Netherlands

Note: The figure plots the evolution of the real number of UK citizens working in Portugal (solid line) and the estimated synthetic counterfactual (dashed line) excluding workers from France and the Netherlands in Panel (a) and (b), respectively

Figure A4: SCM Robustness – doppelganger gap

Note: The figure shows the UK doppelganger gap baseline (back solid line) and the doppelganger gap of all countries included in the donor pools (grey lines).