The Response of Native and Immigrant Employment to the Initial Stages of the Covid-19 Pandemic: Evidence from the UK

Greta Morando*

Abstract

The employment of immigrants usually decreases more than that of natives during recessions. Was this also the case during the last downturn caused by the Covid-19 pandemic? Using UK data, this paper documents that immigrants coming from the EU suffered a larger decrease in employment than natives. This is likely due to the higher probability of EU immigrants to work in jobs which are less suitable to be carried out remotely. The negative impact of the pandemic on immigrants is an important phenomenon to understand as it could importantly affect future migration trends.

Keywords: Covid-19, immigration, employment, UK.

JEL Classification: F22, J01, J20, J61.

*UCL Social Research Institute, University College London, 55-59 Gordon Square, London WC1H 0NU. E-mail: g.morando@ucl.ac.uk

1 Introduction

Immigrants' economic outcomes are more strongly tied to the business cycle than those of natives in the short run. Orrenius and Zavodny (2009) show that in the USA the 2001 and 2007 recessions have affected more severely the employment rate of immigrants than of natives. The employment cycle of immigrants is above the cycle of natives during booms and below that of natives during economic troughs. Most of the cyclicality of immigrants' employment rate can be explained by their low education, their undocumented status, and the fact that most of them work in construction and manufacturing. Also for the USA, Cadena and Kovak (2016) find that immigrants have a higher propensity to geographically move in response to changes in the local labour demand. Immigrants' geographical mobility in response to local shocks re-equilibrates the labour market and results in an important decrease in the likelihood of natives to be unemployed due to local shocks.

The latest economic downturn caused by the global Covid-19 pandemic is very different from previous economic busts as it has been triggered by a global health crisis. It becomes thus relevant to understand whether the employment rates of immigrants and natives have been differently affected in this unprecedented context. There has been little analysis on the impact of the Covid-19 pandemic on the labour market outcomes of immigrants compared to natives. A notable exception is the analysis of Fasani and Mazza (2021). By using the most recent waves of the EU Labour Force Survey (2018) on 14 EU countries and the UK they build an index identifying workers' employment risk due to Covid-19 and simulate the impact of the pandemic on natives and immigrants. After conditioning on occupation and industry, non-EU immigrants are still more likely to be unemployed compared to natives by 4 percent, while the initial gap of 7 percent of EU immigrants disappears. Overall, they find that young, low educated and non-EU workers are those most exposed to employment risk and they predict that 9.3 million workers are at high or at very high risk of losing their

job because of the pandemic. Similarly, Borjas and Cassidy (2020) find that, in the USA,[1] immigrants are particularly affected in terms of job losses and that this is mainly explained by the nature of the job in which they sort into, which is less likely to allow for remote working. Indeed, illegal immigrants are those most negatively affected among the immigrant group.

By using the UK Labour Force Survey, this study contributes to this emerging literature by depicting the causal effect of the immediate outbreak of the Covid-19 pandemic on the actual (not simulated) employment of natives and immigrants. More precisely, this paper estimates the immediate effect of the pandemic, from April to September 2020, on the native and immigrant employment rates in the UK.[2] The UK is an interesting setting to study this topic as it is one of the most hurt countries by the pandemic. At the time of writing the UK is the fifth country in world for total cases of Covid-19.[3] Another interesting feature of the UK is that in the period considered there was a double standard migration system, depending on whether immigrants were from a EU or a non-EU country.[4] This paper thus studies the impact of the pandemic on two different populations of immigrants, notably those coming from an EU country and those coming from a non-EU country which, on average, differ in their socio-economic, demographic, and labour market characteristics.

The main outcome of interest of the paper is employment, as this is an important margin of short-term adjustment during economic downturns and we know that experiencing spells of unemployment has important long-run negative effects for individuals, especially for immigrants (Åslund and Rooth, 2007; Arulampalam et al., 2001; Hardoy and Schøne, 2014). However, other labour market outcomes are also studied. Figure 1 shows the time trends

---

[1]Several reports in the USA warned about Covid-19 disproportionally negatively affecting the migrant and Hispanic population (Gelatt, 2020; Gonzalez et al., 2020; Watson et al., 2020).

[2]In the UK, ethnicity, rather than the migrant dimension, has been explored with respect to Covid-19 enhancing inequality (e.g. Platt and Warwick, 2020; Proto and Quintana-Domeque, 2021). This is possibly due to the lack of representative samples of immigrants (but not of ethnic minorities) in surveys.

[3]March 2022 https://www.worldometers.info/coronavirus/#countries

[4]The migration system changed in January 2021; this period is not covered in this paper.

of the labour market outcomes studied between quarter 4 (Q4) in 2015 and quarter 3 (Q3) in 2020 by country of origin. The employment rate of EU immigrants and UK natives was around 97% in the pre-Covid-19 period. The employment rate of non-EU immigrants was instead stable around 95%. From this subfigure it is already clear that in Q2 and Q3 of 2020 there has been a decrease in the employment rate for all groups. The other subfigures show that EU immigrants have, on average, a higher activity status rate and higher weekly working hours compared to UK natives and non-EU immigrants. Overall for most outcomes, it is clear that the time trends changed after Q1 of 2020 for all groups considered, although to a different extent.

A difference-in-differences-type strategy is implemented where the employment rate in year 2020 (the *post*-pandemic year) is compared to the one in the previous four years (2016 to 2019, the *pre*-pandemic years). To account for seasonality, the labour market outcomes of the *treated* quarters (i.e. Q2 April-June and Q3 July-September in calendar year t) are compared to the labour market outcomes of the *control* quarters (i.e. Q4 October-December in calendar year $t-1$ and Q1 January-March in calendar year t).

When the regression is run separately be each group studied (i.e. UK natives, EU and non-EU immigrants), we find that all groups experienced a decreases in their employment rate in April-September 2020: EU immigrants experienced the biggest rise in unemployment, 67% compared to the pre-pandemic mean value, followed by non-EU immigrants and natives, which experienced a 24% and 12.5% increase, respectively.

Then, I test whether the changes in employment statistically significantly differ for natives and immigrants through a triple interaction (i.e. post year*treated quarters*EU immigrants and post year*treated quarters*non-EU immigrants). The decrease in employment for EU immigrants is about 2 percentage points more than for natives, statistically significant at 5% level. The decrease in employment for non-EU immigrants is instead not statistically significantly different from the one experienced by natives.

Conditioning on several socio-demographic characteristics, such as gender, region of residence, age, and education only slightly affects the estimated difference in employment between natives and EU and non-EU immigrants. This suggests that the different response in employment rate of immigrants and natives to the pandemic is likely to be mainly driven by other characteristics than socio-demographics traits, such as job characteristics. I descriptively analyse the sorting of natives and immigrants across different sectors and occupations. The higher decrease in employment faced by immigrants, and especially by those coming from EU countries, is likely to be explained by them mainly working in jobs which have been particularly affected by the pandemic and the lockdown measures because they are less likely to be carried out remotely, i.e. work at home.

This study also investigates whether the initial impact of the Covid-19 pandemic among natives and immigrants differ across other outcomes. We find, again, significant differences for EU immigrants compared to natives where the former are more importantly affected by the pandemic in terms of becoming inactive (by 0.6 percent), of receiving state benefits (by 33-77 percent, depending on the benefit considered), and of decreasing their weekly working hours (by an extra 40 minutes). Non-EU immigrants are more likely to be benefit recipients (in terms of Universal Credit) than natives, but this is the only outcome in which they were more negatively affected by the pandemic than natives. Interestingly, non-EU immigrants are more likely to shift into the labour force (from the inactivity status) during the pandemic, a pattern that differ from the one found for both natives and EU immigrants.

This paper suggests that immigrants' employment, as well as other labour market outcomes, was particularly badly hit by the pandemic in its initial stage especially for EU citizens. This is consistent with the previous literature showing that immigrants' employment is more affected by economic shocks in the short-term, which can be largely explained by the sectors in which they work in (e.g. Orrenius and Zavodny, 2009). The consequences of the pandemic on immigrants' labour market outcomes are important to understand as neg-

4

ative changes in their economic situation could alter their return or re-emigration intentions (Barker et al., 2020). In the UK, despite the difficulty in interpreting the data on current numbers of immigrants (Portes, 2022; Wadsworth, 2020; Resolution Foundation, 2020), there is evidence that the Covid-19 pandemic caused an exodus of non-UK born citizens, mainly EU citizens. ESCOE (2021) estimates an outflow of 1.3 million residents between 2019 and 2020, with London being particularly affected.[5] The findings in this paper indicate that the effect of the Covid-19 pandemic on immigrants could importantly affect the future trends and composition of the immigrant population in the UK.

2 Institutional settings

EU and non-EU immigration to the UK

Since 1998 more than a half of the population growth can be attributed to net migration and the other half has been due to natural changes, i.e. births/deaths (The Migration Observatory, 2019). If the births from non-UK born mothers are also considered as a migration outcome, between 2001 and 2016, 82% of population change was due to the phenomenon of migration. Roughly 50% was due to net migration once accounting for deaths of immigrants, and 32% due to births from immigrant parents after accounting for deaths of people with immigrant parents (Migration Watch UK, 2018). Between 1996 and 2019, immigrant workers accounted for 60 percent of the employment growth (Resolution Foundation, 2020).

The UK joined the European Communities on 1st January 1973. From 1992 free movement was guaranteed for EU citizens while non-EU immigration has been mainly dealt with a visa system. Following the 2016 Brexit referendum, in January 31st 2020 the UK withdrew from the European Union and since January 2021 a new points-based immigration system

---

[5]This could imply that the estimates on EU immigrants' employment could be downward bias if, for example, those immigrants who returned to their country would have been unemployed if they stayed in the UK.

has been in vigor.

Figure A1 shows that migrant inflows to the UK have importantly increased towards the end of the 90s, especially from non-EU countries: their entries raised from about 150,000 in 1997 to more than 350,000 in 2002. An important part of this was played by the favourable changes in immigration policies in both the origin countries and the UK (Hatton, 2005). Non-EU immigration stabilised in the period 2000-2011 just above 300,000. It did fall due to the restrictions on work, study and family immigration rules implemented in 2010-2012; it has since then increased again due to some pulled factors such as the increase in the demand from the UK of international students and of non-EU workers, especially in the health sector (COMPAS, 2020).

Since 2004 there has been an increase in the EU immigration due to the free movement rules being extended to the EU8 countries (i.e. Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia) which were joined by the EU2 countries (i.e. Bulgaria and Romania) in 2007. In years 2004 and 2015 the EU migration overtook the non-EU migration. However, the pattern reversed since 2016. EU immigration has been falling, especially from EU8 due to the 2016 referendum vote to leave the EU (ONS, 2020; The Migration Observatory, 2020).

The initial stages of Covid-19 in the UK

Despite a relatively successful roll-out of the vaccination programme, the UK experienced three waves of the Covid-19 pandemic in the period ranging from March 2020 to September 2021 resulting in 130,000 total deaths caused by Covid-19 (Government data, 2021) in this period. In March 2022, the total number of deaths reached 185,000.

The impact of the pandemic on the economy has been significant. To limit the negative effects of the first lockdown (23rd March 2020 - 10th May 2020) the *Coronavirus Job Retention Scheme* and the *Self-Employment Income Support Scheme* were introduced, alongside

an increase in the generosity of state benefits for low income families, mainly through the *Universal Credit* scheme. These measures were adequate to limit the loss in household net income, which, between the first and the second quarter of 2020, was calculated to be 6.9 percent on average, while the GDP per capita fell by 18.9 percent (Brewer and Tasseva, 2021).

Employment losses also have been importantly contained by the introduction of the furlough scheme. The magnitude of this intervention from the beginning of the pandemic up to January 2021 was equivalent to the entire UK workforce being off work for four weeks and one day; layoffs increased and hiring severely shrunk (Wadsworth, 2021). In quarter two of 2021 there were still 3 million workers either furloughed or out of work (Resolution Foundation, 2021). Unemployment rates re-stabilised towards pre-pandemic level only in the summer of 2021 to 4.6 percent.

As the pandemic affected mainly young people, London, and the hospitality sector (ONS, 2021), we would expect that immigrants would be particularly hit due to their young age, their high propensity to reside in London and their likelihood of being employed in the hospitality sector.

3   Data and descriptive statistics

The analsyis uses the Quarterly Labour Force Survey (LFS) in the period 2015/2020. The sample of this survey is composed of approximately 40,000 UK household and 100,000 individuals per quarter. These are interviewed for five successive waves at 3-monthly intervals and 20% of the sample is replaced every quarter. The sample is weighted to the most recent ONS population estimates and is thus representative of the UK population.

Since we are interested in the employment of the population in the labour force, only individuals aged 22-65 are retained. The migration status is defined by country of birth.

EU migrants represent about 6% of the UK population and immigrants from the rest of the world constitute about 10% of the UK population (5% from South, East, South-East Asia and Oceania, 3% from Africa, 1% from the American continent, and 1% from the rest of Europe and central Asia).

Table A1 shows the mean value of the main characteristics among the UK and the foreign born population. Immigrants are younger and more likely to have a university degree than natives (32.3% of natives have a degree vs. 41.2% of EU and 46.9% of non-EU immigrants). The large majority of immigrants arrived in the UK in the last 20 years (77% of EU and 61.5% of non-EU immigrants). The employment rate is the highest for EU immigrants (84.9%) followed by natives (78.7%) and non-EU immigrants (71.9%). Non-EU immigrants are those with the highest unemployment and inactivity rates. Immigrants are disproportionally concentrated in London.

4   Empirical strategy

To investigate the short-term effect of the pandemic on employment rates of natives and immigrants, a difference-in-differences-type analysis is implemented. The estimated equation is the following:

$$Z_{i\tau} = \alpha + \beta_1 Q2Q3_\tau + \beta_2 Q2Q3_\tau * Y2020_\tau + X_i'\beta_3 + \phi_\tau + \epsilon_{i\tau} \tag{1}$$

$Z_{i\tau}$ is a dummy variable indicating whether individual i is employed at time τ. Only recent years are considered in this analysis (from October 2015 to September 2020) to have a similar labour market and composition of the immigrant population in the pre-and post pandemic period.[6] This allows us to investigate the short-run effect of the first wave of Covid-19 and of the national lockdown. Quarters 2 and 3 (Q2Q3) correspond to April-June

---

[6]Varying the length of the pre-2020 years considered, however, does not affect the findings - additional results are available upon request.

and July-September, respectively; these two quarters in calendar year 2020 (Y2020) are the *treated* period of interest, as it is the period affected by the pandemic.[7] The coefficient of interest is β_2 which represents the average change in the outcome in the period April to September 2020 (i.e. Q2 and Q3 in 2020) vs. the period ranging from October 2019 to March 2020 (i.e. Q1 in 2019 and quarter 2 in 2020) compared to the difference in those quarters in the previous four years. Note that Q2, Q3, Q4 are in calendar year t and Q1 in calendar year $t-1$, e.g. Y2020 is composed of Q2 to Q4 in year 2020 and Q1 in 2019. The comparison of transitioning from Q4Q1 to Q2Q3 allows us to consider seasonality. The difference between these quarters in 2020 vs. those in the previous years is interpreted as the immediate effect of the first pick of the pandemic and the consequent lockdown measures adopted. ϕ_τ are year (as just defined) fixed effects.

First, the analysis is run separately for natives, EU and non-EU immigrants. Then, a specification with triple interactions[8] (i.e. $Q2Q3_\tau * Y2020_\tau * EU$ and $Q2Q3_\tau * Y2020_\tau * NonEU$) is implemented to test whether the effect of the pandemic statistically significantly differ across UK natives and EU and non-EU immigrants.

To test the validity of the identification strategy just outlined, I implement an event study analysis where the employment in quarters Q1, Q2 and Q3 in calendar year t is compared to the one in Q4 of calendar year $t-1$. This is done separately by each year considered (Y2016-Y2020). This exercise is meant to support the empirical method just discussed by showing that if the pandemic had any effect at all on employment, we should see the coefficients for Q2 and Q3 in Y2020 behaving significantly differently from Q2 and Q3 in the previous

---

[7]The UK Health and Social Care Secretary Matt Hancock announced that all unnecessary social contact should cease on 16th March 2020. However, it was not until 23rd March that the Prime Minister Boris Johnson announced that people must stay at home and certain businesses must close. Thus, we consider that the first national lockdown started on 23rd March. This means that the first week of lockdown is included in Q1 Y2020, which could downward bias the estimates of the immediate impact of the pandemic and lockdown.

[8]This is equivalent to a triple difference estimation, where the identification requires to observe parallel trends in the outcome across the groups considered (UK natives, EU and non-EU immigrants) in the pre-pandemic period (Olden and Møen, 2022), which is shown in Figure 1.

years when they are compared to their respective Q4. Figure 2 shows that the employment rates in Q1, Q2 and Q3 do not statistically significantly differ from that one in Q4 for Y2016-Y2019. However, in Q3 Y2020 (i.e. July-September 2020), the employment rate has statistically significantly decreased compared to Q4 in Y2020 (i.e. October-December 2019). This pattern is consistent with the statistics on the response of the UK labour market to the pandemic and is the same for UK natives, EU and non-EU immigrants, although the decrease in employment is just below 1 percentage point for natives and above 2 percentage points for both EU and non-EU immigrants. This analysis supports the identification strategy outlined above.

5   Results

The initial impact of the pandemic on employment

Panel I in Table 2 shows that in April-September 2020 the employment rate for the entire population decreased by 0.6 percentage points (pp henceforth). Employment fell among natives by 0.4pp and among EU and non-EU immigrants by 2pp and 1.3pp. These estimates are equivalent to an increase in the unemployment rate of 17.6%, 12.5%, 67%, and 24% for the whole population, natives, EU, and non-EU immigrants, respectively, when compared to the group-specific pre-pandemic unemployment rate. Controlling for factors such as gender and region of residence, does not affect the estimates, see Panel II in Table 2. This suggests that we can exclude that across the pre/post-pandemic period there were any compositional changes in terms of age, sex, geographic location, education, and year of arrival which confound the estimated effect of the pandemic on employment.

By implementing a triple interaction in the pooled sample we can test whether employment of natives and immigrants has been statistically significantly differently affected by the pandemic. Results are shown in the third and fourth panel of Table 2. The former specifi-

cation does not condition on any other controls, while the latter does condition on the full set of individual characteristics. Employment decreased for EU immigrants by 1.6pp more than natives statistically significant at 10% level. When we include the controls, the magnitude of the estimates increases to 1.9pp, statistically significant at 5% level. The decrease in employment of non-EU immigrants is instead not statistically significantly different from the one of natives in both specifications - with and without the controls.

Controlling for important individual characteristics, such as age, gender, and region of residence, only mighty affect the estimates.[9] To understand what could drive the different magnitude of the employment response of immigrants and natives to the pandemic, I plot the distribution of immigrants and natives across different occupations and industries in 2019.[10] Figure 3.a shows that foreign workers represent about 25% (15% EU and 10% non-EU) and 21% (9% EU and 12% non-EU) of workers in routine and semi-routine occupations, which are the lowest categories in the standard occupational classification. However, they also represent 20% of workers (8% EU and 12% non-EU) in the higher managerial and professional occupations. Thus, immigrants are not employed exclusivity in low-paid jobs. This reflects what has been found in the UK tax data, where about one in six people are immigrants among low-income groups and one in four people are immigrants among the top-income groups (Advani et al., 2020).

What is much more heterogeneous across immigrants and natives, is their allocation across different industries, see Figure 3.b. Immigrants represent about 34% (17% EU and

---

[9]As a robustness check, I additionally condition on the composition of EU and non-EU migrants (i.e. for EU migrants: EU15, EU8, EU2, other EU; and for non-EU migrants: non-EU Europe, Middle East and Central Asia, East Asia, South Asia, South East Asia, Sub-Saharan Africa, North Africa, North America, Central and South America, and Oceania) and on their specific time trends (this is possible only for years 2017-2020 given data availability with the current version of the LFS). This to make sure that changes in the composition of immigrants do not confound the effect of the pandemic. The findings are not affected when additionally considering changes in levels and trends of immigrant composition within the EU and non-EU samples.

[10]To describe the location of workers across occupations and industries I report the statistics in 2019, the last year before the pandemic. I checked that the distribution of natives and immigrants in industries and occupations is stable across all the years considered in the analysis, so that 2019 is actually representative of the distributions in occupation and industries in the previous years.

17% non-EU) of the accommodation and food services workers. Given that the hospitality sector, which employes 4%, 10% and 8% of native, EU immigrant, and non-EU immigrant employees (see Table 1), was among those mostly affected in the first stage of the pandemic, it is not surprising that immigrants' employment rate decreased to a greater extent than for natives. Furthermore, within the immigrant group, non-EU citizens constitute a higher share of employees in sectors more prone to be carried out remotely, such as financial and insurance activities in which 8% of EU and 13% of non-EU immigrant are employed in. Non-EU immigrants are also more likely than EU immigrants to work in sectors which were crucial during the pandemic, such as the health and social work sector, in which 10% of EU immigrants and 20% of non-EU immigrants work. The concentration of natives, EU and non-EU immigrants in certain industries appears to be the most important factor in explaining the differences in their employment changes during the pandemic.

The initial impact of the pandemic on additional outcomes

The effect of the Covid-19 pandemic has been particularly large among employees with low attachment to the labour market, such as workers with temporary contracts, women and less educated workers (Adams-Prassl et al., 2020; Villarreal and Yu, 2022). Hence, another outcome to consider is the transition in/out activity status. Table 3 shows the estimates for the additional outcomes. The decrease in activity status has been statistically significantly higher for EU immigrants compared to natives by 0.5pp. On the other hand, non-EU immigrants have seen an statistically significant increase in their activity status compared to natives by 2.8pp (and in absolute terms compared to the pre-pandemic period).

Due to the fall in the employment rate and the increase in the generosity of state benefits for low-income households, we would expect to see an increase in benefits for non-employed households.[11] UK natives, EU and non-EU immigrants increased their likelihood of being

---

[11]The entitlement to certain benefits depends on the activity status of other members of the households

Universal Credit recipient, the main benefit at work to help households during the pandemic. However, the increase in benefits was larger for both EU and non-EU immigrants compared to natives (by 1pp and 6pp, respectively, statistically significant at 5% level). The increase of recipients of the Jobseeker's Allowance was larger for EU immigrants compared to natives by 0.3pp statistically significant at 5% level. Very interestingly, for non-EU immigrants, instead there was a decrease in the uptake of this allowance during the pandemic, reflecting the pattern in the activity status outcome.

I finally investigate two additional outcomes among the sample of workers: hours worked and wages. For these two outcomes industry and occupation fixed effects[12] are included in the specification, thus, in this case any difference in job characteristics between natives and immigrants is accounted for. Actual hours worked by employed workers decreased by almost 5 hours per week in April-September 2020 across all the groups considered.[13] EU workers decreased their hours worked by an additional forty minutes compared to natives, statistically significantly at 10% level. The average weekly pay (deflated by the Consumer Price Index in 2020) of natives and EU immigrants was not affected by the pandemic,[14] indeed non-EU workers increased their pay by 3.7% compared to natives, statistically significant at 5% level.

---

and on their migration status (Brewer, 2020). For example, non-EU residents subject to immigration control (i.e. all non-EEA people granted work, study and family visas) cannot access most benefits, such as Universal Credit, until they get the indefinite leave to remain (i.e. the no Recourse to Public Funds condition). The analysis does not condition on any eligibility characteristic as these are unlikely to have immediately changed as a result of the pandemic. Thus we expect that a change in benefit uptake in the period affected by the pandemic is driven by a change in the economic situation of individuals.

[12]There are 605 industries (Standard Industrial Classification 4 digits) and 369 occupations (Standard Occupational Classification 4 digits).

[13]In the event study graph, available under request, it is clear that most of the adjustment in hours worked happened in April-June (compared to July-September) of 2020. Hence, the initial adjustment to Covid-19 happened through a decrease in working hours first, and, then, through a decrease in employment (July-September 2020).

[14]Average wages are usually stable across the business cycle as highly paid workers, which are more likely to be less affected by downturns, are more likely to stay in their job (Solon et al., 1994).

6   Conclusion

This paper shows that, despite the last economic downturn was driven by an exceptional global health crises, the heterogeneous consequences in terms of employment for natives and immigrants are very similar to those found in previous recessions. In the UK, EU immigrants have been suffering the highest decrease in employment rate in the first phase of the Covid-19 pandemic. Furthermore, other labour market outcomes adjusted to the pandemic to a different extent for immigrants and natives. The fact that immigrants, especially from EU countries, have been importantly negatively affected by Covid-19, alongside the new migration regime implemented since January 2021, is likely to importantly affect the upcoming composition of the migrant population in the UK. We leave it for future research, possibly drawing on novel longitudinal survey data, to provide evidence on the longer term impact of Covid-19 on immigrants' labour market outcomes and on their geographical reallocation within and outside the UK.

References

ADAMS-PRASSL, A., T. BONEVA, M. GOLIN, AND C. RAUH (2020): "Inequality in the Impact of the Coronavirus Shock: Evidence from Real Time Surveys," *Journal of Public Economics*, 189, 104245.

ADVANI, A., F. KOENIG, L. PESSINA, A. SUMMERS, ET AL. (2020): "Importing Inequality: Immigration and the Top 1 percent," Competitive Advantage in the Global Economy (CAGE).

ARULAMPALAM, W., P. GREGG, AND M. GREGORY (2001): "Introduction: unemployment scarring," *The Economic Journal*, 111, F577–F584.

ÅSLUND, O. AND D.-O. ROOTH (2007): "Do when and where matter? Initial labour market conditions and immigrant earnings," *The Economic Journal*, 117, 422–448.

BARKER, N., C. A. DAVIS, P. LÓPEZ-PEÑA, H. MITCHELL, A. M. MOBARAK, K. NAGUIB, M. E. REIMÃO, A. SHENOY, AND C. VERNOT (2020): "Migration and the labour market impacts of covid-19," Tech. rep., WIDER Working Paper.

BORJAS, G. J. AND H. CASSIDY (2020): "The Adverse Effect of the Covid-19 Labor Market Shock on Immigrant Employment," *NBER Working Paper*.

BREWER, M. (2020): "What are the effects of Covid-19 on poverty and inequality?" https://www.coronavirusandtheeconomy.com/question/what-are-effects-covid-19-poverty-and-inequality, Economic Obesrvatory.

BREWER, M. AND I. V. TASSEVA (2021): "Did the UK policy response to Covid-19 protect household incomes?" *The Journal of Economic Inequality*, 19, 433–458.

CADENA, B. C. AND B. K. KOVAK (2016): "Immigrants equilibrate local labor markets:

Evidence from the Great Recession," *American Economic Journal: Applied Economics*, 8, 257–90.

COMPAS (2020): "Who migrates to the UK and why?" `https://migrationobservatory.ox.ac.uk/resources/briefings/who-migrates-to-the-uk-and-why/`, COMPAS Briefing.

ESCOE (2021): "Estimating the UK population during the pandemic," `https://www.escoe.ac.uk/estimating-the-uk-population-during-the-pandemic/`, Regional and Labour Market Statistics, Economic Statistics Centre of Excellence.

FASANI, F. AND J. MAZZA (2021): "Being on the Frontline? Immigrant Workers in Europe and the COVID-19 Pandemic," Tech. rep., Centre for Research and Analysis of Migration (CReAM), Department of Economics, UCL.

GELATT, J. (2020): "Immigrant workers: Vital to the US COVID-19 response, disproportionately vulnerable," *Washington, DC: Migration Policy Institute*.

GONZALEZ, D., M. KARPMAN, G. M. KENNEY, S. ZUCKERMAN, ET AL. (2020): "Hispanic adults in families with noncitizens disproportionately feel the economic fallout from COVID-19," *Washington, DC: Urban Institute*, 13.

GOVERNMENT DATA (2021): `https://coronavirus.data.gov.uk/`.

HARDOY, I. AND P. SCHØNE (2014): "Does the impact of plant closure on labour market attachment differ between immigrants and native workers across the business cycle?" *Empirical Economics*, 46, 229–252.

HATTON, T. J. (2005): "Explaining trends in UK immigration," *Journal of Population Economics*, 18, 719–740.

16

MIGRATION WATCH UK (2018): "Impact of immigration on UK population growth," `https://www.migrationwatchuk.org/pdfs/MW452-impact-of-immigration-on-uk-population-growth.pdf`.

OLDEN, A. AND J. MØEN (2022): "The triple difference estimator," *Journal of Applied Econometrics*.

ONS (2020): "Migration Statistics Quarterly Report: May 2020," `https://ons.gov.uk`, Office for National Statistics.

ONS (2021): "Labour market overview, UK: May 2021," `https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/bulletins/uklabourmarket/may2021`, Office for National Statistics.

ORRENIUS, P. M. AND M. ZAVODNY (2009): *Tied to the business cycle: How immigrants fare in good and bad economic times*, Migration Policy Institute Washington, DC.

PLATT, L. AND R. WARWICK (2020): "COVID-19 and ethnic inequalities in England and Wales," *Fiscal Studies*, 41, 259–289.

PORTES, J. (2022): "Immigration and the UK Economy after Brexit," *Oxford Review of Economic Policy*, 38, 82–96.

PROTO, E. AND C. QUINTANA-DOMEQUE (2021): "COVID-19 and mental health deterioration by ethnicity and gender in the UK," *PloS one*, 16, e0244419.

RESOLUTION FOUNDATION (2020): "Home and away. The UK labour market in a post-Brexit world," `https://www.resolutionfoundation.org/publications/home-and-away/`, Resolution Foundation Briefing.

——— (2021): "Labour Market Outlook Q2 2021," `https://www.resolutionfoundation.org/publications/labour-market-outlook-q2-2021/`.

SOLON, G., R. BARSKY, AND J. A. PARKER (1994): "Measuring the cyclicality of real wages: how important is composition bias?" *The Quarterly Journal of Economics*, 109, 1–25.

THE MIGRATION OBSERVATORY (2019): "Briefing: The Impact of Migration on UK Population Growth," https://migrationobservatory.ox.ac.uk/wp-content/uploads/2016/04/Briefing-The-Impact-of-Migration-on-UK-Population-Growth-Dec-2019.pdf.

——— (2020): "Briefing: Net migration to the UK," https://migrationobservatory.ox.ac.uk/wp-content/uploads/2016/04/Briefing-Net-Migration-to-the-UK.pdf.

VILLARREAL, A. AND W.-H. YU (2022): "Research Note: Gender Differences in Employment During the COVID-19 Epidemic," *Demography*.

WADSWORTH, J. (2020): "1 Million Missing Immigrants (And 1.2 Million More UK-Born)," http://stateofworkingbritain.blogspot.com/2020/11/1-million-missing-immigrants-and-12.html, The State of Working Britain Blog.

——— (2021): "A year in the UK labour market: what's happened over the coronavirus pandemic?" https://www.economicsobservatory.com/a-year-in-the-uk-labour-market-whats-happened-over-the-coronavirus-pandemic, Economic Obesrvatory.

WATSON, T., H. HOYNES, AND C. EAST (2020): "Coronavirus' Disproportionate Economic Impacts on Immigrants," *ECONOFACT*.

Figures & Tables

Figure 1: Time trends in several labour market outcomes by country of origin
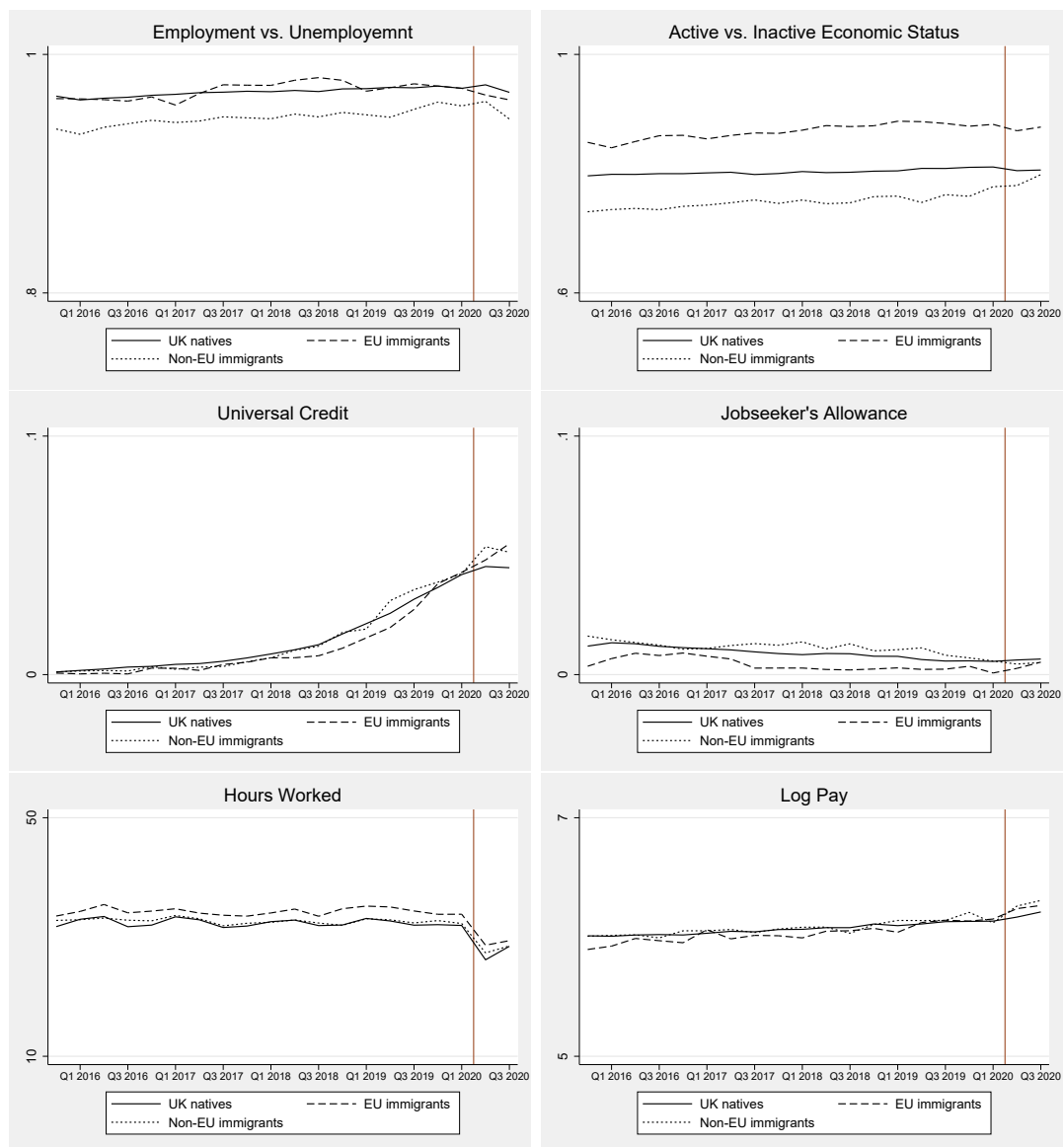
Source: Labour Force Survey from Q4 in 2015 to Q3 in 2020. Notes: Population of 22-65 years old. The vertical line between Q1 2020 and Q3 2020 denotes the start of the initial phase of the Covid-19 pandemic.

Figure 2: Event study
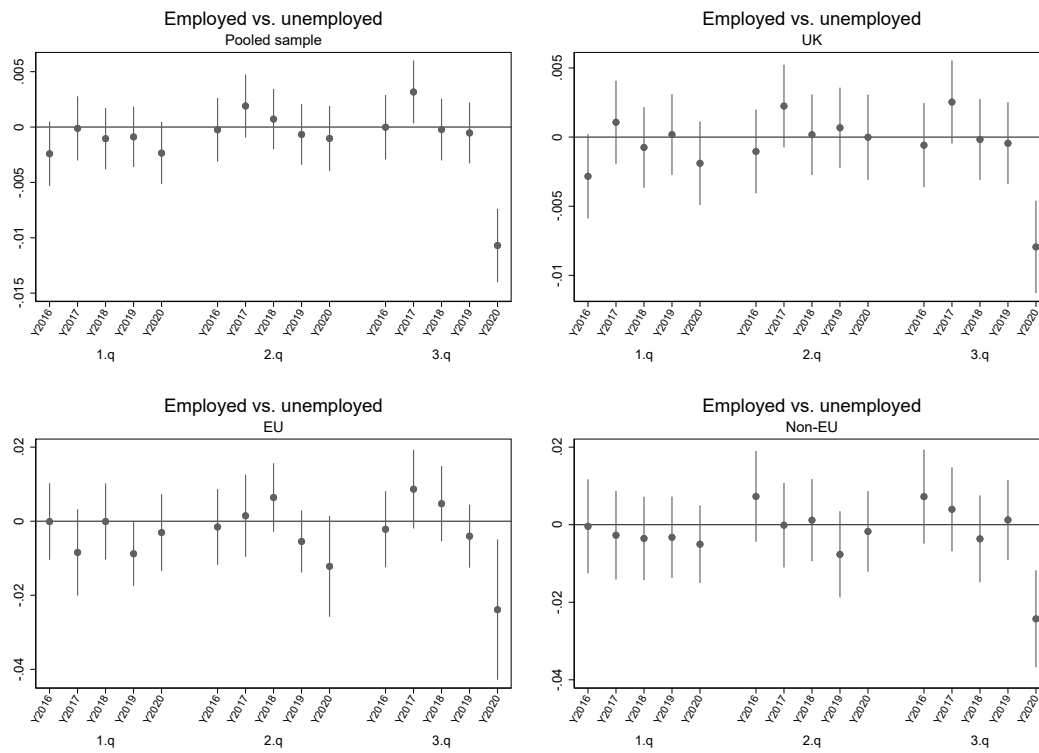
Source: Labour Force Survey from Q4 in 2015 to Q3 in 2020.
Notes: Quarters Q1 to Q3 vs. quarter Q4 of the previous calendar year. Each year is analysed separately in a linear probability model. 95% confidence intervals. Robust standard errors and population weight applied.

21

Figure 3: Percentage of native and immigrants within each occupation and industry, 2019

	UK	EU	Non-EU
Routine occupations	0.74	0.15	0.10
Semi-routine occupations	0.79	0.09	0.12
Higher managerial and profession	0.81	0.08	0.12
Lower supervisory and technical	0.81	0.11	0.09
Lower managerial and professiona	0.85	0.06	0.09
Intermediate occupations	0.87	0.05	0.07

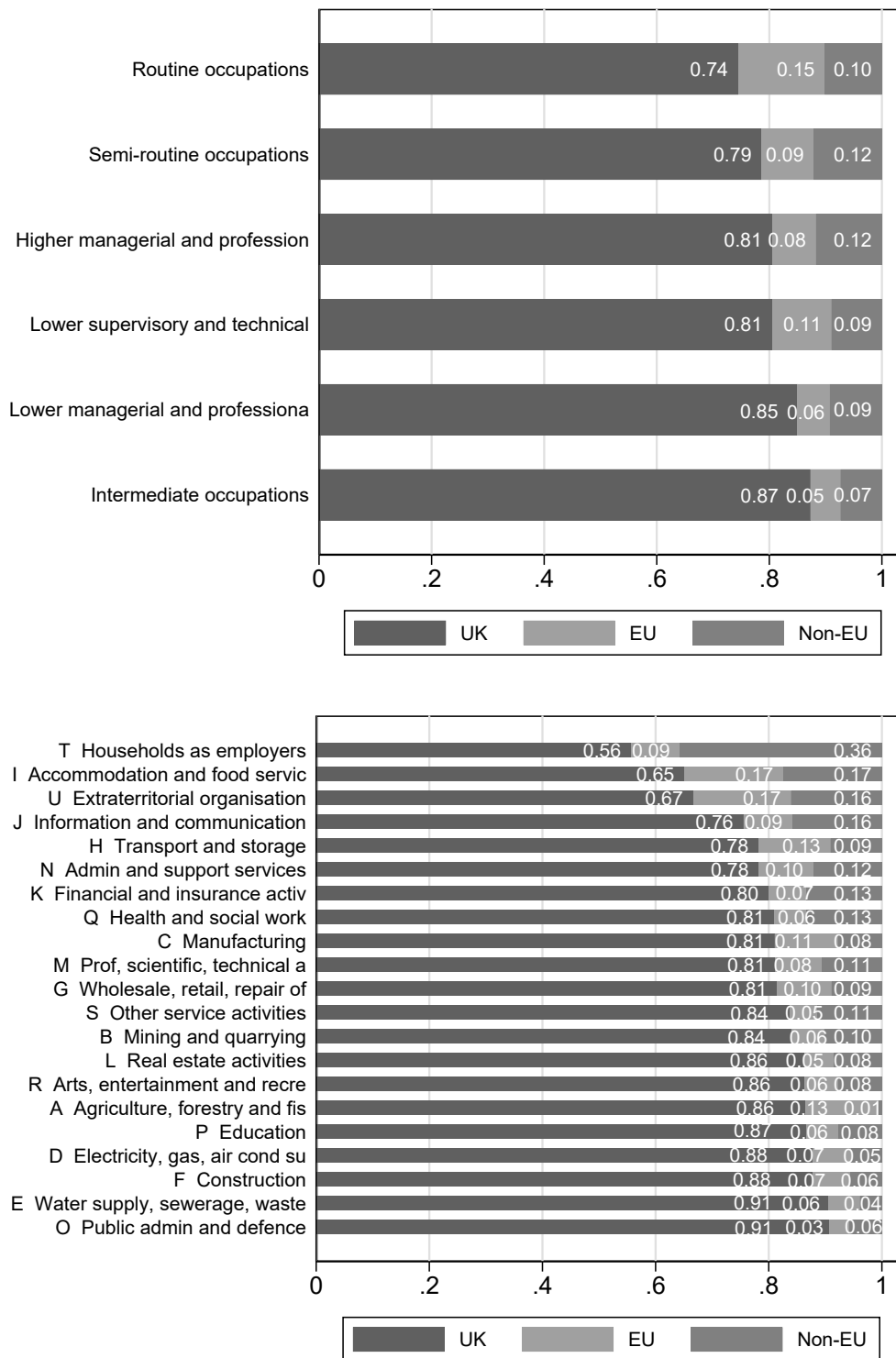|	UK	EU	Non-EU
T Households as employers	0.56	0.09	0.36
I Accommodation and food servic	0.65	0.17	0.17
U Extraterritorial organisation	0.67	0.17	0.16
J Information and communication	0.76	0.09	0.16
H Transport and storage	0.78	0.13	0.09
N Admin and support services	0.78	0.10	0.12
K Financial and insurance activ	0.80	0.07	0.13
Q Health and social work	0.81	0.06	0.13
C Manufacturing	0.81	0.11	0.08
M Prof, scientific, technical a	0.81	0.08	0.11
G Wholesale, retail, repair of	0.81	0.10	0.09
S Other service activities	0.84	0.05	0.11
B Mining and quarrying	0.84	0.06	0.10
L Real estate activities	0.86	0.05	0.08
R Arts, entertainment and recre	0.86	0.06	0.08
A Agriculture, forestry and fis	0.86	0.13	0.01
P Education	0.87	0.06	0.08
D Electricity, gas, air cond su	0.88	0.07	0.05
F Construction	0.88	0.07	0.06
E Water supply, sewerage, waste	0.91	0.06	0.04
O Public admin and defence	0.91	0.03	0.06

Source: Labour Force Survey 2019.
Notes: Occupation and industry by country of origin (UK, EU, or non-EU country) in year 2019. Population weight applied.

Table 1: Employment across industries within native and immigrant groups, 2019

	UK natives	EU immigrants	Non-EU immigrants
Agriculture	0.010	0.012	0.005
Manufacturing	0.102	0.145	0.081
Electricity	0.017	0.012	0.007
Construction	0.054	0.042	0.028
Wholesale	0.165	0.222	0.151
Accommodation	0.035	0.097	0.077
Information	0.084	0.084	0.129
Real estate	0.012	0.007	0.010
Prof	0.071	0.074	0.077
Admin	0.131	0.087	0.098
Education	0.126	0.083	0.092
Health	0.150	0.106	0.203
Arts	0.022	0.015	0.016
Other services	0.021	0.013	0.023
Households as employer	0.000	0.001	0.002

Source: Labour Force Survey 2019.

Notes: Mean of workers across industries by each subpopulation (UK natives, EU immigrants, and non-EU immigrants).

Table 2: The effect of the pandemic on employment

	Pooled	Natives	EU	Non-EU
		Panel I: no controls		
Q2Q3*Y2020	-0.006***	-0.004***	-0.020***	-0.013***
	(0.001)	(0.001)	(0.006)	(0.005)
		Panel II: with controls		
Q2Q3*Y2020	-0.006***	-0.004***	-0.020***	-0.013***
	(0.001)	(0.001)	(0.006)	(0.005)
		Panel III: interaction, no controls		
Q2Q3*Y2020*EU	-0.016*			
	(0.001)			
Q2Q3*Y2020*non-EU	0.002			
	(0.000)			
Q2Q3*Y2020	-0.005***			
	(0.000)			
		Panel IV: interaction, with controls		
Q2Q3*Y2020*EU	-0.019**			
	(0.002)			
Q2Q3*Y2020*non-EU	0.001			
	(0.000)			
Q2Q3*Y2020	-0.005**			
	(0.000)			
Obs.	771,336	643,765	53,717	73,854
Mean Y	0.966	0.968	0.970	0.946

Source: Labour Force Survey from Q4 in 2015 to Q3 in 2020.
Notes: Year defined as Q2, Q3, Q4 in calendar year t and Q1 in calendar year t-1. Controls: age, age squared, gender, region of residence, whether obtained a degree qualification, years since arrival, quarters, and whether UK, EU or non-EU born (the latter for the pooled sample analysis only). Mean Y reports the mean value of the outcome in the pre-pandemic period. Clustered s.e. at treatment level in parenthesis. Population weight applied. *$\rho < 0.10$ **$\rho < 0.05$ ***$\rho < 0.01$.

Table 3: The effect of the pandemic on economic status, benefits, hours worked and pay (interaction specification with controls)

	Active	Universal Credit	Jobseeker's Allowance	Hours worked	Log pay
Q2Q3*Y2020*EU	-0.005**	0.010**	0.003***	-0.389*	0.001
	(0.000)	(0.001)	(0.000)	(0.053)	(0.009)
Q2Q3*Y2020*non-EU	0.028**	0.006**	-0.004**	0.101	0.037**
	(0.001)	(0.000)	(0.000)	(0.027)	(0.001)
Q2Q3*Y2020	-0.007***	0.008***	0.002***	-4.603***	-0.003
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
Obs.	961,138	961,138	961,138	724,478	176,090
Mean Y	0.802	0.013	0.009	32.690	6.070

Source: Labour Force Survey from Q4 in 2015 to Q3 in 2020.

Notes: Year defined as Q2, Q3, Q4 in calendar year t and Q1 in calendar year t-1. Controls: age, age squared, gender, region of residence, whether obtained a degree qualification, years since arrival, quarters, and whether UK, EU or non-EU born. The specification for the last two outcomes additionally includes industry and occupation fixed effects. Mean Y reports the mean value of the outcome in the pre-pandemic period. Clustered s.e. at treatment level in parenthesis. Population weight applied. *$\rho < 0.10$ **$\rho < 0.05$ ***$\rho < 0.01$.

Supplementary Material

Figure A1: Inflows of EU and non-EU migrants in the UK, 1991-2018
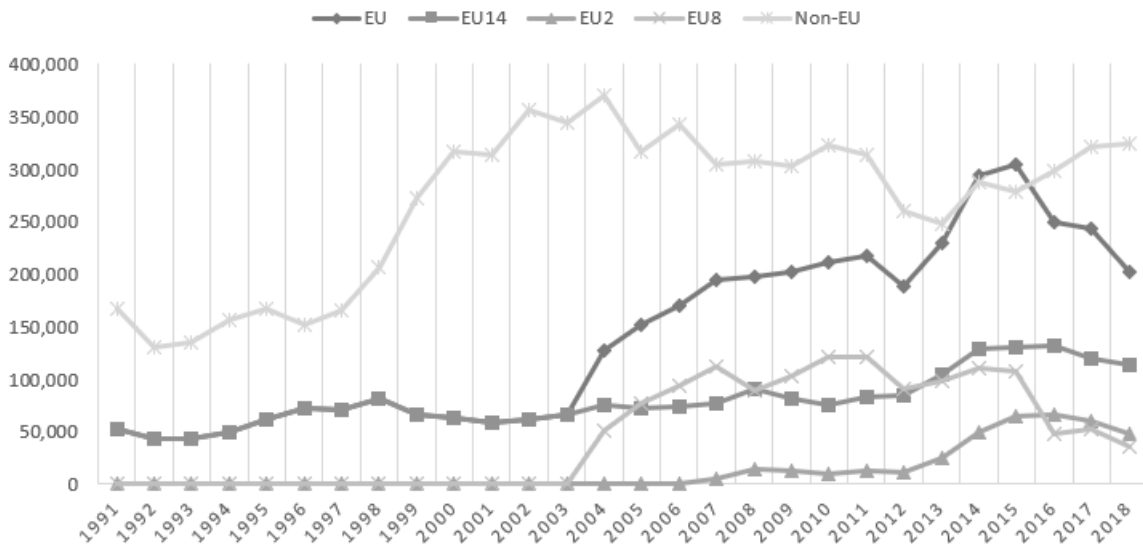
Source: Office for National Statistics.
Notes: EU14: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Republic of Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden; EU8: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia; EU2: Bulgaria, Romania.

Table A1: Summary statistics

	(1) UK	(2) EU	(3) Non-EU
Age	43.686	38.222	41.909
Female	0.502	0.525	0.526
Arrived in the UK: '50-'80		0.078	0.126
Arrived in the UK: '80-2000		0.151	0.259
Arrived in the UK: >2000		0.770	0.615
University degree	0.323	0.412	0.469
Region: North East	0.045	0.016	0.016
Region: North West	0.117	0.069	0.074
Region: Yorkshire and Humberside	0.087	0.057	0.052
Region: East Midlands	0.074	0.071	0.053
Region: West Midlands	0.087	0.068	0.085
Region: Eastern	0.094	0.098	0.074
Region: London	0.097	0.302	0.411
Region: South East	0.137	0.136	0.129
Region: South West	0.088	0.066	0.043
Region: Wales	0.052	0.023	0.016
Region: Scotland	0.091	0.069	0.040
Region: Northern Ireland	0.030	0.025	0.008
Activity status: in employment	0.787	0.849	0.719
Activity status: ILO unemployed	0.027	0.028	0.041
Activity status: inactive	0.186	0.123	0.239
Observations	801,633	62,079	98,633

Source: Labour Force Survey from from Q4 in 2015 to Q3 in 2020.
Notes: Main characteristics of 22 to 65 years old individuals by country of origin (UK, EU, non-EU). Population weight applied.