

# Differences in labour market outcomes between immigrant and UK-born employees: evidence from linked data

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## Abstract

Using data from the Annual Survey of Hours and Earnings linked to the 2011 Census of England and Wales, this paper examines labour market differences between first-generation immigrants and UK-born employees. The findings indicate that recent immigrants earn less, work longer hours, are less likely to work part-time, and are more likely to hold low-skilled or temporary jobs. Despite the narrowing influence of education and region, these disparities remain largely unexplained. In contrast, long-term immigrants exhibit outcomes similar to those of UK-born employees. Heterogeneity analysis further reveals varying gaps across immigrant groups, reflecting potential differences in outside options and cultural norms.

**Keywords:** Immigration; years of residence; labour market outcomes; linked data; regression; decomposition

**JEL classification:** J24; J31; J61; J71

## 1. Introduction

Migration flows and the proportion of the foreign-born population have increased substantially in recent decades in several advanced economies, including the UK. This growing diversity has brought questions surrounding the labour market performance of immigrants to the forefront of political and public debate. Indeed, considerable academic interest has focused on how immigrant employees fare in the labour markets of host economies, given its importance in determining immigrants' economic well-being (Adamopoulou and Kaya, 2020; Tamborini and Villarreal, 2021) and their contribution to the wider economy (Algan et al., 2010). Empirical evidence suggests that, in most countries, significant disparities exist in labour market outcomes, with immigrant employees experiencing lower levels of employment and being more likely to work in less stable and lower-paid jobs compared with employees born in the host country; see, for example, Smith (2006) for the

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US, Algan et al. (2010) for France, Germany, and the UK, and Dustmann and Frattini (2013) for 15 Western European countries.

In this paper, we contribute new evidence to the literature by using a novel linked dataset: the Annual Survey of Hours and Earnings (ASHE) linked to the 2011 Census of England and Wales. In contrast to much of the literature that relies on self-reported information, the ASHE provides detailed and accurate data on pay and hours, reported by employers from their payrolls based on a statutory request from the UK's national statistical authority. As such, it is considered the most comprehensive and accurate source of earnings information in the UK (Office for National Statistics, 2024). However, the ASHE lacks information on country of birth to distinguish between immigrant and UK-born employees. While the Census is considered the most reliable source of data on immigrants in the UK (Kierans, 2024), it offers only limited information on labour market outcomes. The newly linked ASHE–Census dataset addresses this gap by combining country of birth information from the Census with precise labour market records from the ASHE, covering around 0.5 percent of employees in England and Wales in 2011 (Phan et al., 2022). Additionally, the linked dataset provides a rich set of covariates – well-established determinants of labour market outcomes – enabling a comprehensive analysis of differences between UK-born and immigrant employees.

Our analysis employs established regression and decomposition methods. We define an immigrant as an individual born outside the UK. Unlike many UK studies that do not distinguish between immigrant and British-born minorities, we focus on the labour performance of first-generation immigrants.<sup>1</sup> Throughout the analysis, we distinguish between long-term immigrants (with 10 or more years of residence in the UK, as recorded in the 2011 Census) and more recent immigrants (with fewer than 10 years of residence) to capture heterogeneity in labour market outcomes based on years of residence.<sup>2</sup> Our comparison group is UK-born employees.

While much of the UK literature focuses primarily on pay (see Section 2 for an overview), we examine a broader range of outcomes to provide a

<sup>1</sup>Indeed, Dustmann and Fabbri (2005) argue that many important questions specifically concern first-generation immigrants, who represent a significant share of minorities in the UK. In Section 2, we provide a brief overview of the related UK literature.

<sup>2</sup>This approach aligns with the argument that distinguishing between long-term and recent immigrants helps capture differences in labour market integration, as more established immigrants are likely to exhibit similar cultural norms and labour market behaviours to employees born in the host country and are less inclined to accept lower wages compared with newer arrivals (Edo, 2015). Indeed, international evidence indicates that immigrants typically require 10 years or more in the labour market to catch up with native-born workers (e.g., Chiswick, 1978; Lee et al., 2022).

more complete picture of the labour market differences. The first outcome we consider is gross weekly pay. Because differences in weekly pay may result from gross hourly pay and/or weekly paid hours, we also analyse these outcomes. Additionally, we investigate differences in the probability of part-time employment, employment in low-skilled occupations, and temporary contracts – outcomes often associated with low pay (see, e.g., Booth et al., 2002; Nightingale, 2019).<sup>3</sup>

We find a significant gap in gross weekly pay between more recent immigrants and UK-born employees, with more recent immigrants earning less. This gap is driven by differences in gross hourly pay rather than weekly paid hours, as recent immigrants tend to work longer hours. Consistent with this, they are also less likely to be employed in part-time roles. However, they are more likely to be employed in low-skilled occupations and temporary positions. Regression-based estimates of these differences, which account for observed productivity-related characteristics (such as education, region, and tenure), are smaller but remain significant. Specifically, more recent immigrants earn 5 percent less on average, work 4 percent longer weekly hours, are 6.5 percentage points less likely to work part-time, 6.7 percentage points more likely to be in low-skilled occupations, and 2.9 percentage points more likely to hold temporary jobs than observationally equivalent UK-born employees.

The labour market outcomes for long-term immigrants differ markedly from those of more recent immigrants. Long-term immigrants earn, on average, 13 percent more than UK-born employees, whether measured weekly or hourly, and are 2.8 percentage points less likely to be in low-skilled occupations. However, after accounting for observed productivity-related characteristics of employees, these differences become statistically insignificant, indicating that the labour market performance of long-term immigrants is broadly comparable to that of UK-born employees with similar characteristics. The only notable significant difference is the lower probability of part-time employment among long-term immigrants relative to comparable UK-born employees, though this difference is much smaller than that of more recent immigrants (2.3 percentage points versus 6.5 percentage points).

Our sensitivity analysis confirms the robustness of these patterns across a wide range of checks, including the potential influence of unobservables, and in the case of pay and working hours, the results are not driven by overtime or shift work. Further heterogeneity analyses by ethnicity, gender, country of

<sup>3</sup>Temporary employment in Britain is found to be also associated with lower levels of job satisfaction, and less work-related training compared with permanent employment, although it is often seen as a pathway to securing permanent positions (see Booth et al., 2002).

birth, and (a proxy for) reason for migration reveal that the differences between long-term and more recent immigrants are evident across various groups, with wider gaps identified for non-White immigrants, female immigrants, those from the New Commonwealth or other countries, and those likely to have initially arrived in the UK for reasons other than employment.

Our decomposition analysis reveals that the higher concentration of non-UK-born employees in high-paid regions, such as London, and their greater likelihood of holding a university degree compared with UK-born individuals, narrow the gaps in pay and the likelihood of employment in low-skilled occupations for recent immigrants relative to UK-born employees, and also explain the favourable labour market outcomes of long-term immigrants. However, regardless of years of residence in the UK, differences in ethnicity offset these advantages, primarily because most non-UK-born employees are non-White, reinforcing concerns about ethnic disparities in the UK labour market (see, e.g., Blackaby et al., 1998, 2002; Phan et al., 2022; Forth et al., 2023b). Nevertheless, the differences in labour market outcomes for recent immigrants relative to UK-born employees remain largely unexplained, with the unexplained gaps being considerably wider than those for long-term immigrants.

Our findings align with the argument that immigrant groups with outside options and cultural norms similar to those of employees born in the host country are less likely to accept lower-paid roles and harder working conditions than other immigrants (Edo, 2015). With additional years of residence – for example, through acquiring host-country-specific skills, building networks, and/or obtaining citizenship status, such as through naturalization – immigrants' employment prospects improve (see, among others, Bratsberg et al., 2002; Adamopoulou and Kaya, 2020; Govind, 2021; Gathmann and Garbers, 2023). Additionally, cultural norms may play a role, as immigrants' initial attitudes toward wages and working conditions may be shaped by the conditions in their country of origin (Wilson and Jaynes, 2000).<sup>4</sup> Over time, with greater familiarity with the host country's labour market, immigrants' expectations and preferences may adjust. As such, long-term immigrants are more likely than more recent immigrants to exhibit labour market behaviour similar to that of employees born in the host country.<sup>5</sup>

<sup>4</sup>Consistent with this explanation, Galbis (2020) shows that, in the French context, immigrants are disproportionately employed in sectors with relatively high injury rates, and argues that this may reflect not only more limited outside options but also differences in risk preferences regarding job characteristics – preferences that may, in part, be shaped by work conditions in their countries of origin.

<sup>5</sup>Alternative mechanisms include compositional differences across immigrant cohorts over time, selective out-migration, where immigrants with lower labour market performance are more likely to return to their country of origin than those who remain in the host country (Borjas, 1989;

Consistent with this, we observe larger gaps across all labour market outcomes for more recent immigrants compared with long-term immigrants, even after accounting for a wide range of productivity-related characteristics. Our further heterogeneity analysis reinforces this explanation, revealing wider gaps for immigrant groups that face greater barriers in the labour market and those with different cultural norms compared with UK-born employees. Moreover, the significance of education and work region – likely key determinants of employment prospects, as identified in our decomposition analysis – provides additional support.

## 2. Background

The international literature investigating disparities in labour market outcomes between immigrant employees and employees born in the host country is vast; for recent reviews, see Edo et al. (2020) and Guzi et al. (2021). In the UK context, previous evidence primarily focuses on pay and often relies on household surveys, which have small sample sizes in some cases (e.g., the British Household Panel Survey) or collect self-reported information on pay and other labour market outcomes (e.g., the Labour Force Survey). As such, these surveys are subject to more limited response rates and greater measurement error (for a similar discussion, see Schaefer and Singleton, 2023).

For instance, Chiswick (1980) utilizes data from the 1972 General Household Survey (GHS) and finds that White male immigrants have similar earning patterns to British-born males. However, conditional on observed productivity-related characteristics, earnings of immigrants from ethnic minority groups are around 25 percent lower, and this difference persists regardless of the time spent in the UK. Using the same data source for the period 1973–1992 and focusing solely on men, Bell (1997) finds comparable results. While White immigrants initially have a pay advantage compared with UK-born workers, immigrants from certain ethnic minority groups experience an earnings disadvantage. Contrary to Chiswick (1980), however, this disadvantage is found to diminish over time spent in the UK. Using data from the 1979–2004 Labour Force Survey (LFS) and expanding the analysis to include females, Dustmann and Fabbri (2005) find a 40 percent pay disadvantage for non-White immigrants, although this varies with immigrants' region of origin. More recently, Algan et al. (2010) analysing data from the 1993–2007 LFS, find significant pay gaps between first-generation

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Constant and Massey, 2003; Dustmann and Weiss, 2007), or a reduction in discrimination (Govind, 2021). For a further discussion, see Section 4.

immigrants and UK-born individuals, which are found to be substantially higher than those observed in France or Germany. They also show that relative earnings improve substantially for second-generation immigrants.

To the best of our knowledge, exceptions to the reliance on household survey data in the UK literature include Dickens and McKnight (2008) and Lemos (2013, 2017, 2018), who use data from the Lifetime Labour Market Database (LLMDB), derived from several administrative datasets linked by a unique individual identifier (i.e., the national insurance number). Additionally, the study by Phan et al. (2022) is the first to utilize data from the linked ASHE–Census dataset. However, similar to much of the UK literature based on household surveys, this evidence primarily focuses on pay.<sup>6</sup>

Because of a lack of information on hours, studies utilizing data from the LLMDB focus on weekly rather than hourly pay and, as such, are unable to account for potential differences in working hours between immigrant and UK-born employees. Another limitation of the LLMDB is the absence of other personal characteristics, common in administrative datasets, particularly education, which is found to be particularly important in analysing the labour market performance of immigrants in the UK context (see, e.g., Dustmann and Fabbri, 2005). Among these studies, the analysis by Dickens and McKnight (2008) for the 1978–2003 period shows a large earnings gap for all immigrant groups, including White European immigrants, contrasting with much of the UK literature. Lemos (2013) explores the earnings gap between UK-born and overseas-born individuals at entry and over time between 1978 and 2006, finding that immigrants from more recent cohorts fare better than earlier ones at entry. The earnings of more recent immigrants are also found to catch up faster with the earnings of UK-born individuals. Exploiting the longitudinal dimension of the same data source, Lemos (2017) shows that while low-paid immigrants, who are found to be disproportionately non-White, face an earnings penalty compared with similar UK-born workers, higher-paid immigrants, who are disproportionately White, do not experience such a penalty. In a follow-up work, Lemos (2018) focuses on both employment

<sup>6</sup>Exceptions in the literature include Elliott and Lindley (2008), who investigate the occupational attainment of non-White employees by using data from the 1993–2003 LFS. Additionally, utilizing the work histories of 600 migrant residents in London boroughs, Gazioglu and Sloane (1994) explore immigrants' (undesirable) working conditions. More recently, in a study based on data from the European Union (EU) LFS and using a multidimensional index, Garcia-Serrano and Hernanz (2023) compare the "job quality" of native-born and foreign-born workers across European countries. Their results for the UK show that only workers coming from the new EU member states (which joined the EU in 2004, 2007, and 2013) exhibit lower job quality than UK-born employees.

and pay, finding that immigrant–native gaps vary across gender, continents of nationality, and lengths of stay.

The analysis of Phan et al. (2022), using the data from the ASHE–Census dataset, reveals substantial wage gaps between White and ethnic minority employees, particularly among higher earners, which are unexplained by factors such as employer characteristics or individual attributes. Their findings show that firm-specific wage effects account for a sizeable portion of wage gaps between White and ethnic minority employees, particularly among higher earners.<sup>7</sup> However, similar to much of the existing literature for the UK, their focus remains on ethnicity pay differentials, without distinguishing between immigrant and UK-born employees.

### 3. Data

Our analysis utilizes data from a novel source, the payroll-based ASHE linked to the 2011 Census of England and Wales (Office for National Statistics, 2023), which contains around 0.5 percent of the employee population in England and Wales in 2011 (Phan et al., 2022). Unlike much of the UK literature, which utilizes household survey data, the ASHE is based on employer records and is considered the most comprehensive and accurate source of earnings information in the UK (Office for National Statistics, 2024). As such, these data have been widely used to study labour market inequalities in the UK, particularly in relation to gender (see, among others, Jones and Kaya, 2019; Jewell et al., 2020), which is one of the limited personal characteristics of employees that the ASHE includes.<sup>8</sup> The linked dataset adds several characteristics from the Census for employees observed in the ASHE, which are well-established determinants of labour market outcomes, such as ethnicity, education, marital status, the presence of dependent children, and long-term health problems or disability. Most importantly, the linked dataset adds information on the country of birth of employees from the Census, which is considered the most reliable source of information on immigrants in the UK (Kierans, 2024).

While ASHE data are available for subsequent years, the reliability of census-derived variables decreases over time, as these variables are self-reported at a single point in 2011 (Forth et al., 2023a). Additionally, potential non-random selection of individuals in later ASHE years poses a challenge, as the selection process may differ between immigrant and UK-born

<sup>7</sup>In light of the findings of Phan et al. (2022) regarding the role of firm-specific effects, we also test the sensitivity of our results to the inclusion of employer fixed effects (see Section 4).

<sup>8</sup>Other personal characteristics included in the ASHE dataset are age and region.



individuals.<sup>9</sup> Given these concerns, our analysis is based on data from the linkage year, 2011.<sup>10</sup>

Our measure for non-UK-born is a binary indicator, taking the value of one if the country of birth recorded in the Census is non-UK, and zero otherwise. Therefore, our analysis focuses on first-generation immigrants. For non-UK-born employees, we also use information on length of residence in the UK, a well-established determinant of immigrants' labour market performance (see, e.g., Chiswick, 1978; Borjas, 1985; Bell, 1997; Kahanec et al., 2011; Lee et al., 2022).<sup>11</sup> Specifically, we distinguish between long-term immigrants (10 or more years in the UK, as recorded in the 2011 Census) and more recent immigrants (fewer than 10 years); see, for example, Pendakur and Woodcock (2010) for a similar approach, as these groups are likely to differ in their outside options, cultural norms, and labour market behaviours (Edo, 2015).

The ASHE–Census dataset includes detailed information on the employee earnings and hours during the pay period (the week or the month depending on whether the employee is paid weekly or monthly) that includes the reference date in April coming from the employer payroll records. Our first outcome of interest is (log) gross weekly pay, which includes gross weekly earnings for the reference period, including overtime pay. As any differences identified in weekly pay could result from variations in hourly pay and/or weekly hours, we also examine (log) gross hourly pay and (log) total weekly paid hours. Our hourly pay measure is based on average gross weekly earnings for the reference period divided by the average total paid hours during the reference period.<sup>12</sup> The total weekly paid hours are defined as basic weekly paid hours plus weekly paid overtime hours during the reference week.<sup>13</sup>

<sup>9</sup>Missing individuals in later years may result from being unpaid during the reference period, as well as transitions from paid employment to self-employment, exits from the labour force, or out-migration – which is especially relevant for immigrant employees – and these reasons for absence cannot be distinguished. Furthermore, for new entrants (i.e., those first observed in later ASHE years), it is not possible to distinguish between immigrant and UK-born employees or to include new migrant cohorts (i.e., post-2011 arrivals), as country of birth information is only available for ASHE observations linked (i.e., matched) to the 2011 Census.

<sup>10</sup>A link between the ASHE and the 2021 Census for England and Wales is anticipated (Forth et al., 2023a); however, at the time of writing, equivalent linked datasets for later census years were not available.

<sup>11</sup>The length of residence information is only applicable to usual residents who were not born in the UK. It is derived in the Census from the date that a person last arrived to live in the UK, excluding short visits away from the UK.

<sup>12</sup>We code gross hourly pay outliers, which are ten times above the 99th percentile and below half the first percentile of the gross hourly pay distribution, as missing.

<sup>13</sup>In Section 4, we examine the robustness of our findings to the alternative measures of pay and hours.



The rich information in the linked dataset enables us to consider additional labour market outcomes, such as the probability of part-time employment, employment in low-skilled occupations, and temporary employment. Our measure of part-time employment is based on information about employees' part-time or full-time status. Employment in low-skilled occupations is defined using occupation information from the Standard Classification of Occupations (SOC; Office for National Statistics, 2010). Specifically, we classify an employee as being employed in a low-skilled occupation if the SOC 2010 one-digit title has a skill level below three (see Migration Advisory Committee, 2014).<sup>14,15</sup> The probability of temporary employment is determined based on the type of contract information from the payroll records. In particular, we classify an individual as being in temporary employment if they hold a temporary contract, and as in permanent employment if they hold a permanent contract.

The benchmark sample is restricted to working-age employees (aged 16–64), who are paid an adult rate and whose earnings are not affected by absence. We only consider the main job of an employee observed in the ASHE with weekly basic paid hours no less than one and no more than 99 hours. Finally, we restrict our sample to those with non-missing and valid information in all the variables included in the analysis.<sup>16</sup> Our final sample includes 99,159 observations, of which 10.9 percent are non-UK-born employees (see Table 1). Among them, 6,364 are long-term immigrants and 4,462 are more recent immigrants.

In Table 1, the sample means for our outcome variables are reported by country of origin, and for immigrant employees, by length of residence in the UK. These confirm the relatively higher weekly pay among non-UK-born employees compared with UK-born employees, with the difference averaging about 0.059 log points (or 6 percent).<sup>17</sup> The next two rows in the table show that this is driven by both higher hourly pay (0.034 log points or 4 percent) and longer weekly hours for non-UK-born employees (0.936 log points or about 2.5 times). Consistent with the latter, immigrant employees are less likely to

<sup>14</sup>Constructing occupational skill level based on the classification of the employee's occupation also aligns with the classification used by the UK Visas and Immigration to determine eligible occupations and codes for the skilled worker visa (see <https://www.gov.uk/government/publications/skilled-worker-visa-eligible-occupations/skilled-worker-visa-eligible-occupations-and-codes>).

<sup>15</sup>As this definition groups low- and medium-low-skilled occupations together, we also considered an alternative definition that uses only skill level one (i.e., elementary occupations) to define low-skilled occupations. These alternative results confirm the robustness of our core conclusions and are available upon request.

<sup>16</sup>Online Appendix A provides a detailed discussion of our data, sample construction, and variable descriptions.

<sup>17</sup>Percentages are calculated as  $[\exp(\log \text{ difference}) - 1] \times 100$ .

**Table 1.** Sample means of key variables, by country of birth and length of residence in the UK

	UK-born employees (1)	Non-UK-born employees		All non-UK-born employees (4)	All employees (5)
		<10 years (2)	≥10 years (3)		
(log) gross weekly pay	5.935 (0.768)	5.889 (0.783)	6.068 (0.808)	5.994 (0.802)	5.942 (0.772)
(log) gross hourly pay	2.498 (0.527)	2.403 (0.558)	2.623 (0.594)	2.532 (0.589)	2.502 (0.534)
(log) weekly total paid hours	33.605 (10.520)	35.509 (11.631)	33.863 (10.635)	34.541 (11.086)	33.707 (10.587)
% part-time employment	27.45	23.44	26.19	25.06	27.19
% employed in low-skilled occupations	51.93	59.30	49.18	53.35	52.09
% temporary employment	4.77	11.54	5.26	7.85	5.11
Number of observations	88,333	4,462	6,364	10,826	99,159

Notes: Authors' calculations based on the ASHE–Census 2011 dataset. Figures in parentheses are standard deviations. In Columns 2 and 3, <10 and ≥10 years denote employees with fewer than 10 and with 10 or more years of residence in the UK, respectively.

work part-time (by 2.4 percentage points). However, they are more likely to work in low-skilled occupations (by 1.4 percentage points) or on temporary contracts (by 3.1 percentage points) than UK-born workers.<sup>18</sup>

Table 1 also reveals noticeable differences by length of residence, with more recent immigrants (fewer than 10 years of residence) earning approximately 0.046 log points (or 5 percent) less than UK-born employees on average, while long-term immigrants (10 or more years of residence) earn 0.133 log points (or 14 percent) more. This pattern also holds for hourly pay, with more recent immigrants earning 0.095 log points (or 10 percent) less than their UK-born counterparts, and long-term immigrants earning 0.125 log points (or 13 percent) more. In terms of working hours, more recent immigrants tend to work longer hours (about 6.7 times more) and are less likely to work part-time (by 4.0 percentage points). They are also more likely to work in low-skilled occupations (by 7.4 percentage points) and have temporary

<sup>18</sup>Our further analysis confirms that while part-time employment is more prevalent in low-skilled occupations, immigrants are less likely to work part-time than UK-born employees within both low-skilled and high-skilled occupations. This pattern is primarily driven by women, among whom UK-born employees exhibit significantly higher rates of part-time employment than their immigrant counterparts regardless of occupational skill level. These results are available upon request.

employment contracts (by 6.8 percentage points) compared with UK-born employees.<sup>19</sup> However, the differences in hours, part-time employment, and temporary contracts are less pronounced for long-term immigrants (only about 1.3 times, 1.3 percentage points, and 0.5 percentage points, respectively). Long-term immigrants are also less likely to be employed in low-skilled occupations (by 2.8 percentage points) than UK-born employees.

Table B2 in the Online Appendix provides further details and summary statistics for the explanatory variables included in our analysis. They highlight several compositional differences between immigrant and UK-born employees. Consistent with previous evidence for Britain (see, e.g., Dustmann and Fabbri, 2005), a lower proportion of immigrants are White compared with UK-born employees. Non-UK-born employees, on average, are more likely to have a degree, be married, and have dependent children than UK-born employees. They are also more likely to work in London, in the healthcare industry, and in professional and elementary occupations.

While some commonalities are evident across immigrants, there are also some distinct patterns. For instance, while more recent immigrants, on average, are younger, have lower average job tenure, and are less likely to have a long-term health problem or disability and be covered by collective agreements than UK-born employees, long-term immigrants are more comparable to the UK-born employees in these dimensions.

## 4. Differences in labour market outcomes between UK-born and immigrant employees

### 4.1. Empirical strategy

To explore the differences in labour market outcomes between UK-born and immigrant employees, we estimate a series of regressions with varying controls:

$$y_{ig} = \alpha_g + \beta_g I_{ig} + X_{ig} \gamma_g + \varepsilon_{ig}, \quad (1)$$

where the dependent variable  $y_{ig}$  is the considered labour market outcome ((log) gross weekly pay, (log) gross hourly pay, (log) weekly total paid hours, (probability of) part-time employment, (probability of) employment in a low-skilled occupation, or (probability of) temporary employment) of

<sup>19</sup>We explore the sample means of our key variables for more disaggregated groups of recent immigrants (with fewer than two years of residence, with two to four years of residence, and with five to nine years of residence) in Table B1 in the Online Appendix but observe similar patterns. Therefore, and considering the relatively smaller sample sizes of some of these groups, our analysis considers more recent immigrants as a whole.

employee  $i$  in group  $g$  (where  $g = 1$  for UK-born employees and more recent immigrants, and  $g = 2$  for UK-born employees and long-term immigrants).

In equation (1), the coefficient of interest,  $\beta_g$ , is on the binary indicator for (non-UK) country of birth,  $I_{ig}$ , and is allowed to vary by immigrants' length of residence.<sup>20</sup> As such, it captures the difference between UK-born employees and immigrants, specifically distinguishing between recent and long-term immigrants. The set of control variables  $X_{ig}$  with (group-specific) coefficient vector  $\gamma_g$  varies across specifications, but in the most comprehensive specification, it includes personal characteristics such as (female) gender, ethnicity, age (and age-squared), highest qualification, long-term health problem or disability, marital status, the presence of dependent children, and region; as well as work-related characteristics including part-time employment, tenure (and tenure squared), (log) employer size, collective agreement, temporary employment contract, occupation, and industry controls.<sup>21,22</sup>

In equation (1), the exclusion and inclusion of personal and work-related characteristics ( $X_{ig}$ ) provide raw (or unadjusted) and adjusted differences between UK-born and non-UK-born employees in the considered outcome ( $\beta_g$ ), respectively. While in our analysis, we are able to control for a rich set of observable characteristics, unobserved factors remain a potential bias, for example, in terms of selective labour force participation or in- and out-migration. Given the nature of our data, however, we do not observe non-labour market participants or self-employed individuals. As is common in the literature, the population pool from which immigrants are selected in or out is also unobservable. Therefore, following existing UK studies (see, e.g., Chiswick, 1980; Bell, 1997; Dustmann and Fabbri, 2005; Algan et al., 2010), we do not attempt to model this. Nevertheless, we assess the impact of selection on observables (using matching methods) and explore the stability of our estimates to unobserved factors – following the approach suggested by Oster (2019) – as part of our robustness checks (see Section 4.3).

Throughout, our benchmark estimates are obtained using ordinary least squares (OLS), are unweighted, and robust standard errors are reported.

<sup>20</sup>Our benchmark approach is based on separate regression models for more recent and long-term immigrants, as this allows for group-specific effects of control variables and provides a straightforward interpretation of differences relative to UK-born employees. Nevertheless, we estimate pooled models with interaction terms to assess the sensitivity of our results and formally test for differences in coefficients across groups (see Section 4.3).

<sup>21</sup>See Online Appendix A for a detailed description of all the variables included in the analysis.

<sup>22</sup>Temporary employment contract is excluded among controls where the outcome is probability of temporary employment. Similarly, we exclude the part-time indicator, where the outcome is probability of part-time employment, and occupation controls for specifications where the outcome is probability of employment in low-skill occupation. Our most comprehensive specifications for (log) gross weekly pay also include a control for (log) weekly total paid hours.

However, in Section 4.3, we explore the robustness of our findings to these methodological choices.<sup>23</sup>

## 4.2. Baseline results

Table 2 presents the estimates of equation (1) for each of the outcomes considered (Panels A–F). Within each panel, the estimated raw (Columns 1 and 4) and adjusted (Columns 2–3 and 5–6) differences between UK-born and non-UK-born employees are presented, distinguishing more recent (Columns 1–3) and long-term (Columns 4–6) immigrants. The estimates in Columns 2 and 5 are adjusted for personal characteristics, and Columns 3 and 6 additionally control for work-related characteristics.<sup>24</sup>

Aligned with the above descriptive statistics, we find a sizeable raw weekly pay gap between UK-born employees and recent immigrants, with recent immigrants earning 0.046 log points, or around 5 percent, less than UK-born employees.<sup>25</sup> This is despite recent immigrants working 5 percent longer weekly hours than UK-born employees, indicating that the weekly pay gap is primarily driven by an hourly pay gap. The weekly pay gap widens to 7 percent after adjusting for personal characteristics but narrows when work-related characteristics and weekly paid hours are included, resulting in a significant adjusted pay gap of 5 percent, similar in magnitude to the raw gap. These patterns are similar for hourly pay, with the raw gap of 9 percent widening to 12 percent with the inclusion of personal characteristics but narrowing considerably to 5 percent after accounting for work-related characteristics.

The inclusion of controls diminishes the 5 percent difference in weekly hours only slightly (to 4 percent) after accounting for personal and work-related characteristics. Consistent with this, more recent immigrants are less likely to be employed part-time, even after controlling for characteristics (by 6.5 percentage points). In contrast, the probabilities of being employed in low-skilled occupations and on temporary contracts are higher for more recent immigrants than for UK-born employees (by 7.4 percentage points and 6.8 percentage points, respectively). The inclusion of observed characteristics narrows these differences, particularly for temporary employment, though in the most comprehensive specification, the gaps remain positive and statistically

<sup>23</sup>In the case of binary outcome variables, the OLS estimate of the coefficient of interest has the linear probability model (LPM) interpretation and, as such, significant estimates of  $\beta_g$  are interpreted as the change in probabilities.

<sup>24</sup>Table 2 focuses on the coefficient of interest, but we present the full set of coefficient estimates in Tables B3a and B3b in the Online Appendix.

<sup>25</sup>Throughout, percentage differences reported are computed as  $(e^{\hat{\beta}_g} - 1) \times 100$ , where  $\hat{\beta}_g$  is the (group-specific) OLS coefficient estimate for the non-UK-born dummy.

**Table 2.** Differences in labour market outcomes between UK-born and non-UK-born employees by years of residence in the UK

	Non-UK-born employees with fewer than 10 years of residence			Non-UK-born employees with 10 years or more of residence		
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Panel A. Log gross weekly pay</b>						
Non-UK-born	−0.046*** (0.012)	−0.071*** (0.012)	−0.053*** (0.007)	0.132*** (0.010)	0.012 (0.010)	0.007 (0.006)
Personal char.	No	Yes	Yes	No	Yes	Yes
Work-related char.	No	No	Yes	No	No	Yes
Adjusted <i>R</i> <sup>2</sup>	0.000	0.368	0.811	0.002	0.370	0.810
<b>Panel B. Log gross hourly pay</b>						
Non-UK-born	−0.095*** (0.009)	−0.124*** (0.008)	−0.056*** (0.007)	0.125*** (0.008)	−0.003 (0.007)	0.007 (0.006)
Personal char.	No	Yes	Yes	No	Yes	Yes
Work-related char.	No	No	Yes	No	No	Yes
Adjusted <i>R</i> <sup>2</sup>	0.001	0.422	0.600	0.003	0.424	0.600
<b>Panel C. Log weekly total paid hours</b>						
Non-UK-born	0.049*** (0.007)	0.053*** (0.008)	0.040*** (0.005)	0.007 (0.006)	0.015* (0.006)	0.007 (0.004)
Personal char.	No	Yes	Yes	No	Yes	Yes
Work-related char.	No	No	Yes	No	No	Yes
Adjusted <i>R</i> <sup>2</sup>	0.001	0.173	0.605	0.000	0.173	0.604
<b>Panel D. Probability of part-time employment</b>						
Non-UK-born	−0.040*** (0.007)	−0.034*** (0.007)	−0.065*** (0.007)	−0.013* (0.006)	−0.014* (0.006)	−0.023*** (0.006)
Personal char.	No	Yes	Yes	No	Yes	Yes
Work-related char.	No	No	Yes	No	No	Yes
Adjusted <i>R</i> <sup>2</sup>	0.000	0.207	0.276	0.000	0.208	0.277
<b>Panel E. Probability of employment in low-skilled occupations</b>						
Non-UK-born	0.074*** (0.008)	0.082*** (0.008)	0.067*** (0.008)	−0.028*** (0.006)	0.001 (0.006)	−0.003 (0.006)
Personal char.	No	Yes	Yes	No	Yes	Yes
Work-related char.	No	No	Yes	No	No	Yes
Adjusted <i>R</i> <sup>2</sup>	0.001	0.255	0.296	0.000	0.258	0.298
<b>Panel F. Probability of temporary employment</b>						
Non-UK-born	0.068*** (0.005)	0.052*** (0.005)	0.029** (0.005)	0.005 (0.003)	0.002 (0.003)	0.000 (0.003)
Personal char.	No	Yes	Yes	No	Yes	Yes
Work-related char.	No	No	Yes	No	No	Yes
Adjusted <i>R</i> <sup>2</sup>	0.004	0.020	0.085	0.000	0.017	0.079
Number of obs.	92,795	92,795	92,795	94,697	94,697	94,697

*Notes:* The OLS estimates are presented. The dependent variable for each model is indicated within panel headings. The reference category for “non-UK-born” is UK-born employees. Personal characteristics include age (and its square), gender, ethnicity, education, disability, marital status, presence of dependent children, and work region (11 NUTS1 categories). Work-related characteristics are tenure (and its square), part-time (except in Panel D), temporary employment contract (except in Panel F), log firm size, collective agreement, industry (11 categories for SIC07 regrouped sections), occupation (except in Panel E) (nine categories for SOC10 major groups), and, in Panel A, a control for (log) weekly total paid hours. All models also include a constant term. Figures in parentheses are robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

significant – around 6.7 percentage points for low-skilled occupations and 2.9 percentage points for temporary employment.

Table 2 highlights the stark differences between more recent and long-term immigrants. Immigrants with 10 or more years of residence earn more compared with UK-born employees (around 13–14 percent, whether using weekly or hourly pay). They are also less likely to work in low-skilled occupations (by 2.8 percentage points). However, these differences narrow considerably after accounting for personal and work-related characteristics, consistent with the influence of compositional differences between UK-born and non-UK-born employees. In fact, the adjusted pay gap – whether using weekly or hourly pay – and the difference in the probability of employment in low-skilled occupations between UK-born and long-term immigrants remain small (less than 1 percent and 0.3 percentage points, respectively) and are statistically insignificant. In the most comprehensive specification, the only significant difference between long-term immigrants and UK-born employees is observed for the probability of part-time employment, with long-term immigrants being less likely to work part-time than UK-born employees (by 2.3 percentage points). However, this gap remains considerably smaller (roughly one-third) compared to that observed for more recent immigrants.

Overall, our results reveal significant differences in the labour market outcomes of immigrants based on their length of residence. More recent immigrants earn less, work longer hours, are considerably less likely to be employed part-time, and are more likely to be in low-skilled or temporary jobs compared with comparable UK-born employees. In contrast, the labour market outcomes of long-term immigrants are more similar to those of observationally equivalent UK-born employees.<sup>26</sup> These results are consistent with international evidence suggesting that immigrants typically require 10 years or more in the labour market to catch up with workers born in the host country (see, e.g., Chiswick, 1978; Lee et al., 2022).

Our findings are also consistent with the argument that immigrant groups with outside options are less likely to accept lower-paid roles and harder working conditions than other immigrants (Edo, 2015). If immigrants are more willing to accept lower-paid jobs and less desirable working conditions due to limited outside options and lower reservation wages (Malchow-Møller et al., 2012; Battisti et al., 2018; Galbis, 2020), then this can strengthen the firms' monopsony power (Amior and Manning, 2021; Amior and

<sup>26</sup>Our benchmark analysis of pay focuses on the mean, but in Figures B1a and B1b in the Online Appendix, we also examine pay differences across the distribution using the unconditional quantile regression method (Firpo et al., 2009). Consistent with previous UK studies (e.g., Lemos, 2013, 2017), these results show that pay differences between immigrants and UK-born employees vary across the distribution. Coefficient estimates for selected percentiles are available upon request.



Stuhler, 2024). Long-term immigrants, having spent more time in the host country, acquire skills valued in the local labour market, build networks, and/or obtain citizenship status, all of which are found to enhance their employment prospects (see, e.g., Bratsberg et al., 2002; Adamopoulou and Kaya, 2020; Govind, 2021; Gathmann and Garbers, 2023).<sup>27,28</sup> As a result, they have more similar outside options to UK-born employees compared with recent immigrants. In contrast, more recent immigrants might be more inclined to accept lower-paid jobs and exert greater effort because of their restricted outside options (Edo, 2015).<sup>29</sup> Indeed, this is consistent with the findings of Heath and Li (2008), who show that first-generation immigrants in the UK exhibit limited intergenerational improvements in labour market outcomes, largely due to their higher willingness to accept lower-paying jobs.

Our findings are also consistent with the explanation that the two immigrant groups may also differ in terms of cultural norms (Edo, 2015). Attitudes toward pay and working conditions are shaped by conditions in immigrants' countries of origin (Wilson and Jaynes, 2000; Galbis, 2020), which may be particularly relevant upon arrival, especially for recent immigrants. As immigrants spend more time in the host country, they become more familiar with the labour market, adjust their expectations, and consequently reduce their willingness to accept lower-paying jobs and harder working conditions.

Negative selective emigration may also offer an alternative explanation. If immigrants with poorer labour market performance are more likely to return to their country of origin, this could explain the differences between long-term and recent immigrants. Evidence suggests that out-migration is selective, particularly among immigrants with lower labour market performance; see Borjas (1989) for the United States, Constant and Massey (2003) for

<sup>27</sup>Govind (2021) suggests that naturalization also reduces statistical or taste-based discrimination. If discrimination is particularly significant upon arrival and reduces over time, it could further limit the outside options of more recent immigrants compared with long-term immigrants.

<sup>28</sup>An alternative approach to explore this mechanism would be a heterogeneity analysis by citizenship status. Unfortunately, the ASHE–Census dataset does not include information on citizenship status; however, it does include data on UK passport holding, which can only serve as a proxy, as it is primarily a travel document. In fact, not all UK-born employees reported having a UK passport – around 8 percent reported not having one. Nevertheless, we use this information to explore how the results vary for immigrants with and without a UK passport. The estimates, presented in Table B4 in the Online Appendix, suggest that some of the identified differences are larger for more recent immigrants who do not hold a UK passport (e.g., weekly hours and the probability of employment in low-skilled and temporary jobs, compared with UK-born employees). We are, however, cautious in interpreting these results, given the imperfect nature of this measure.

<sup>29</sup>Consistent with this explanation, refugees, who are likely to have lower outside options, are found to experience consistently larger gaps in labour market outcomes compared with other immigrants, particularly upon arrival (see, e.g., Fasani et al., 2022).

Germany, and Dustmann and Weiss (2007) for the UK. A related explanation is compositional differences among immigrant cohorts, with more recent arrivals potentially having lower productivity-enhancing characteristics than earlier arrivals. However, this explanation is less likely in the UK context, given previous evidence suggesting that more recent immigrant cohorts fare better than earlier ones at entry (Lemos, 2013). Indeed, our further analysis indicates that our results are robust to the potential influence of unobserved factors, which we return to next.

### 4.3. Robustness checks

Our benchmark specification controls for a wide range of observable characteristics. However, unobserved factors remain a potential bias. To assess the robustness of our estimates to potential unobserved factors, we apply the coefficient stability approach of Oster (2019), which allows us to construct bounds for the identified differences. This method requires selecting  $R_{\max}$ , the maximum explanatory power of a regression accounting for both observed and unobserved characteristics, and  $\delta$ , the coefficient of proportionality between selection on observables and unobservables. Following Oster (2019), we use the minimum of either 1 or 1.3 times the  $R^2$  from the model adjusted for observable characteristics for  $R_{\max}$ , while assuming observables are at least as important as unobservables (i.e.,  $\delta = 1$ ). These results are presented in Table B5 (Column 1) in the Online Appendix. For all our statistically significant results, the Oster bounds exclude zero, suggesting that our results are robust to bias from unobservables.

Our next robustness check concerns our empirical approach. Specifically, we assess the impact of using pooled regression models, instead of employing separate models for long-term and more recent immigrants. Reassuringly, the results from using a pooled regression model – where we control for a non-UK-born dummy and its interaction with an indicator for having fewer than 10 years of residence in the UK (Table B6, Panel A in the Online Appendix), or alternatively control for separate dummies for long-term and more recent immigrants with UK-born as the reference group (Panel B) – are consistent with our core estimates.<sup>30</sup> The only exception is for (log) weekly total paid hours among long-term immigrants, where pooled models indicate that the small difference of 1 percent longer working hours, compared with UK-born employees, is now statistically significant at the 0.05 level. However, this remains similar in magnitude to our benchmark estimates and

<sup>30</sup>In Panel A, the coefficient on the non-UK born dummy reflects the difference between UK-born employees and long-term immigrants, while the coefficient on the interaction term captures the additional difference for more recent immigrants. The coefficient estimates presented in Panel B are interpreted relative to UK-born employees.

is considerably smaller than the 4 percent adjusted gap observed for more recent immigrants.

Results from a further battery of robustness tests are presented in Tables B7a and B7b in the Online Appendix for more recent and long-term immigrants, respectively. These include sensitivity to the application of weights to account for linkage bias (Column 1 within each table); the exclusion of observations with lower match quality scores (Column 2); the clustering of standard errors at the employer level (Column 3); focusing on a more homogeneous group of employees by excluding those working outside England and Wales (Column 4) or part-time employees (Column 5), or restricting the sample to employees aged 25–54 (Column 6).<sup>31</sup> Additionally, we explore the impact of model specification by controlling for an extended set of personal characteristics, such as the number of dependent children (instead of a binary indicator of the presence of children), the age of the youngest dependent child, religion, and (self-assessed) general health status (Column 7); sector (Column 8); more detailed controls for industry (SIC07 groups instead of regrouped sections; Column 9); and for occupation (SOC10 minor groups instead of major groups; Column 10).<sup>32,33</sup> Given the employer–employee nature of the data, we also account for employer-specific effects (i.e., characteristics common to all employees observed within the same employer) and assess the impact of their inclusion on our benchmark estimates (Column 11).

In all cases, our results for more recent immigrants remain robust, with non-UK-born employees earning less on average (both weekly and hourly), working longer hours, being less likely to be employed part-time, and more likely to be in low-skilled occupations or temporary employment relative to comparable UK-born employees. For long-term immigrants, we observe similar patterns to our benchmark, with no significant differences in any of

<sup>31</sup>We cluster standard errors at the employer level to account for potential within-employer correlation in unobserved factors influencing employee outcomes, such as pay-setting practices and job opportunities. As a further check, we also examined the impact of clustering at more aggregate levels, including occupation, industry, and region. With one exception – the probability of temporary employment for more recent immigrants, which becomes significant only at the 10 percent level when clustered at the industry level – these results confirm the robustness of our findings (results available upon request).

<sup>32</sup>The ASHE–Census dataset includes a match quality score for each record, ensuring reliable linkage between the two data sources. Linked data include only observations with a match score of at least 0.82 but in our sensitivity analysis, we focus on cases with the highest match score of 1.0. While population census information is limited to England and Wales, the linked dataset includes a small number of individuals working outside this area (see Table B2 in the Online Appendix).

<sup>33</sup>See Online Appendix A for a detailed description of additional control variables used in the sensitivity analysis.

the outcomes considered, with a few exceptions. The small positive difference in weekly paid hours between long-term immigrants and UK-born employees becomes statistically significant when part-time employees are excluded from the sample (Column 5) or when detailed occupation controls are included in the model (Column 10). The previously insignificant pay advantage for long-term immigrants also becomes statistically significant when detailed industry controls or employer-specific effects are included in the model (Columns 9 and 11), although the magnitude of this difference remains relatively small (around 2 percent).

The final three columns (Columns 12–14) concern our choice of using OLS as the benchmark method. First, we apply matching methods (nearest-neighbour propensity score matching) to account for potential selection based on personal characteristics (Column 12) and both personal and work-related characteristics (Column 13).<sup>34</sup> For more recent immigrants, while some differences are amplified – particularly in pay and the probability of employment in low-skilled or temporary jobs – this is not uniformly the case across all outcomes. More importantly, the patterns remain consistent with our benchmark results. The only exceptions are weekly hours, where the result appears sensitive to the inclusion of work-related characteristics, and the probability of part-time employment, where the negative coefficient becomes statistically insignificant. For long-term immigrants, the results appear more sensitive, with a significant pay penalty and an increased probability of employment in low-skilled occupations, while the difference in part-time employment also becomes insignificant. Although these results suggest that the selection process may have a more pronounced impact for long-term immigrants, the differences relative to UK-born employees remain much smaller in magnitude compared with those for more recent immigrants, reinforcing our core conclusions.

Second, for binary outcomes (such as the probability of employment in part-time, low-skilled, or temporary jobs), we further check the sensitivity of our findings by estimating a probit model (Column 14). However, our results also remain robust to this choice.

As a final check, in Table B8 in the Online Appendix, we further explore the robustness of our results for pay and weekly hours by using alternative

<sup>34</sup>Specifically, we first estimate the probability of being an immigrant employee based on a set of observed characteristics using a logit model. UK-born and immigrant employees are then matched based on their estimated propensity scores. For matching, Column 12 uses personal characteristics – including gender, ethnicity, age (and age-squared), highest qualification, long-term health problems or disability, marital status, presence of dependent children, and region – as these are more likely to be predetermined. Column 13 extends this approach by incorporating the above-listed work-related characteristics, in line with the baseline regression specification, to allow for a more direct comparison.

measures. Our findings remain virtually unchanged when employing (log) gross weekly or hourly pay excluding overtime payments (Columns 1 and 2) or (log) basic hourly pay (Column 3). Additionally, our core results remain robust when using weekly basic paid hours (Column 4), although the differences are now more pronounced, particularly for long-term immigrants. Specifically, the (positive) difference in weekly hours between comparable long-term immigrants and UK-born employees becomes statistically significant, albeit remaining relatively small in magnitude (1 percent). These additional analyses provide further support to our core findings and suggest that the identified patterns are evident in basic pay and basic hours, and hence are not driven by other components such as shift work or overtime.

## 5. Heterogeneity analysis

### 5.1. Ethnicity

Given the evidence of the importance of ethnicity within the UK labour market context (see, e.g., Blackaby et al., 1998, 2002; Phan et al., 2022; Forth et al., 2023b), we further explore the differences in labour market outcomes by ethnicity, as outside options and labour market behaviour are likely vary across ethnic groups. To do so, we estimate our benchmark model specified in equation (1) separately by ethnicity to distinguish “immigrant effects” from “ethnicity effects”.<sup>35</sup> Due to smaller sample sizes in ethnic groups among non-White employees, Table 3 presents these results for White and non-White employees, as do some other studies (see, e.g., Forth et al., 2023b), acknowledging the fact that the latter is a diverse group.<sup>36</sup>

Consistent with our baseline estimates, the gaps are consistently wider for more recent immigrants compared with long-term immigrants, both in pay and in the probability of employment in low-skilled occupations. For

<sup>35</sup>Our heterogeneity analyses are based on separate regression models, aligning with the benchmark method. In the context of ethnicity, this approach enables comparisons relative to UK-born employees of the same ethnicity, accounting for potential ethnicity-specific effects. In the UK context, ethnic background – particularly non-White ethnicity – has also been used as a proxy for second or subsequent-generation immigrants (see, e.g., Algan et al., 2010). Therefore, separate models for non-White employees also serve as an indirect means of comparing first- and second- or subsequent-generation immigrants. Nevertheless, as a sensitivity check, we provide estimates from a pooled model that includes separate dummies for long-term and more recent immigrants (with UK-born employees as the reference group), interacted with ethnicity, in Table B9a in the Online Appendix, and confirm the broad patterns observed in the separate regressions.

<sup>36</sup>We exclude a small number of mixed ethnicities (2.93 percent of the observations) for heterogeneity analysis by ethnicity, as do some other studies (see, e.g., Phan et al., 2022). Ethnicity is excluded among personal characteristics in the model for White employees.

**Table 3.** Heterogeneity analysis by ethnicity

	Non-UK-born employees with fewer than 10 years of residence		Non-UK-born employees with 10 or more years of residence	
	White (1)	Non-White (2)	White (3)	Non-White (4)
<b>Panel A. Log gross weekly pay</b>				
Non-UK-born	-0.033*** (0.008)	-0.102*** (0.012)	0.029*** (0.007)	-0.042*** (0.010)
Adjusted $R^2$	0.809	0.840	0.809	0.826
<b>Panel B. Log gross hourly pay</b>				
Non-UK-born	-0.036*** (0.008)	-0.103*** (0.012)	0.029*** (0.007)	-0.042*** (0.010)
Adjusted $R^2$	0.601	0.601	0.602	0.597
<b>Panel C. Log weekly total paid hours</b>				
Non-UK-born	0.048*** (0.006)	0.004 (0.011)	0.004 (0.005)	-0.001 (0.009)
Adjusted $R^2$	0.605	0.617	0.604	0.607
<b>Panel D. Probability of part-time employment</b>				
Non-UK-born	-0.072*** (0.008)	-0.007 (0.013)	-0.019** (0.007)	0.008 (0.011)
Adjusted $R^2$	0.281	0.256	0.282	0.246
<b>Panel E. Probability of employment in low-skilled occupations</b>				
Non-UK-born	0.066*** (0.009)	0.080*** (0.014)	-0.022** (0.008)	0.030* (0.013)
Adjusted $R^2$	0.299	0.264	0.301	0.283
<b>Panel F. Probability of temporary employment</b>				
Non-UK-born	0.038*** (0.007)	-0.001 (0.010)	0.001 (0.004)	0.002 (0.008)
Adjusted $R^2$	0.082	0.114	0.078	0.093
Number of observations	86,798	5,997	87,542	7,155
Percentage of non-UK-born	2.76	34.40	3.59	45.02

*Notes:* The table presents the OLS estimates. The dependent variable for each model is indicated within the panel headings. The reference category for “non-UK-born” is UK-born employees. All models also control for personal characteristics including age (and its square), gender, ethnicity (except in Columns 1 and 3), education, disability, marital status, presence of dependent children, and work region (11 NUTS1 categories); work-related characteristics including tenure (and its square), part-time (except in Panel D), temporary employment contract (except in Panel F), log firm size, collective agreement, industry (11 categories for SIC07 regrouped sections), occupation (except in Panel E); nine categories for SOC10 major groups), and a constant term. In Panel A, the models also include a control for (log) weekly total paid hours. Figures in parentheses are robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

more recent immigrants, the gaps are more pronounced among non-White immigrants than among White immigrants (10 percent versus 3–4 percent in pay, and 8.0 versus 6.6 percentage points in the probability of employment in low-skilled occupations; Columns 1 and 2). However, differences in working hours, and the probability of part-time and temporary employment between more recent immigrants and UK-born employees, are only evident among White employees.<sup>37</sup>

Turning to the results for long-term immigrants, there are noticeable differences between White and non-White employees in pay and the probability of employment in low-skilled occupations (Columns 3 and 4). Among White employees, long-term immigrants earn, on average, about 3 percent more than comparable UK-born employees, whether measured by hourly or weekly pay. They are also slightly less likely to work part-time (by 1.9 percentage points) or to be employed in low-skilled occupations (by 2.2 percentage points). In contrast, non-White long-term immigrants earn 4 percent less than their UK-born counterparts, are 3.0 percentage points more likely to work in low-skilled occupations, and show no significant difference in their likelihood of working part-time. In terms of weekly hours and the likelihood of temporary employment, however, there are no significant differences between UK-born and long-term immigrant employees, regardless of their ethnicity.<sup>38</sup>

Overall, these results reinforce our baseline findings, showing that the gaps are wider for more recent immigrants than for long-term immigrants, particularly in pay and the likelihood of employment in low-skilled occupations. These gaps are notably larger among non-White than White immigrants, regardless of years of residence, reinforcing the intersectionality of ethnicity and immigration status in shaping labour market outcomes.<sup>39</sup> The larger gaps observed for non-White immigrants compared with White immigrants, even within the same duration of residence in the UK, may also reflect the role of labour market discrimination, consistent with prior UK

<sup>37</sup> While the separate regressions suggest these differences are only evident among White immigrants, pooled model estimates (Table B9a in the Online Appendix) indicate that non-White recent immigrants also work longer hours, are less likely to be in part-time employment, and more likely to be in temporary employment, although the magnitudes are smaller.

<sup>38</sup> As in our baseline, we test the robustness of our heterogeneity analyses across all groups (ethnicity, gender, country of birth groupings, and (a proxy) reason for migration) through various checks, including applying weights to account for linkage bias, excluding observations with lower match quality scores, clustering standard errors at the employer level, restricting the sample to employees aged 25–54, and controlling for an extended set of personal characteristics. The broad patterns remain consistent across all cases (results available upon request).

<sup>39</sup> The presence of wider disparities between non-White UK-born and non-UK-born employees is also consistent with much improved outcomes for the second- or subsequent-generation immigrants.



evidence from audit studies showing that ethnic minorities with equivalent human capital are treated less favourably by employers (see, e.g., Wood et al., 2009; Heath and Di Stasio, 2019).

## 5.2. Gender

The gender differences in the labour market are well established. Consistent with this, females are found to have lower outside options than males (see, e.g., Caldwell and Danieli, 2024). International evidence highlights the intersectionality of gender and immigration status, with female immigrants experiencing larger initial employment gaps compared with male immigrants and native-born women. Despite some evidence of faster convergence over time, they often do not fully catch up to their male counterparts or native-born employees even after a decade (Lee et al., 2022).

In the UK context, while a large number of studies focus on males (see, e.g., Chiswick, 1980; Bell, 1997; Clark and Lindley, 2009; Hunt, 2012; Elliott and Lindley, 2008), existing evidence that extends the analysis to include females suggests that the overall differences between immigrants and UK-born employees vary by gender, although the patterns identified are mixed. For instance, using household survey data from the LFS, Algan et al. (2010) find that the difference in hourly pay between UK-born and first-generation immigrants is not as large for females compared with their male counterparts. Using the same data source, Dustmann and Fabbri (2005) find similar patterns and show that the overall wage differentials between immigrants and UK-born individuals are smaller for females. In contrast, based on the analysis of administrative data from the LLMDb, Lemos (2013) shows that the earnings gap relative to UK-born individuals is significant and larger for female immigrants than for their male counterparts. The gender difference is also found to be reversed for those who migrated to the UK to seek asylum, with males outperforming females in likelihood of employment, weekly earnings, hourly pay, and number of hours worked (Ruiz and Vargas-Silva, 2018). To explore whether our benchmark results differ for males and females, we estimate a version of equation (1) by gender.<sup>40</sup> Table 4 presents these results.

Once again, these findings confirm that the gaps are notably larger for more recent immigrants compared with long-term immigrants. Both male and female immigrants with fewer than 10 years of residence in the UK

<sup>40</sup> As such, the coefficient estimates are relative to UK-born employees of the same gender. These models exclude gender from the set of controls. Nevertheless, Table B9b in the Online Appendix explores the sensitivity of the results to a pooled model specification in which separate dummies for long-term and more recent immigrants (with UK-born employees as the reference group) are interacted with gender.

**Table 4.** Heterogeneity analysis by gender

	Non-UK-born employees with fewer than 10 years of residence		Non-UK-born employees with 10 years or more of residence	
	Males (1)	Females (2)	Males (3)	Females (4)
<b>Panel A. Log gross weekly pay</b>				
Non-UK-born	-0.052*** (0.010)	-0.050*** (0.008)	0.010 (0.009)	0.006 (0.007)
Adjusted $R^2$	0.711	0.847	0.707	0.846
<b>Panel B. Log gross hourly pay</b>				
Non-UK-born	-0.056*** (0.010)	-0.052*** (0.008)	0.009 (0.009)	0.006 (0.007)
Adjusted $R^2$	0.572	0.612	0.569	0.613
<b>Panel C. Log weekly total paid hours</b>				
Non-UK-born	0.031*** (0.006)	0.062*** (0.009)	0.010 (0.005)	0.011 (0.007)
Adjusted $R^2$	0.590	0.561	0.588	0.561
<b>Panel D. Probability of part-time employment</b>				
Non-UK-born	-0.005 (0.008)	-0.115*** (0.011)	0.019** (0.007)	-0.051*** (0.009)
Adjusted $R^2$	0.183	0.228	0.180	0.228
<b>Panel E. Probability of employment in low-skilled occupations</b>				
Non-UK-born	0.066*** (0.011)	0.063*** (0.010)	0.001 (0.009)	-0.006 (0.008)
Adjusted $R^2$	0.262	0.304	0.262	0.306
<b>Panel F. Probability of temporary employment</b>				
Non-UK-born	0.027*** (0.007)	0.031*** (0.008)	-0.005 (0.004)	0.002 (0.005)
Adjusted $R^2$	0.110	0.073	0.103	0.068
Number of observations	44,372	48,423	45,084	49,613
Percentage of non-UK-born	4.96	4.67	6.46	6.96

*Notes:* The table presents the OLS estimates. The dependent variable for each model is indicated within the panel headings. The reference category for “non-UK-born” is UK-born employees. All models also control for personal characteristics including age (and its square), ethnicity, education, disability, marital status, presence of dependent children, and work region (11 NUTS1 categories); work-related characteristics including tenure (and its square), part-time (except in Panel D), temporary employment contract (except in Panel F), log firm size, collective agreement, industry (11 categories for SIC07 regrouped sections), occupation (except in Panel E; nine categories for SOC10 major groups), and a constant term. In Panel A, the models also include a control for (log) weekly total paid hours. Figures in parentheses are robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

(Columns 1 and 2) earn less than their UK-born counterparts, work longer hours, and are more likely to be employed in low-skilled occupations and temporary jobs. The pay gap is around 5 percent, and the likelihood of employment in low-skilled occupations is about 6 percentage points higher for both male and female immigrants compared with comparable UK-born employees. However, there are also notable gender differences. While the difference in the probability of temporary employment is relatively small (2.7 percentage points for males versus 3.1 percentage points for females), recent female immigrants are significantly less likely to work part-time than their UK-born counterparts, whereas no such difference is observed for males.<sup>41</sup>

The gender difference in part-time employment is also evident among long-term immigrants (Columns 3 and 4). Male long-term immigrants are 1.9 percentage points more likely, while female long-term immigrants are 5.1 percentage points less likely to work part-time compared with their UK-born counterparts. Except for part-time employment, however, both male and female long-term immigrants show no significant differences from their UK-born counterparts in any of the outcomes considered.<sup>42</sup>

### 5.3. Country of birth groupings

We now turn to analysing differentials in labour market outcomes based on country of birth, as immigrants from countries economically or culturally close to the UK may exhibit outcomes similar to those of UK-born employees; see Edo (2015) for a similar discussion in the context of France. Although the ASHE–Census dataset includes detailed information on the country of birth, the sample sizes are too small to conduct separate analyses. Therefore, we categorize immigrant employees' birth countries into five groups: the European Union (excluding the UK as of 2011), Old Commonwealth, New Commonwealth, Reminder of Europe and the US, and Other countries. We

<sup>41</sup> The small gender difference in temporary employment observed in the separate models is statistically insignificant in the pooled model (see Table B9b in the Online Appendix). Similarly, while the separate models indicate a gender difference in weekly hours, this difference is not statistically significant in the pooled specification.

<sup>42</sup> In analysing gender differences in labour market outcomes, non-random selection into the labour force is a particular concern. Unobserved factors affecting labour force participation could also influence labour market outcomes, with selection patterns potentially differing for men and women (see, e.g., Blau et al., 2024). However, because of the nature of our data, we do not observe non-labour participation, which limits our ability to formally model selection into the labour force. Nevertheless, to assess the robustness of our estimates to unobserved factors, as in our baseline, we calculate Oster (2019) bounds for the gender-specific coefficients presented in Table 4. For most statistically significant results, the Oster bounds exclude zero (see Table B6, Columns 2 and 3 in the Online Appendix), indicating that our findings are robust to potential bias from unobservables.

compare the outcomes of UK-born individuals with those from each country of birth groupings.<sup>43,44</sup> These results are presented in Tables 5 and 6.

As in our baseline results, the gaps are wider for more recent immigrants compared to long-term immigrants, but Tables 5 and 6 reveal significant variations across country of birth. Among recent immigrants (Table 5), those from the EU, New Commonwealth, and Other countries earn less than UK-born counterparts (6 percent, 8 percent, and 11 percent, respectively), while those from Old Commonwealth countries, the Remainder of Europe, or the US earn more (5 percent and 9 percent, respectively). EU, New Commonwealth, and US immigrants work longer hours, but no significant difference is observed for Old Commonwealth and Other countries. Recent immigrants are generally less likely to work part-time, with gaps ranging from 3.8 to 8.0 percentage points, except for those from the Remainder of Europe and the US. EU, New Commonwealth, and Other immigrants are also more likely to hold low-skilled or temporary jobs.

For long-term immigrants (Table 6), differences are less pronounced, but a pay advantage is observed for those from EU and Old Commonwealth countries (around 2 percent and 9 percent, respectively). Long-term immigrants from the New Commonwealth earn about 2 percent less, and the likelihood of working in low-skilled occupations is lower for Old Commonwealth immigrants. The probability of part-time employment shows no significant difference for long-term immigrants, except for a modest gap (3.4–3.7 percentage points) among those from Commonwealth countries.

Overall, these results indicate that immigrants of different origins are far from homogeneous. However, consistent with our baseline results, the gaps in labour market outcomes are wider for more recent immigrants compared with long-term immigrants. The gaps in pay and the probability of employment in low-skilled occupations are particularly wider for more recent immigrants from the New Commonwealth and Other countries, consistent with their lower outside options and different cultural norms compared with both UK-born employees and other immigrants, such as those from Old Commonwealth

<sup>43</sup> Country of birth groupings follow the old country of birth group definitions provided by the ONS, at <http://www.ons.gov.uk/ons/rel/migration1/long-term-international-migration/2014/table-3-25.xls>.

<sup>44</sup> A small number of non-UK-born individuals have country of birth information that is not specific enough to be classified into our predefined categories. Therefore, these individuals are excluded from this analysis. Specifically, this includes individuals whose country of birth is listed as Europe (Not otherwise specified), Africa (Not otherwise specified), Middle East (Not otherwise specified), Asia (Except Middle East) (Not otherwise specified), North America (Not otherwise specified), Central America (Not otherwise specified), South America (Not otherwise specified), Caribbean (Not otherwise specified), or Antarctica and Oceania (Not otherwise specified).

**Table 5.** Heterogeneity analysis by country of birth groupings: non-UK-born employees with fewer than 10 years of residence

	EU (1)	Old Common- wealth (2)	New Common- wealth (3)	Remainder of Europe and the US (4)	Other (5)
<b>Panel A. Log gross weekly pay</b>					
Non-UK-born	-0.056*** (0.009)	0.054** (0.021)	-0.083*** (0.012)	0.088** (0.033)	-0.109*** (0.014)
Adjusted $R^2$	0.811	0.813	0.813	0.813	0.813
<b>Panel B. Log gross hourly pay</b>					
Non-UK-born	-0.060*** (0.009)	0.055** (0.021)	-0.085*** (0.012)	0.085** (0.033)	-0.111*** (0.015)
Adjusted $R^2$	0.601	0.602	0.601	0.602	0.602
<b>Panel C. Log weekly total paid hours</b>					
Non-UK-born	0.061*** (0.007)	-0.014 (0.015)	0.032** (0.011)	0.033** (0.012)	0.023 (0.015)
Adjusted $R^2$	0.605	0.605	0.605	0.605	0.605
<b>Panel D. Probability of part-time employment</b>					
Non-UK-born	-0.080*** (0.009)	-0.063*** (0.016)	-0.043** (0.014)	-0.035 (0.027)	-0.038* (0.017)
Adjusted $R^2$	0.279	0.281	0.279	0.281	0.280
<b>Panel E. Probability of employment in low-skilled occupations</b>					
Non-UK-born	0.107*** (0.011)	-0.090*** (0.022)	0.059*** (0.015)	-0.011 (0.031)	0.057** (0.018)
Adjusted $R^2$	0.297	0.297	0.297	0.297	0.297
<b>Panel F. Probability of temporary employment</b>					
Non-UK-born	0.043*** (0.008)	0.005 (0.014)	0.004 (0.010)	0.043 (0.022)	0.036** (0.013)
Adjusted $R^2$	0.083	0.080	0.081	0.080	0.081
Number of observations	90,140	88,707	89,636	88,530	89,103
Percentage non-UK	2.00	0.42	1.45	0.22	0.86

Notes: The table presents the OLS estimates. The dependent variable for each model is indicated within the panel headings. The reference category for “non-UK-born” is UK-born employees. All models also control for personal characteristics including age (and its square), gender, ethnicity, education, disability, marital status, presence of dependent children, and work region (11 NUTS1 categories); work-related characteristics including tenure (and its square), part-time (except in Panel D), temporary employment contract (except in Panel F), log firm size, collective agreement, industry (11 categories for SIC07 regrouped sections), occupation (except in Panel E; nine categories for SOC10 major groups), and a constant term. In Panel A, the models also include a control for (log) weekly total paid hours. Figures in parentheses are robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

**Table 6.** Heterogeneity analysis by country of birth groupings: non-UK-born employees with 10 or more years of residence

	EU	Old Common- wealth	New Common- wealth	Remainder of Europe and the US	Other
<b>Panel A. Log gross weekly pay</b>					
Non-UK-born	0.022* (0.009)	0.083*** (0.017)	-0.024** (0.009)	0.001 (0.026)	-0.024 (0.015)
Adjusted $R^2$	0.812	0.813	0.811	0.812	0.813
<b>Panel B. Log gross hourly pay</b>					
Non-UK-born	0.022* (0.010)	0.083*** (0.017)	-0.024** (0.009)	0.001 (0.026)	-0.024 (0.015)
Adjusted $R^2$	0.601	0.602	0.600	0.602	0.602
<b>Panel C. Log weekly total paid hours</b>					
Non-UK-born	0.012 (0.007)	0.001 (0.012)	0.010 (0.007)	0.009 (0.014)	-0.004 (0.012)
Adjusted $R^2$	0.605	0.605	0.605	0.605	0.605
<b>Panel D. Probability of part-time employment</b>					
Non-UK-born	-0.015 (0.009)	-0.034* (0.016)	-0.037*** (0.009)	0.007 (0.022)	-0.015 (0.015)
Adjusted $R^2$	0.281	0.281	0.279	0.281	0.281
<b>Panel E. Probability of employment in low-skilled occupations</b>					
Non-UK-born	-0.016 (0.010)	-0.050** (0.018)	0.018 (0.010)	-0.013 (0.023)	0.023 (0.016)
Adjusted $R^2$	0.297	0.298	0.298	0.297	0.297
<b>Panel F. Probability of temporary employment</b>					
Non-UK-born	0.004 (0.005)	-0.000 (0.009)	-0.002 (0.006)	-0.015 (0.010)	0.002 (0.009)
Adjusted $R^2$	0.080	0.080	0.080	0.080	0.080
Number of observations	90,079	88,868	91,141	88,655	89,239
Percentage non-UK	1.94	0.60	3.08	0.36	1.02

*Notes:* The table presents the OLS estimates. The dependent variable for each model is indicated within the panel headings. The reference category for “non-UK-born” is UK-born employees. All models also control for personal characteristics including age (and its square), gender, ethnicity, education, disability, marital status, presence of dependent children, and work region (11 NUTS1 categories); work-related characteristics including tenure (and its square), part-time (except in Panel D), temporary employment contract (except in Panel F), log firm size, collective agreement, industry (11 categories for SIC07 regrouped sections), occupation (except in Panel E; nine categories for SOC10 major groups), and a constant term. In Panel A, the models also include a control for (log) weekly total paid hours. Figures in parentheses are robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

countries. In fact, for immigrants from Old Commonwealth countries, pay advantages over UK-born employees and a lower likelihood of working in low-skilled occupations are observed, regardless of years of residence.<sup>45</sup> There are also differences between recent and long-term immigrants from the same regions. For instance, more recent immigrants from the EU earn less than UK-born employees and are more likely to work in low-skilled occupations. In contrast, long-term EU immigrants earn approximately 2 percent more than UK-born employees, with no significant differences observed in other labour market outcomes.

Despite limited comparable previous evidence, some of these estimates align with existing UK studies. For instance, the pay advantage for immigrants from Old Commonwealth countries is consistent with the findings of Dustmann and Fabbri (2005), who show that individuals from these countries earn, on average, higher wages than comparable British-born individuals. The higher likelihood of being employed in low-skilled occupations for more recent EU immigrants is also consistent with the findings of Drinkwater et al. (2009), which show that the majority of post-2004 EU enlargement immigrants in Britain were from new member states (i.e., EU8) and were more likely to be employed in low-paying jobs.

#### 5.4. Reason for migration

Previous UK evidence suggests that there are diverse labour market patterns for immigrants who arrived in the UK to enter the labour market and those who arrived for other reasons, such as to complete their education (Clark and Lindley, 2009). Ruiz and Vargas-Silva (2018) also argue that those who migrated for employment reasons are likely to have high success rates in the labour market as they would likely be selected based on their economic performance in the host country. The ASHE–Census dataset does not include information on reasons for migration for non-UK-born employees. However, it includes information on the year of arrival in the UK and employment start date. We use this information to identify a subgroup of labour market entrants (i.e., those who arrived in the UK for employment reasons) whose employment start year coincides with the year of arrival in the UK. For comparative purposes, we also present the estimation results for the remaining non-UK-born employees, which would include immigrants who arrived in the

<sup>45</sup> While the precise estimates vary, the patterns are reassuringly consistent in the pooled model, where separate dummies for long-term and more recent immigrants (with UK-born employees as the reference group) are interacted with country-of-birth groupings. These results suggest that immigrants from regions less culturally or economically proximate to the UK, particularly recent immigrants, face wider gaps compared with their long-term counterparts (see Table B9c in the Online Appendix).



UK for other reasons such as education or accompanying/joining the family, but also some labour market entrants who might have changed their employer throughout their residence in the UK.<sup>46,47</sup> Our separate estimates for these two groups are presented in Table 7, where UK-born employees serve as the comparison group for each.

Table 7 suggests that the pay gap – whether measured weekly or hourly – is smaller for recent labour market entrants than for other immigrants (4 percent versus 6 percent), and disparities in weekly hours and temporary employment are more pronounced for labour market entrants compared with other immigrants, albeit these differences remain relatively small (Columns 1 and 2).<sup>48</sup> However, other immigrants are significantly more likely to be employed in low-skilled occupations than UK-born employees, whereas this is not the case for the subgroup of labour market entrants.<sup>49</sup> In terms of part-time employment, while both other immigrants and labour market entrants are less likely to be employed part-time compared with their UK counterparts, the difference is wider for labour market entrants than for other immigrants. A similar pattern is observed in the probability of part-time employment for long-term immigrants (Columns 3 and 4), with labour market entrants being less likely to work part-time than UK-born employees compared with other immigrant groups (9.2 percentage points versus 2.2 percentage points). However, no significant differences are observed for other outcomes for long-term immigrants, consistent with our baseline results.

Interpreted reasonably cautiously due to the imperfect identification of labour market entrants, these results align with the arguments of Ruiz and Vargas-Silva (2018) and suggest that those who arrived in the UK for employment reasons might differ from immigrants who arrived for other reasons, possibly due to positive selection in terms of their economic performance and therefore likely to have wider employment opportunities.

<sup>46</sup>While migration reasons may be endogenous to labour market outcomes, this concern is somewhat mitigated by the use of an objective proxy based on the timing of arrival and employment start date. However, we recognize that individuals who enter employment immediately upon arrival may still differ in unobserved characteristics from those who do not.

<sup>47</sup>There could also be a small number of cases where an immigrant arrived in the UK for other reasons but found employment within the same year, or where a labour market entrant who arrived in a year (particularly in the last quarter) did not start their employment until the following year.

<sup>48</sup>Indeed, when estimated using a pooled model where separate dummies for long-term and more recent immigrants (with UK-born employees as the reference group) are interacted with an indicator for the subgroup of labour market entrants, these differences are statistically indifferent from zero (see Table B9d in the Online Appendix).

<sup>49</sup>This pattern is also observed in the pooled model estimates (see Table B9d in the Online Appendix). In contrast to separate model estimates, long-term immigrants, however, are slightly more likely to be in low-skilled occupations than UK-born employees (by 1.2 percentage points) in the pooled model.

Table 7. Heterogeneity analysis by proxy for reason for migration

	Non-UK-born employees with fewer than 10 years of residence		Non-UK-born employees with 10 or more years of residence	
	Subgroup of labour market entrants	Other	Subgroup of labour market entrants	Other
	(1)	(2)	(3)	(4)
<b>Panel A. Log gross weekly pay</b>				
Non-UK-born	-0.035*	-0.060***	0.044	0.006
	(0.014)	(0.007)	(0.040)	(0.006)
Adjusted $R^2$	0.812	0.812	0.813	0.810
<b>Panel B. Log gross hourly pay</b>				
Non-UK-born	-0.038**	-0.062***	0.043	0.005
	(0.014)	(0.007)	(0.040)	(0.006)
Adjusted $R^2$	0.601	0.600	0.602	0.600
<b>Panel C. Log weekly total paid hours</b>				
Non-UK-born	0.049***	0.037***	0.013	0.007
	(0.008)	(0.006)	(0.017)	(0.004)
Adjusted $R^2$	0.605	0.605	0.605	0.604
<b>Panel D. Probability of part-time employment</b>				
Non-UK-born	-0.089***	-0.057***	-0.092**	-0.022***
	(0.012)	(0.008)	(0.028)	(0.006)
Adjusted $R^2$	0.280	0.277	0.281	0.277
<b>Panel E. Probability of employment in low-skilled occupations</b>				
Non-UK-born	0.013	0.079***	-0.038	-0.001
	(0.014)	(0.008)	(0.033)	(0.006)
Adjusted $R^2$	0.297	0.296	0.298	0.298
<b>Panel F. Probability of temporary employment</b>				
Non-UK-born	0.035***	0.026***	0.018	-0.000
	(0.010)	(0.006)	(0.013)	(0.003)
Adjusted $R^2$	0.081	0.084	0.080	0.079
Number of observations	89,249	91,879	88,465	94,565
Percentage non-UK-born	1.03	3.86	0.15	6.59

Notes: The table presents the OLS estimates. The dependent variable for each model is indicated within the panel headings. The reference category for “non-UK-born” is UK-born employees. All models also control for personal characteristics including age (and its square), gender, ethnicity, education, disability, marital status, presence of dependent children, and work region (11 NUTS1 categories); work-related characteristics including tenure (and its square), part-time (except in Panel D), temporary employment contract (except in Panel F), log firm size, collective agreement, industry (11 categories for SIC07 regrouped sections), occupation (except in Panel E; nine categories for SOC10 major groups), and a constant term. In Panel A, the models also include a control for (log) weekly total paid hours. Figures in parentheses are robust standard errors. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

## 6. Decomposing differences in labour market outcomes

Despite heterogeneity among subgroups, our analysis consistently shows that more recent immigrants experience wider labour market outcome gaps relative to UK-born employees than long-term immigrants. In this section, to understand the factors driving the observed gaps in labour market outcomes and to explore whether these factors differ between recent and long-term immigrants, we apply established decomposition methods (Oaxaca, 1973; Blinder, 1973), which are widely used to analyse disparities in the economic performance of different groups. Our focus is to identify the portion of the raw gaps explained by differences in observable characteristics between UK-born employees and immigrants, aiming to determine the specific factors contributing to the gaps in labour market outcomes. We conduct this analysis separately for long-term and more recent immigrants, which helps us identify the factors driving the gaps for each group and determine commonalities or differences.

Specifically, we estimate a version of equation (1) separately for UK-born employees, more recent immigrants, and long-term immigrants:

$$y_g = X_g \gamma_g + \epsilon_g, \quad (2)$$

where  $X_g$  includes the above-listed personal and work-related characteristics along with a constant term, and  $\gamma_g$  is the group-specific coefficient vector (for UK-born employees,  $g = 0$ ; for more recent immigrants,  $g = 1$ ; and for long-term immigrants,  $g = 2$ ). This approach facilitates an Oaxaca–Blinder (OB) decomposition (Oaxaca, 1973; Blinder, 1973) of the observed difference between UK-born and two groups of immigrants (for  $g = 1, 2$ ), as follows:

$$\bar{y}_0 - \bar{y}_g = (\bar{X}_0 - \bar{X}_g) \hat{\gamma}_0 + \bar{X}_g (\hat{\gamma}_0 - \hat{\gamma}_g). \quad (3)$$

Here, the bar above a variable denotes the mean value, and  $\hat{\gamma}_g$  is the OLS estimate of the coefficient vector  $\gamma_g$  from equation (2).<sup>50,51</sup> The first term on the right-hand side of equation (3) comprises the “explained gap”, which measures the part of the observed difference in the considered labour

<sup>50</sup> Although in the case of binary outcomes the non-linear decomposition may perform better, for probability of being in part-time, low-skilled, or temporary employment, we employ the standard OB decomposition using an LPM given the additional challenges in the computation of detailed decompositions for non-linear models, and the path dependence of the alternative decomposition methodologies (see Fortin et al., 2011). This approach also aligns with our benchmark regression models presented in Section 4.

<sup>51</sup> Equation (2) uses the labour market outcome of an average non-UK-born employee evaluated at the returns for UK-born employees ( $\bar{X}_g \hat{\gamma}_0$ ) as the counterfactual, assuming the latter represent the competitive prices.

market outcome attributable to differences in observed characteristics between UK-born employees ( $g = 0$ ) and recent immigrants ( $g = 1$ ) or long-term immigrants ( $g = 2$ ). The second term is referred to as the “unexplained gap” and is often interpreted as the upper bound measure of unequal treatment, as it also captures unobserved productivity-related differences.<sup>52</sup>

Tables 8 and 9 present the OB decomposition results for more recent immigrants and long-term immigrants, respectively. Within each table, each column presents the observed difference in the considered labour market outcome, separated into explained and unexplained components (top panel), along with a detailed breakdown of the explained gap, showing the contribution of each observable characteristic to the overall gap (bottom panel).

For more recent immigrants (Table 8), personal and work-related characteristics explain some of the observed differences, though the extent varies by outcome. For gross weekly pay, the explained gap is small and statistically insignificant, leaving the entire 5 percent observed gap unexplained (Column 1). Similarly, only 41 percent of the 10 percent hourly pay gap is explained (Column 2), while for weekly hours, just 18 percent of the difference is explained (Column 3). Interestingly, the explained gap for part-time employment is negative; however, there is an observed gap of 4.0 percentage points, driven entirely by the unexplained component (Column 4). In temporary employment, only 60 percent of the 6.8 percentage points gap is explained (Column 5), while for employment in low-skilled occupations, the unexplained portion only accounts for 18 percent of the 7.4 percentage points observed gap (Column 6).

Turning to the detailed components of the explained gap (bottom panel), we find that, while the aggregate explained gap between UK-born employees and more recent immigrants is small – and statistically indistinguishable from zero in the case of gross weekly pay and weekly hours – this masks offsetting effects among personal and work-related characteristics. Some factors widen the observed differences, while others narrow them.

In particular, the detailed components highlight the importance of work region and education, which play a narrowing role in the observed differences, particularly in pay and the likelihood of low-skilled employment. Specifically, the higher concentration of recent immigrants in high-paying regions, such as London, and their relatively higher educational attainment compared with UK-born employees (see Table B2 in the Online Appendix) contribute to

<sup>52</sup>As shown by Elder et al. (2010), adjusted gaps derived from a regression pooling observations from the two groups being compared serve as a proxy for the unexplained gap in an OB decomposition. This approach, therefore, also offers an additional robustness check for our baseline estimates presented in Section 4.

**Table 8.** Oaxaca–Blinder decomposition results, UK-born employees and non-UK-born employees with fewer than 10 years of residence in the UK

	Log gross weekly pay (1)	Log gross hourly pay (2)	Log weekly total paid hours (3)	Probability of part-time employment (4)	Probability of employment in low-skilled occupations (5)	Probability of temporary employment (6)
<b>Observed gap</b>	0.046*** (0.012)	0.095*** (0.009)	-0.049*** (0.007)	0.040*** (0.007)	-0.074*** (0.008)	-0.068*** (0.005)
Explained gap	-0.007 (0.011)	0.039*** (0.008)	-0.009 (0.006)	-0.019** (0.006)	-0.014* (0.007)	-0.041*** (0.003)
Unexplained gap	[-16.17] 0.054*** (0.007)	[40.85] 0.056*** (0.007)	[18.95] -0.039*** (0.006)	[-46.68] 0.059* (0.007)	[18.34] -0.060*** (0.008)	[59.89] -0.027*** (0.006)
	[116.17]	[59.15]	[81.05]	[146.68]	[81.66]	[40.11]
<b>Components of the explained gap</b>						
Female	-0.002* (0.001)	-0.002* (0.001)	-0.001* (0.000)	0.004* (0.002)	0.002* (0.001)	-0.000 (0.000)
Ethnicity	[-4.59] 0.031*** (0.003)	[-2.18] 0.031*** (0.003)	[1.65] 0.006* (0.003)	[10.01] 0.000 (0.004)	[-3.32] -0.032*** (0.004)	[0.26] -0.008** (0.003)
Age	[68.05] 0.019*** (0.001)	[32.69] 0.020*** (0.001)	[-11.79] -0.003*** (0.001)	[-1.23] 0.026*** (0.001)	[43.78] 0.005*** (0.001)	[11.97] -0.000 (0.001)
Education	[41.89] -0.015*** (0.003)	[20.60] -0.014*** (0.003)	[7.07] -0.006*** (0.002)	[66.03] 0.006* (0.002)	[-6.86] 0.022*** (0.004)	[0.68] -0.003** (0.001)
Work region	[-32.23] -0.059*** (0.002)	[-15.27] -0.059*** (0.002)	[12.11] 0.003*** (0.001)	[15.41] 0.005*** (0.001)	[30.05] 0.015*** (0.001)	[5.03] 0.002** (0.000)
Marital status	[-128.40] -0.006*** (0.000)	[-62.60] -0.006*** (0.000)	[0.001] 0.001** (0.000)	[-5.70] -0.005*** (0.000)	[12.24] -0.004*** (0.000)	[-2.2] 0.001*** (0.000)
Disability	[-12.11] -0.002*** (0.000)	[-5.93] -0.002*** (0.000)	[-1.32] -0.001*** (0.000)	[-11.25] 0.001*** (0.000)	[-6.00] 0.001*** (0.000)	[-0.93] 0.000 (0.000)
	[-3.41]	[-1.60]	[1.61]	[2.82]	[-1.55]	[-0.09]

Table 8. Continued

	Log gross weekly pay (1)	Log gross hourly pay (2)	Log weekly total paid hours (3)	Probability of part-time employment (4)	Probability of employment in low-skilled occupations (5)	Probability of temporary employment (6)
Dependent children	-0.002*** (0.000) [-5.35]	-0.003*** (0.000) [-2.82]	0.003*** (0.000) [6.45]	-0.014*** (0.001) [-34.43]	0.001*** (0.000) [-1.97]	-0.000 (0.000) [0.00]
Tenure	0.044*** (0.001) [96.42]	0.044*** (0.001) [46.36]	0.007*** (0.001) [-15.12]	-0.016*** (0.001) [-39.07]	-0.031*** (0.001) [42.32]	-0.029*** (0.001) [43.42]
Part-time	-0.005*** (0.001) [-11.54]	-0.003*** (0.001) [-3.66]	-0.029*** (0.005) [58.96]	-	0.007*** (0.001) [-9.51]	0.002*** (0.000) [-2.91]
Temporary contract	0.003*** (0.000) [5.76]	0.002*** (0.000) [2.13]	0.010*** (0.001) [-20.35]	-0.011*** (0.001) [-28.41]	-0.003*** (0.001) [4.12]	-
Log firm size	0.001 (0.001) [2.21]	0.001 (0.001) [1.06]	0.000 (0.000) [-0.55]	0.000 (0.000) [-1.00]	0.001 (0.000) [0.00]	0.000 (0.000) [-0.40]
Collective agreement	0.003*** (0.000) [5.78]	0.003*** (0.000) [2.78]	0.000 (0.000) [0.00]	0.000 (0.000) [0.64]	0.005*** (0.001) [-6.33]	-0.001*** (0.000) [1.48]
Industry	-0.009*** (0.001) [-19.76]	-0.009*** (0.001) [-8.99]	-0.009*** (0.001) [18.52]	0.008*** (0.001) [20.49]	-0.011*** (0.001) [14.61]	0.003*** (0.000) [-4.20]
Occupation	0.037*** (0.004) [80.04]	0.036*** (0.004) [38.28]	0.009*** (0.001) [-18.88]	-0.024*** (0.002) [-58.93]	-	-0.005*** (0.000) [7.89]
Log weekly hours	-0.046*** (0.000) [-98.92]	-	-	-	-	-
Number of observations	92,795	92,795	92,795	92,795	92,795	92,795

Notes: The table presents the OB decomposition results performed using a model that includes personal and work-related characteristics. The dependent variable for each model is indicated within the column headings. Decompositions use the relevant male coefficients as the baseline. Figures in parentheses are robust standard errors. Figures in square brackets are proportions of observed gap. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

**Table 9.** Detailed Oaxaca–Blinder decomposition results, UK-born employees and non-UK-born employees with 10 or more years of residence in the UK

	Log gross weekly pay (1)	Log gross hourly pay (2)	Log weekly total paid hours (3)	Probability of part-time employment (4)	Probability of employment in low-skilled occupations (5)	Probability of temporary employment (6)
<b>Observed gap</b>	-0.132*** (0.010)	-0.125*** (0.008)	-0.007 (0.006)	0.013* (0.006)	0.028*** (0.007)	-0.005 (0.003)
Explained gap	-0.138*** (0.009)	-0.131*** (0.006)	0.004 (0.005)	-0.013** (0.005)	0.035*** (0.005)	-0.007*** (0.003)
Unexplained gap	[103.93] 0.005 (0.006)	[104.73] 0.006 (0.006)	[-49.89] -0.011* (0.005)	[-105.45] 0.026*** (0.006)	[125.48] -0.007 (0.007)	[148.19] 0.002 (0.004)
	[-3.93]	[-4.73]	[149.89]	[205.45]	[-25.48]	[-48.19]
<b>Components of the explained gap</b>						
Female	0.003** (0.001)	0.003** (0.001)	0.001** (0.000)	-0.005** (0.002)	-0.003** (0.001)	0.000** (0.000)
Ethnicity	[-2.08] 0.034*** (0.003)	[-2.14] 0.033*** (0.003)	[-14.19] 0.007* (0.003)	[-41.55] 0.000 (0.003)	[-11.57] -0.034*** (0.004)	[-4.69] -0.009*** (0.003)
Age	[-25.43] -0.023*** (0.001)	[-26.59] -0.023*** (0.001)	[-89.09] -0.006*** (0.001)	[1.30] 0.000 (0.001)	[-123.61] 0.005*** (0.001)	[182.74] 0.002*** (0.000)
Education	[17.53] -0.028*** (0.002)	[18.26] -0.028*** (0.002)	[79.06] -0.000 (0.001)	[-0.78] 0.004*** (0.001)	[17.12] 0.044*** (0.003)	[-42.83] -0.002*** (0.000)
Work region	[20.99] -0.082*** (0.002)	[22.21] -0.082*** (0.002)	[3.00] 0.004*** (0.001)	[31.03] 0.008*** (0.001)	[158.88] 0.019*** (0.001)	[39.48] 0.002** (0.001)
Marital status	[62.01] -0.006*** (0.000)	[65.86] -0.006*** (0.000)	[-53.10] 0.001** (0.000)	[61.31] -0.005*** (0.000)	[68.96] 0.005*** (0.000)	[-41.47] 0.001*** (0.000)
Disability	[4.76] 0.000 (0.000)	[5.07] 0.000 (0.000)	[-9.87] 0.000 (0.000)	[-40.56] 0.000 (0.000)	[18.14] -0.000 (0.000)	[-14.49] -0.000 (0.000)
	[-0.08] (0.000)	[-0.09] (0.000)	[-0.76] (0.000)	[-0.64] (0.000)	[-0.30] (0.000)	[0.09] (0.000)



Table 9. Continued

	Log gross weekly pay (1)	Log gross hourly pay (2)	Log weekly total paid hours (3)	Probability of part-time employment (4)	Probability of employment in low-skilled occupations (5)	Probability of temporary employment (6)
Dependent children	-0.002*** (0.000) [1.66]	-0.002*** (0.000) [1.91]	0.003*** (0.000) [-38.17]	-0.012*** (0.001) [-98.24]	0.001*** (0.000) [4.71]	-0.000 (0.000) [0.04]
Tenure	0.001 (0.001) [-0.52]	0.001 (0.001) [-0.57]	-0.000 (0.000) [2.55]	-0.001 (0.000) [-4.12]	-0.001* (0.001) [-4.96]	0.001* (0.001) [-22.74]
Part-time	-0.002*** (0.001) [1.26]	-0.001* (0.000) [0.87]	-0.009* (0.004) [122.36]	- (0.000) [0.001]	0.002* (0.001) [7.98]	0.001* (0.000) [-12.51]
Temporary contract	0.000 (0.000) [-0.15]	0.000 (0.000) [-0.12]	0.001 (0.000) [-9.81]	-0.001 (0.000) [-6.60]	-0.000 (0.000) [-0.80]	- (0.000) [0.000]
Log firm size	-0.002*** (0.000) [1.27]	-0.002*** (0.000) [1.32]	-0.000** (0.000) [6.04]	0.001** (0.000) [5.28]	-0.001** (0.000) [-4.76]	-0.000** (0.000) [9.00]
Collective agreement	0.000 (0.000) [0.03]	-0.000 (0.000) [0.03]	-0.000 (0.000) [0.07]	0.000 (0.000) [-0.03]	0.000 (0.000) [-0.23]	0.000 (0.000) [-0.27]
Industry	-0.001 (0.001) [0.42]	-0.000 (0.001) [0.39]	-0.001* (0.000) [15.62]	-0.002** (0.001) [-15.25]	-0.001 (0.001) [-4.09]	-0.001** (0.000) [25.00]
Occupation	-0.023*** (0.003) [17.08]	-0.023*** (0.003) [18.32]	0.005*** (0.001) [-63.60]	0.000 (0.001) [3.40]	- (0.000) [30.84]	-0.002*** (0.000) [0.000]
Log weekly hours	-0.007 (0.000) [5.19]	- (0.000) [5.19]	- (0.000) [5.19]	- (0.000) [5.19]	- (0.000) [5.19]	- (0.000) [5.19]
Number of observations	94,697	94,697	94,697	94,697	94,697	94,697

Notes: The table presents the OB decomposition results performed using a model that includes personal and work-related characteristics. The dependent variable for each model is indicated within the column headings. Decompositions use the relevant male coefficients as the baseline. Figures in parentheses are robust standard errors. Figures in square brackets are proportions of observed gap. \*\*\*, \*\*, and \* denote statistical significance at the 0.001, 0.01, and 0.05 levels, respectively.

narrowing the observed gaps. However, differences in ethnicity largely offset these effects, as non-UK-born employees are predominantly non-White. In addition to ethnicity, lower average tenure among recent immigrants plays a critical role in explaining gaps across multiple outcomes, particularly pay (whether measured weekly or hourly) and the likelihood of employment in low-skilled occupations or temporary jobs. For weekly hours, differences in industry and part-time employment status account for some variation, as recent immigrants are more likely to work in industries with longer working hours (e.g., Human Health and Social Work activities) and less likely to hold part-time roles. Despite these contributions, a significant portion of the observed gaps between more recent immigrants and UK-born employees remains unexplained, consistent with our baseline regression results.

Turning to the estimates for longer-term immigrants, the decomposition results present a contrasting picture (Table 9). For gross weekly pay, an observed 12 percent gap favouring immigrant employees (Column 1) is almost entirely explained by differences in observed characteristics. Similarly, the 12 percent hourly pay advantage (Column 2) and the 2.8 percentage point advantage in the likelihood of low-skilled employment (Column 5) are fully accounted for by these characteristics. Although the observed gaps are not statistically significant, the decomposition reveals an unexplained gap for weekly hours, with long-term immigrants working longer than UK-born employees (Column 3), though the magnitude (at 1 percent) remains small. Consistent with this, there is a significant 2.6 percentage points unexplained gap in part-time employment (Column 4). A comparison of the unexplained gaps for long-term immigrants and more recent immigrants confirms wider gaps for the latter, consistent with our baseline results. However, the components of the explained gap (bottom panel) highlight the importance of region and education, as also noted for more recent immigrants. Region accounts for over 60 percent of the observed pay advantage and the lower likelihood of part-time and low-skilled employment among long-term immigrants, reflecting their concentration in high-paying regions such as London (see Table B2 in the Online Appendix). Similarly, long-term immigrants, like their more recent counterparts, have a higher proportion of employees with degrees compared with UK-born workers, which significantly contributes to their advantages in pay, full-time employment, and occupational allocation.<sup>53</sup>

<sup>53</sup> As in our benchmark regression analysis, our focus here is on the mean gaps, but Figure B2 in the Online Appendix presents decomposition results across the weekly and hourly pay distributions using the approach by Firpo et al. (2018).

## 7. Conclusion

This paper provides new evidence on labour market differences between first-generation immigrants and UK-born employees. By using a novel dataset – the ASHE linked to the 2011 Census of England and Wales – which combines accurate and detailed labour market outcomes from employer payroll records with a rich set of personal and family characteristics from the national census, our analysis goes beyond pay and additionally considers weekly paid hours and the probability of employment in part-time, low-skilled, and temporary jobs. In doing so, we offer a comprehensive picture that provides new and policy-relevant insights from which to understand the labour market performance of immigrants.

Our analysis considers heterogeneities among immigrant groups who are likely to differ in their outside options, cultural norms, and labour market behaviour. By distinguishing immigrants based on years of residence, we find that more recent immigrants (with fewer than 10 years of residence in the UK as of 2011), on average, earn less, work longer hours, are less likely to be employed in part-time roles, and are more likely to be employed in low-skilled occupations or temporary jobs relative to comparable UK-born employees. In contrast, labour market performance of long-term immigrants (with 10 or more years of residence) is more comparable to that of UK-born employees. Additionally, wider gaps are identified for immigrant groups likely to have lower outside options, such as females and non-White immigrants, or those likely to have initially arrived in the UK for reasons other than employment, as well as for those from regions less similar to the UK economically and culturally. Our decomposition analysis further supports this, as it identifies the important role of work region and education – factors likely to improve employees' outside options. In particular, immigrant employees' higher concentration in high-paying regions, such as London, and their greater likelihood of having a degree relative to UK-born individuals contribute to improving their labour market performance. However, consistent with UK evidence and reinforcing concerns relating to ethnic disparities, ethnicity is found to widen disparities in labour market outcomes in favour of UK-born employees, who are disproportionately White.

Our findings point to the importance of policies that influence the employment opportunities of immigrants to improve their outcomes and address labour market inequalities. However, the observed differences could also result from shifts in the composition of immigrant cohorts, driven by factors such as negative selective emigration or changes in selection for in-migration. Because our data are limited to a single point in time (i.e., 2011), it is not possible to investigate these patterns further. Given the significant changes in the UK economy and labour market since then, including Brexit and the COVID-19 pandemic, the composition and performance of immigrant cohorts may also have evolved. In this regard, extending the ASHE–Census

linkage to include later census years would be particularly valuable for future research, enabling a more detailed and contemporary analysis of these dynamics.

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## Data availability statement

Information on the data underpinning this publication, including access details, can be found in the ONS SRS Metadata Catalogue: <https://doi.org/10.57906/80f7-te97>.

## Supporting information

Additional supporting information can be found online in the supporting information section at the end of the article.

### Online appendices

### Replication files

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