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The Effects of Welfare Restrictions on the Labour Supply of EU Immigrants in the UK

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THE EFFECTS OF WELFARE RESTRICTIONS ON THE LABOUR SUPPLY OF EU IMMIGRANTS IN THE UK

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Abstract

A relevant question within the growing debate on immigration policy concerns the impact of granting immigrants free access to the welfare system. I analyse the case of the European 2004 Accession (A8) countries and the lift of the temporary limitations to benefit eligibility that citizens from these countries faced until April 2011 in the UK. I provide evidence that supports the absence of magnet effects and compositional changes following the end of the stricter regime. I find that when the restrictions are relaxed A8 immigrants claim more benefits and are less likely to be employed. Results are consistent with the hypothesis that, if denied welfare support, immigrants may be more keen on increasing their labour supply in order to compensate for the foregone receipt of assistance, especially when they are more financially constrained.

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1 Introduction

On May 2004, a group of countries entered the European Union and since then have become commonly known as Accession Countries or A8 Countries. These are: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. With the 2004 enlargement the EU population increased by almost 75 million people (i.e. by 20%) overnight and, evidently, this opened its labour market to millions of potential workers from the new Member States.

Fears of massive migration flows within the post-enlargement EU and concerns on the risk of severe shocks to their labour markets and to their welfare systems led the old Member States to temporarily restrict access to workers coming from the A8 countries, usually through the need of a work permit (Boeri et al., 2005). The UK, Ireland and Sweden were the only exceptions. They granted workers from the new Member States full access to their labour markets, although the UK imposed some additional conditions for welfare purposes until April 2011. Indeed, in the years 2004–2007 only, 1.2 million A8-born workers moved to these three countries (Elsner, 2013).

Such big numbers, inevitably, sparked a debate on the access to and the usage of welfare benefits by immigrants. The two main concerns related to this phenomenon involve a possible congestion of public goods and services and to the potential insurgence of the so-called ‘benefit tourism’, i.e. foreign citizens moving to a country with the (explicit) intention to make use of welfare assistance.¹ As a matter of fact, along with the widespread belief that the presence of immigrants might jeopardise the employability and the wage level of the native population, these arguments have come to form one of the cornerstones of the Leave campaign for the 2016 Brexit referendum (Wadsworth et al., 2016). However, such controversies are far from being a prerogative of the UK and they are currently disputed in several other countries, where some are pushing to put a stop to migration flows and to cut down on public support to foreign citizens, including EU nationals.²

In light of the ongoing debate, it is of major interest for both policy-makers and the general public to understand the potential implications of allowing immigrants free access to the welfare system in the host country. I contribute to this discussion by evaluating the effects of lifting welfare access restrictions on the propensity to take up benefits and on the labour supply of a group of newly arrived workers. Nevertheless, the results of the analysis might easily be applied to other contexts. This work, in fact, also fits into other strands of the economic literature, especially the one dealing with welfare, taxation and their effects on employment (Brewer et al.,

¹ As to the first issue, the then British Prime Minister Theresa May in January 2017 has argued that “while controlled immigration can bring great benefits, [...] when the numbers get too high, public support for the system falters” (*The Independent*, 17 January 2017). Yet, Dustmann and Frattini (2014) point out that the marginal cost of providing public goods to immigrants is likely to be lower than the average cost. As to the second concern, the former British Foreign Secretary Philip Hammond has publicly stated that Britain would be “‘wide open to abuse’ by ‘freeloading’ EU migrants who are exploiting the welfare state” (*The Telegraph*, 20 January 2015). However, little evidence supports the main intra-EU migration motives being benefit-related, as opposed to work- or family-related (Verschueren, 2014).

² In August 2019, the US government under President Donald Trump has issued a rule aiming at denying permanent legal status to immigrants who are believed to be likely to receive public benefits (*The New York Times*, 12 August 2019).

2006; Francesconi and Van Der Klaauw, 2007; Meghir and Phillips, 2010; Blundell et al., 2016). The analysis focuses on the UK as the destination country and refers to the decade immediately following the 2004 EU enlargement.

The UK is a convenient case for two reasons. The first one is found in the set-up of the transitional limitations to welfare access that were applied to A8 nationals in the years 2004–2011. In fact, the way these have been designed provides a suitable setting that allows me to identify the effect of granting the right to claim benefits by comparing A8 and EU15 immigrants before and after the change in policy.³ The second factor that makes the UK a valid unit of analysis is the considerable influx of workers that have arrived in the country during the last fifteen years from the newly-accessed countries to the European Union. In the UK alone, in fact, it is estimated that the foreign-born population has increased from around 3.8 million to 7.8 million between 1993 and 2013, while the number of foreign citizens has risen from 2 million to 5 million (Vargas-Silva and Rienzo, 2014).

In the last decades, extensive theoretical and empirical evidence has developed in order to assess the impact of immigration on a number of outcomes. The literature finds modest or absent effects of immigration on the employment opportunities and the wages of the native population (Dustmann et al., 2005; Clark and Drinkwater, 2008; Manacorda et al., 2012; Dustmann et al., 2013). While the core of the literature focuses especially on labour market effects, other dimensions, such as health (Norman et al., 2005; Wadsworth, 2013; Kennedy et al., 2014; Giuntella, 2014), housing (Saiz, 2007; Sa, 2015), schooling (Geay et al., 2013) and crime (Bell and Machin, 2011; Bell et al., 2013; Mastrobuoni and Pinotti, 2015), have been amply analysed.⁴

A few empirical studies examine the participation of immigrants to welfare in the UK. They generally conclude that immigrants, and especially those coming from Europe, make less use of welfare and social assistance compared to natives (Barrett and McCarthy, 2008; Drinkwater and Robinson, 2013; Battiston et al., 2014) and, contrary to the resident UK-born population, they positively contribute to the fiscal balance (Dustmann and Frattini, 2014). Yet, there is little evidence on the potential effects of temporarily restraining welfare access to the foreign-born sub-population and the implications on their labour supply in the host country.⁵ In a recent paper, Ruhs and Wadsworth (2017) evaluate the impact of the removal of temporary work permit regulations on Bulgarian and Romanian citizens in the UK. The authors focus on the likelihood of being self-employed, but also look at other outcomes, including welfare usage. Given the characteristics of the policy, however, they cannot disentangle the effect of gaining the right to work from that of the contemporaneous acquisition of the eligibility to access welfare.

Here, I investigate the consequences of temporarily restricting immigrants access to welfare, by exploiting a quasi-natural experiment in the context of the 2004 EU enlargement. In contrast to previous research, I am able to isolate the effect of gaining eligibility to welfare access on

³ EU15 countries are essentially those belonging to the EU prior to the 2004 enlargement (and Switzerland).

⁴ See also Borjas (1999b), Dustmann and Glitz (2005) and Kerr and Kerr (2011) for extensive reviews. Preston (2014) presents a detailed survey on the effect of immigration on public finances.

⁵ One example, referred to the US, comes from Borjas (2003), who estimates that welfare cutbacks during the 1990s not only did not raise the share of uninsured immigrants, but significantly increased their labour supply, making them more likely to be covered by employer-sponsored health insurance.

the usage of benefits and on the response in terms of labour supply. To do so, I rely on a Differences-in-Differences model. I test the hypothesis that individuals who gain eligibility to welfare access are more likely to claim benefits.⁶ Furthermore, they might decrease their supply of labour in reaction to the newly acquired possibility to receive financial support. In principle, by gaining eligibility, individuals have lower incentives to be in work because their non-labour income increases (income effect). At the same time, if the amount of the benefits received is significantly affected by the earned income, benefit recipients might reduce their supply of labour (substitution effect). The data also allows me to analyse if the change in policy affects differently various sub-groups among the immigrants.

In this setting, the identification strategy might incorrectly identify adjustments in the behaviour of the immigrants affected by the end of the restrictions due to either a change in the quantity or in the composition of the incoming workforce. On the one hand, the lift of the restrictions might have attracted citizens of A8 countries to permanently move to the UK. This, in turn, might have generated a shock to the labour market, making it more difficult for A8 immigrants to find a job, or to remain employed, causing the estimates to be biased away from zero. I provide evidence that this is not the case and that migration inflows are constant across the 2011 threshold.⁷ On the other hand, the end of the transitional limitations might cause a change in the composition of the incoming cohorts of immigrants, as a relatively more generous welfare might attract individuals that are less motivated or less attached to the labour market, i.e. might lead to an inflow of negatively-selected workforce from abroad (Borjas, 1999a; Brücker et al., 2002). This, again, could make the estimates biased away from zero. All the different pieces of information that I am able to provide, however, suggests that this is not the case: A8 nationals moving to the UK in the post-2011 years (i.e. after the end of the restrictions) do not seem different from their peers who have migrated earlier (i.e. when access to welfare was limited).

Then, I measure the rise in the benefit claiming rate for A8 immigrants compared to their EU15 counterparts. I estimate that the end of the transitional limitations yield an increase by more than 7 percentage points in the probability of claiming benefits. The results are validated by a large set of robustness exercises and placebo tests. Interestingly, the effect is equally appreciable across all types of benefits concerned by the temporary restrictions (unemployment, family/child and housing benefits) and is particularly intense for females and the less educated immigrants, especially when they have children.

Finally, I examine whether an increase in the probability to claim benefits is accompanied by a decline in the probability to work. As Bingley and Walker (2001) observe, income and sub-

⁶ As described by Blundell et al. (1988), the decision to take up means-tested welfare instruments such as housing benefits depends on the returns to claim relative to the disutility of claiming. The former is a function of the size of the benefit entitlement, income and other household characteristics; the latter depends on factors such as transaction costs, lack of information and stigma. In this context, the take-up rate for A8 immigrants in the post-2011 years is predicted to be positive, given that individuals in this group typically earn lower wages. At low income levels, in fact, the returns from claiming are higher and the corresponding costs are lower (Blundell et al., 1988).

⁷ See Monras et al. (2018), who discuss a similar issue and find that legalisation of immigrant workers in Spain does not give rise to magnet effects.

stitution effects tend to reinforce each other in the presence of substantial entitlement amounts and high taper rates. Moreover, the authors note that in the UK the taper rate for housing benefits amounts to 65%, but the combination with other instruments such as Family Credits can raise it up to 90%. Thus, the incentive to reduce the labour supply could be stronger for those who are more in need of public support. I provide evidence that this mechanism does, in fact, take place: A8 immigrants who no longer undergo limitations in access to welfare are 5 p.p. less likely to be in employment and symmetrically more likely to be inactive. In line with the results on benefit take-up, I find that female participation is mostly affected by the restrictions, as well as that of the less educated, the more so in the presence of children. These results suggest that the restrictions on benefits do, indeed, predominantly affect sub-populations of immigrants who might be in deeper financial distress.

The remainder of this paper is organised as follows. In the next section I describe the context and the data used in the analysis. In section 3 I present the identification strategy. I also discuss potential selection effects and changes in the composition of the incoming workforce. Sections 4 and 5 are dedicated to the empirical results on the claim of benefits and the labour supply, respectively, while section 6 focuses on the impact of the change in policy by gender and educational attainment. Section 7 concludes.

2 Setting and Data

In this section I describe the institutional context in which the analysis is framed. Then, I illustrate the selection of the sample and the definition of the outcome variables. Last, I present some descriptive statistics.

2.1 Institutional Context

I consider the case of the 2004 Accession (A8) Countries, that entered the European Union on 1st May 2004: Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia.⁸ At the time of the Accession all former EU Member States, except the UK, Ireland and Sweden, decided to temporarily apply restrictions at entry, which typically consisted of requiring workers from new Member States to get work permits. The UK opted for a less restrictive regime that allowed entry into the country's labour market but limited access to welfare.⁹ In all cases, the possibility to impose restrictions to A8 citizens was granted to the old Member States for a maximum period of seven years since the date of the Accession (i.e. until 30th April 2011).

In the UK, citizens of countries that belong to the European Economic Area (EEA) and Switzerland can access welfare support only if they have the Right to Reside (RtR), i.e. are

⁸ Malta and Cyprus also joined the EU on the same date. They are excluded from the analysis because they belong to the Commonwealth of Nations and, as a consequence, have been subject to different institutional circumstances.

⁹ The UK released the regulations on the transitional restrictions to A8 nationals on 25th March 2004, just a month before the 2004 Accession. On 28th April 2004, without prior notice to the public, the British government approved some additional constraints.

economically active or able to support themselves.¹⁰ If unemployed, EEA citizens may also acquire the RtR if they can show that they have a ‘genuine chance of being engaged’, are actively looking for a job and are habitually resident in the country. After a continuous period of residence in the UK for five years, EEA citizens can gain a Permanent Right of Residence status and access benefits like UK nationals.

The restrictions devised in 2004 by the UK granted A8 nationals moving into the country the RtR only if in work and registered to the UK Border Agency’s Worker Registration Scheme (WRS). Specifically, during the WRS regime they only had access to in-work benefits and to some other welfare instruments, such as Statutory Maternity Pay and Statutory Sick Pay, that are payable regardless of immigration status. Only after being registered to the WRS and in continuous employment for 12 months, they could claim out-of-work benefits and tax credits on the same grounds as other EEA nationals (Kennedy, 2011, 2015; Wilson, 2015).¹¹

The WRS scheme was initially supposed to last five years and, hence, expire on 30th April 2009. From that moment on, citizens of A8 countries would have been entitled to equal treatment as nationals of the other EU Member States. However, on 8th April 2009, just three weeks before the expiration of the WRS, the British government unexpectedly decided to extend it for further two years.¹² Ultimately, immigrants from A8 countries have been subject to the WRS scheme for the first seven years since the date of the 2004 Accession. Starting on 1st May 2011, they have been wholly equalised to other EEA citizens.

I exploit the change in policy on 1st May 2011 for A8 nationals to evaluate the effect of gaining access to welfare support on the probability to take up benefits and on the labour supply. In the baseline specification the comparison is made against EU15 nationals, who did not go through any change in legislation over the period examined.¹³

To my knowledge, this is the first attempt to empirically assess the impact of the expiration of the transitional restrictions applied to nationals of the A8 countries on their use of welfare services and their labour supply.¹⁴

¹⁰ The term ‘Right to Reside’, in this context may generate some equivocation: the RtR differs from the free movement rights that all EEA citizens can exercise in the sense that, while all EEA citizens can freely move from one country to the other within the EEA, only certain categories may have some rights attached to their residence in the host country. As Kennedy (2011) suggests, it may be more convenient to think of RtR as ‘rights of residence’.

¹¹ They could be out of work for no more than 30 days in the 12-month period.

¹² On 31st March 2009, the then Parliamentary Under-Secretary of State at the British Home Office Lord Alan West issued the following statement at the House of Lords: “No decision has yet been taken on whether to continue the Worker Registration Scheme beyond the end of April 2009” (HL2391, 31/03/2009, available at <https://publications.parliament.uk/pa/ld200809/ldhansrd/text/90331w0003.htm>).

¹³ EU15 countries include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Sweden and Spain. The UK also typically belong to the EU15 group but they are excluded here for the purpose of the analysis. I also include Switzerland in this group because, even if technically they do not belong to the EEA, they are subject to the same rules as other EU15 countries in view of separate agreements (Kennedy, 2011). Samples of UK-born individuals and of immigrants from a comparable group of countries are employed in the descriptive statistics and in the robustness checks.

¹⁴ Ruhs and Wadsworth (2017) exploit a similar setting with the 2007 Accession of Bulgaria and Romania (A2 countries), whose citizens were required to hold a work permit to be employed (but not self-employed). The authors find that the end of the transitional rules yield a decrease in the probability of being self-employed for A2 nationals compared to their A8 counterparts. They also look at welfare reciprocity and other employment outcomes. However, in the paper they acknowledge that the common trends assumption for some of their

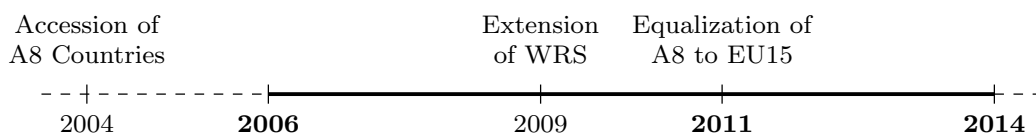
2.2 Sample Selection

I use data from the Annual Population Survey (APS), an annual survey based on the UK Labour Force Survey (UK-LFS) plus a boost sample which allows an enhanced representativity at the local level.¹⁵ The data are available for the years 2004–2014 but I only consider individuals who were interviewed in the period 2006q3–2014q1 (see Figure 1). On the one hand, I account for a slight change in the law that came with the application of the EU Rights of Residence Directive in April 2006; thus, the year 2005 and the first half of 2006 are dropped.¹⁶ On the other hand, most of the year 2014 is excluded because of major changes to the welfare system that came into place with the introduction of the Universal Credit, which replaces the current system of benefits and tax credits.

I consider all foreign-born individuals aged 18 to 65 who come from an EU15 or an A8 country and have arrived in the UK any time after 2004. Throughout the analysis, individuals are defined as coming from a certain country based on their place of birth.¹⁷ In this particular case, the specification of the origin on the grounds of the country of birth seems preferable to the one based on their nationality as the place of birth is predetermined, while one could potentially change nationality for reasons that may be correlated to their eligibility to benefits and, hence, generate endogeneity (Borjas, 2002).¹⁸

I exclude from the sample any immigrant that arrived before the 2004 Accession to avoid any potential selection problems. This is due to the fact that prior to 2004 immigrants from A8 countries did not enjoy the same freedom of movement rights as other EEA nationals and, as a consequence, they have been found to be significantly different from later waves of immigrants (Longhi and Rokicka, 2012).¹⁹ Moreover, the UK and all EU15 countries already belonged to

Figure 1: Change in Welfare Accessibility for A8 Nationals



outcomes does not hold.

¹⁵ The sampling of the APS ensures the inclusion of at least 510 economically active persons for each Unitary Authority (UA)/Local Authority District (LAD) and at least 450 in each Greater London Borough.

¹⁶ The Rights of Residence Directive (2004/38/EC) imposed the UK to concede the RtR also to economically inactive immigrants in the first three months since their arrival, although benefits are not granted to those who gained the RtR only on the basis of the three-month rule.

¹⁷ Nationality is only used in the few cases where the country of birth yields ambiguity: e.g. individuals who state that they were born in Former Czechoslovakia are assigned to either Czech Republic or Slovakia on the basis of their declared nationality. Those declaring a nationality other than Czech or Slovakian are dropped.

¹⁸ It is also true that, as Boeri (2010) points out, when the country of birth is used as a proxy for immigration status, estimates may be biased because of misclassification as immigrants of ‘true nationals’ born abroad for whatever reason and this issue may be especially important for a country with a large number of former colonies such as the UK. However, given that I include only immigrants from the European continent in the sample and that none of these countries have been former British colonies, I opt for the definition based on the country of birth.

¹⁹ In a recent paper, Ruhs (2017) estimate that the acquisition of EU status in 2004 has had a positive impact on the earnings of A8 workers who have moved to the UK prior to April 2004.

Table 1: Sample by Country of Birth

EU15						A8		
Austria	23	(66)	Italy	244	(651)	Czech Republic	118	(501)
Belgium	46	(124)	Luxembourg	3	(8)	Estonia	27	(112)
Denmark	37	(87)	Netherlands	87	(273)	Hungary	204	(715)
Finland	25	(76)	Portugal	135	(559)	Latvia	219	(856)
France	334	(831)	Spain	77	(170)	Lithuania	274	(1,480)
Germany	228	(683)	Sweden	20	(72)	Poland	2,023	(11,291)
Greece	80	(268)	Switzerland	232	(520)	Slovakia	270	(1,005)
Ireland	208	(640)				Slovenia	4	(17)
Total				1,779	(5,028)	Total	3,139	(15,977)

Note: Figures refer to the sample of immigrants that arrived in the UK after the year 2004 and who have spent less than two years in the country. Numbers in parentheses pertain to the enlarged sample containing also immigrants who have lived in the UK for more than two years.

the EU in 2004 and immigrants from these countries were not subject to any change at the time of the A8 Accession. Last, I keep all observations for which outcome and control variables are non-missing.

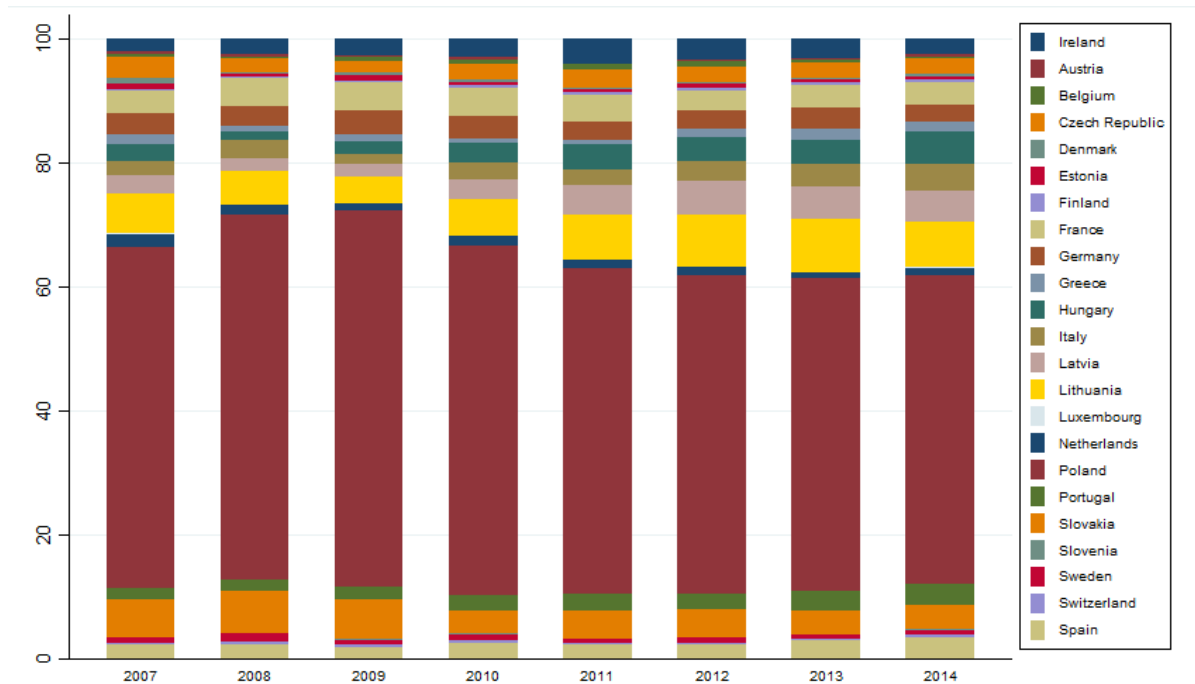
The final sample resulting from the selection process described above is tabulated in Table 1, divided by country of birth. In the main sample I consider all individuals who have been in the UK for less than two years. The reason behind this lies in the fact that, under the stricter regime (May 2004–April 2011), A8 immigrants had to be continuously in work for at least 12 months before being able to access out-of-work benefits. Hence, A8-born workers that had just moved to the UK would have been the ones actually subject to the limitations. As the year of arrival is the only piece of information available across all waves, I cannot compute precisely the length of time that each individual has spent in the country. Given this, in the main sample I select all individuals for whom the difference between the year of interview and the year of arrival is strictly less than two. Hence, the time elapsed since the time of arrival is, *de facto*, restricted to be from a minimum of 6 months to a maximum of 23 months.²⁰ However, for a smaller sample of immigrants, namely only those in the waves 2008–2014 and having moved to the UK less than two years before the interview, I can retrieve information on both the month and the year of last arrival to the UK and compute the time spent since migration in months, rather than years. I use this sample to restrict the analysis to the group of immigrants that are inevitably affected by the WRS scheme (i.e. have been in the UK for 6–12 months) and to isolate those who have plausibly met the 12-month requirement (i.e. have been in the UK for

Table 2: Share of EU15 and A8 immigrants by year

	2007	2008	2009	2010	2011	2012	2013	2014
EU15	0.23	0.23	0.22	0.24	0.24	0.23	0.25	0.26
A8	0.77	0.77	0.78	0.76	0.76	0.77	0.75	0.74

²⁰ This is because 6 months is the minimum time that an individual needs to be residing in the UK before being interviewed in the LFS/APS, while 23 months would be the case where the immigrant who arrived on January of the year $t - 1$ is interviewed in December of the year t .

Figure 2: Proportion of Immigrants by Group and Year



Note: The graphs show the proportion of immigrants in the sample by country of birth and year. Source: APS.

13–23 months). Additional evidence is computed on a larger sample that includes immigrants who have lived in the UK for two years or more.

Figure 2 shows the proportion of immigrants in the sample by country of birth and year. On average, EU15 nationals constitute around 25% of the whole sample of EU immigrants, and this share is constant over time (Table 2). Immigrants from Poland, followed by Lithuania, make up the largest group of immigrants, compared to individuals coming from any other European country. This is consistent with previous analyses (Elsner, 2013) and official figures: according to the Office for National Statistics (2013), the group of immigrants residing in England and Wales that increased the most between 2001 to 2011 were the Polish-born, with almost a ten-fold increase from 58,000 to 579,000. This increase is largely attributed to Poland joining the European Union in May 2004. In the years 2004 to 2009 also a large number of immigrants from other A8 countries arrived in the UK: in 2011 there were 29,000 Hungarian-born residents, 36,000 coming from Latvia, 63,000 from Lithuania and 43,000 that were born in Slovakia (Office for National Statistics, 2013).

2.3 Variables Definition

The UK benefit system provides for countless categories of benefits and contributions.²¹ Eligibility to benefits depends on a number of circumstances within a ‘benefit unit’, such as income,

²¹ At least up until the adoption of the Universal Credit, which started in some pilot areas at the end of 2013 with the purpose of replacing a number of welfare contributions.

savings, outgoings (e.g. rent and childcare payments), existing benefits and council tax bill.²² This makes it virtually impossible to identify the eligibility of individuals in the sample.

The APS/UK-LFS questionnaires contain a section dedicated to the respondents' benefit entitlement.²³ Questions related to benefit and tax credits claims are asked to all survey respondents who are in paid or unpaid work or are aged 16-69. They are referred to as benefit 'claims' but they can, in fact, be interpreted as the actual take-up of benefits, as the exact question that is posed to the respondents reads: 'state benefits/tax credits that [they] may be receiving or claiming'.²⁴ All variables concerning the claim of benefits are dummy variables. This is because the only information available in the APS is whether or not an individual claims a particular benefit, while no questions are asked on the amounts claimed or their duration, which unfortunately limits the potentiality of this investigation.²⁵

I classify the multitude of benefits existing in the UK in five groups on the grounds of their type and of the claimants' employment status.²⁶ These are synthesised in Table 3. In addition, I construct three aggregate indicators where I group benefits according to their type. The first indicator, 'Any Benefit', takes value 1 if the respondent claims any type of benefit, regardless of their employment status, and value 0 otherwise. The second dummy, 'Out-of-Work Benefits', is an indicator for whether the individual claims any of the following out-of-work benefits: unemployment, family or housing. This category comprises means-tested benefits that can be claimed regardless of the working status. Eligibility to these benefits for A8 nationals was restricted in the period up until 1st May 2011. Hence, this is used as main outcome of interest when the effect of the transitional limitations is assessed in terms of benefit take-up. The third and last variable, 'Household Benefits' is equal to 1 if any of the benefits at the household level, namely family or housing benefits, are claimed and is equal to 0 otherwise.

The variables describing the individuals' labour supply identify their economic status, the hours worked and their likelihood of working full-time or of having a second job. Economic status is divided into three categories, as defined under the ILO classification: in employment (which includes both employees and self-employed workers), unemployment and inactivity. Hours worked are determined on the basis of usual hours worked, only for people in employment. Full-time employment and having a second job are identified by two dummy variables, again only for people in employment.

The information concerning the educational level of immigrants in the data is rather prob-

²² A benefit unit is essentially the nuclear family (single person or couple living together with or without dependent children). The benefit unit differs from the 'household', whereas a household may contain more than one benefit units. For simplicity, throughout the analysis I refer to a benefit unit as a household.

²³ Comparison between the data collected by the LFS and administrative data collected by other Government departments shows that the LFS consistently undercounts benefit claimants (see APS/UK-LFS documentation). However, as there is no reason to believe that these figures are systematically undercounted for a particular group (i.e. nationality) of respondents, one should not be concerned over selection issues.

²⁴ For more details, see APS/UK-LFS documentation: LFS User Guide, Volume 2. In the remainder of the paper, I will broadly refer to both benefits and tax credits simply as 'benefits'.

²⁵ Thus, as the assessment of the eligibility and the computation of the benefits depends on a wide set of circumstances within the household, the analysis can only be restricted to an estimate of the Intention-to-Treat.

²⁶ The data offer a wide range of potential outcomes. Yet, I focus on a restricted set of variables that are specifically relevant to this analysis. Collapsing the information on benefit claims into groups serves this purpose, as well as avoiding multiple hypothesis testing concerns. Similar reasoning applies to labour market outcomes.

Table 3: Definition of Benefit Variables

Benefit	Any	Out-of-Work	Household	Description
Unemployment	✓	✓		All transfers destined to financially support people who are not working, including National Insurance Credits and Job Seeker’s Allowance.
Family	✓	✓	✓	All family- and child-related benefits, including Child Benefit and Child Tax Credits.
Housing	✓	✓	✓	Contributions to housing, including Council Tax Reductions (GB) and Rent Rebate (NI).
In-Work	✓			Transfers aimed at subsidising those who are in paid work but earn low income or work for a few hours per week, including Income Support and Working Tax Credits.
Sickness	✓			All kinds of financial support for ill or disabled individuals, including Personal Independence Payment and Employment and Support Allowance.

lematic. Up until January 2011 all non-UK qualifications are recoded as ‘other’ and this makes it troublesome to allocate the correct qualification level to individuals who have completed their educational career abroad. Other authors typically exploit the age of full-time education completion (e.g. Dustmann et al., 2010; Drinkwater and Robinson, 2013), classifying educational attainment as high (21 or older), intermediate (between 17 and 20) and low (16 or younger). However, this approach neglects the fact that different countries may have incomparable educational systems and that the age at which full-time education is left may correspond to different levels achieved.²⁷ Hence, I follow Campbell (2013) and adopt an alternative strategy to determine the qualification attained by the individuals in the sample. This is achieved by exploiting the variable ‘age when completed full-time education’ and comparing it to the corresponding level of educational attainment in the country of origin, so to frame it into the relevant educational system. In order to maintain a good degree of accuracy and to ensure some harmonisation among the different educational systems across European countries, I refer to the International Standard Classification of Education (ISCED).²⁸ While this practice may suffer to recall bias of respondents (especially in the case of individuals who have repeated years in school), it differs from the other approach in that the potential misclassification of the individuals’ educational attainment is unlikely to be persistent within each country of origin group.

2.4 Descriptive Statistics

Table 4 reports the averages of the variables used in the analysis by area of origin (UK, EU15 and A8) and by sub-sample. Natives comprise individuals born in the UK who are aged 18–65, interviewed in the period 2006q1–2014q1 and have no missing information in the key variables.

²⁷ For instance, leaving school at age 19 (i.e. 13 years of education) in Spain may translate in a vocational tertiary level (ISCED 5B), while at the same age a German student may reach a post-secondary level (ISCED 3). In both countries the primary school entry age is 6 years old.

²⁸ I refer to the 1980 primary school entry ages from the World Bank’s World Development Indicators and the tables in the 2009 PISA Technical Report (OECD, 2012) to compute the average age at which each ISCED level is attained in each European country. I follow a conservative approach and assign the lowest ISCED achievement in the cases where two or more levels can be attained at the same age.

The sample used in the main analysis consists of EU15 and A8-born individuals who have been in the UK for less than two years (<2 yrs).

Both groups of immigrants are approximately 30 years old at the time of the interview. A higher share of A8 nationals is married and has children compared to the EU15-born. Moreover, A8 migrants tend to have been living in the UK for longer and are less well educated relative to the EU15 migrants. Yet, only less than a fifth of the A8-born, compared to almost half of the EU15-born, lives in a household with at least one individual coming from a different country of origin than hers. In terms of observables, the two groups in the sub-sample of less recent immigrants (>2 yrs) appear to slowly converge to each other. Moreover, their variables on family formation are similar to those of the UK-born.

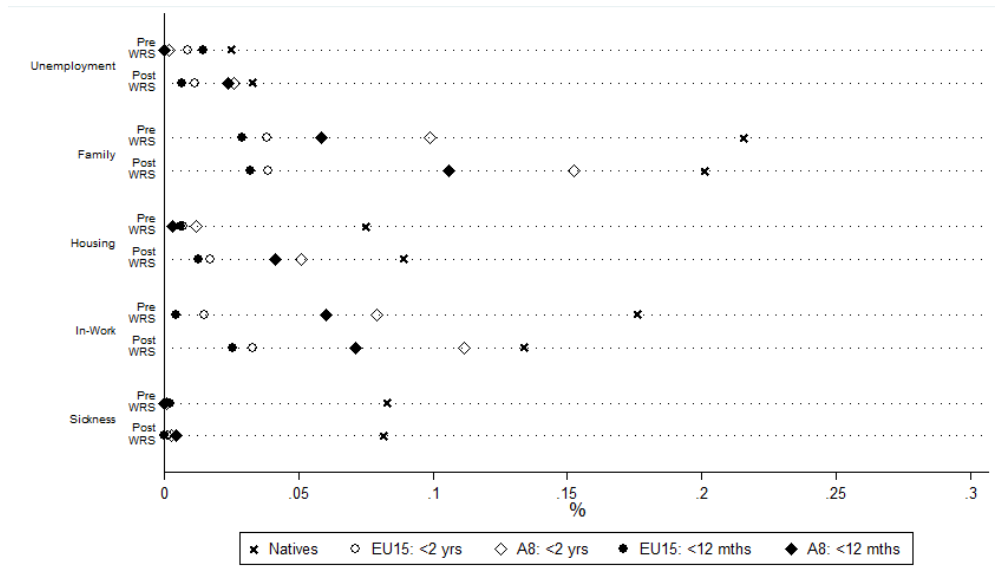
Information on the indicators concerning the claim of benefits are summarised in Table 4 and Figure 3. Here, the following features can be easily noticed. First, in the pre-WRS period, A8 nationals who have lived in the UK for less than 12 months, i.e. the sub-population of immigrants affected by the restrictions, do not claim out-of-work benefits. The only exception is found in family and child benefits, as Maternity Statutory Pay, which is payable regardless of the immigration status, is also included in this variable. Second, EU15-born tend to claim less benefits than A8 nationals. Third, natives claim significantly more benefits than migrants

Table 4: Descriptive Statistics

	Natives	EU15			A8		
	All	<12 mths	<2 yrs	>2 yrs	<12 mths	<2 yrs	>2 yrs
Demographics							
Female	0.523	0.518	0.525	0.525	0.541	0.523	0.542
Age	43.059	28.513	29.170	33.073	29.897	29.222	32.488
Married	0.543	0.191	0.203	0.386	0.282	0.298	0.455
No. of children	0.693	0.433	0.417	0.657	0.647	0.572	0.814
Years in UK	-	0.745	0.676	4.702	0.833	0.727	5.049
High Edu (ISCED5-6)	0.223	0.724	0.707	0.661	0.337	0.340	0.375
Mixed-origin HH	0.052	0.464	0.491	0.613	0.201	0.176	0.405
Benefits							
Any benefit	0.336	0.045	0.057	0.199	0.116	0.146	0.362
Out-of-work benefits	0.269	0.043	0.052	0.189	0.092	0.121	0.328
Household benefits	0.254	0.034	0.045	0.181	0.087	0.118	0.321
Unemployment benefit	0.025	0.011	0.010	0.020	0.009	0.008	0.020
Family/Child benefit	0.210	0.030	0.039	0.165	0.077	0.110	0.301
Housing benefits	0.076	0.009	0.012	0.052	0.019	0.022	0.081
In-work benefits	0.149	0.014	0.021	0.076	0.064	0.085	0.199
Sickness benefits	0.083	0.001	0.002	0.010	0.002	0.001	0.009
Labour Supply							
In employment	0.721	0.566	0.617	0.741	0.701	0.763	0.821
ILO unemployed	0.041	0.095	0.078	0.051	0.117	0.079	0.052
Inactive	0.238	0.339	0.305	0.209	0.182	0.159	0.128
Usual Hrs Worked	26.105	21.491	23.994	29.698	27.271	30.374	31.816
Has full-time job	0.723	0.784	0.800	0.816	0.840	0.863	0.827
Has 2nd job	0.028	0.013	0.013	0.019	0.009	0.011	0.021
Observations	1,839,057	1,010	1,726	2,248	1,275	3,088	9,724

Note: Individuals in all samples are restricted to be aged 18–65, to be interviewed in the period 2006q1–2014q1 and not to have missing information in the key variables. EU15 and A8 immigrants must have moved to the UK after 2004. The sample used in the main analysis consists of EU15 and A8-born individuals who have been in the UK for less than two years (<2 yrs).

Figure 3: Share of Benefit Claim by Group and Period



Note: Raw averages computed on separate sub-samples before and after 2011q2. Source: APS.

in the main sample (<2 yrs).²⁹ Finally, an extremely low percentage of immigrants claim unemployment benefits (around 1% in the main sample). The same is true also in the case of sickness benefits, where up to 0.2% of immigrants claim this type of benefit (compared to around 8% of natives).

Labour supply averages by period and group are presented in Figure A.1. A8 immigrants constitute the group that has the highest employment rate (over 80%) and the lowest inactivity rate (14%), while EU15 nationals tend to behave similarly to the native population, where around 70% are in work. These values are consistent with Campbell (2013), who uses ONS data to compute that the employment rates for A8 and EU15 immigrants and natives are 81.1%, 72.4% and 72.8%, respectively. The proportion of unemployed is on average constant across groups and is between 5% and 6%. A8 nationals also work longer hours: they tend to work up to 4 hours more than EU15 migrants (and than natives). Additionally, they are more likely to be in a full-time job than British workers. Nevertheless, they receive the lowest wage, namely around a third less than the UK- and the EU15-born.

3 Empirical Strategy

In this section I illustrate the empirical model and the identification strategy. I also discuss potential magnet and compositional effects that might originate from the change in policy.

²⁹ This is true also in comparison to the less recent immigrants (>2 yrs), for most types of benefits. The pattern is reversed only for family-related and housing benefits and for in-work support when compared to A8 nationals. This, however, is consistent with the fact that A8 nationals reach higher fertility levels and their wage is sensibly lower. Thus, their share of benefits claimants grows accordingly.

3.1 Model

In the main specifications, I estimate a regression Differences-in-Differences model such that:

$$Y_{icrt} = \alpha + \beta A8_c * PostWRS_t + \mu_c + \sigma_r + \lambda_t + X'_{icrt}\theta + \epsilon_{icrt}, \quad (1)$$

where $A8_c$ is a dummy for being born in a A8 country and $PostWRS_t$ is a dummy for being interviewed after 1st May 2011, i.e. the date in which the transitional restrictions for A8 nationals were lifted.³⁰ Hence, β is the treatment effect of interest, as it should capture the ‘pure’ effect of the expiration of the restrictions to welfare access on the outcome.

I also include X_{icrt} , which is a set of characteristics of individual i from country c and residing in region r at time t . This contains the typical individual controls, i.e. gender, age, age squared, a dummy for being married, the number of dependent children, the number of years since the arrival to the UK, education and whether the individual lives in a household in which residents are born in two or more different countries (i.e. mixed-origin HH). This latter variable should pick up the effect of living in a multicultural environment and coming across more information, which may be especially important with respect to dealing with bureaucratic procedures and to the chances of finding a job, particularly for non-English speakers. In order to control for characteristics of the area of residence such as unemployment rate and the share of immigrants, I also include region dummies (σ_r), in addition to country of origin and year dummies (μ_c and λ_t , respectively).³¹ Finally, ϵ_{icrt} is the error term, where standard errors are clustered at the country of origin level.³²

Various outcomes (Y_{icrt}) are considered. I first look at the impact of the limitations to welfare support on the probability of claiming benefits. Then, I evaluate the effect on the labour supply, namely economic status, hours worked, probability of working full-time and of having a second job.

The coefficient β is correctly identified provided that the treatment has no impact on the pre-treatment population and that the common trend assumption holds (Lechner, 2011). As to the first assumption, this would be violated in the presence of changes in the composition of migrants from A8 countries in response to the removal of WRS. These issues are discussed in section 3.2. Additionally, I consider that if A8-born individuals arriving after the change in policy were to be negatively selected compared to those migrating in the years 2004–2011, they would display higher welfare usage and lower propensity to work even after having met

³⁰ The data are treated as a repeated cross-section. Moreover, since respondents are interviewed yearly and the treatment is based on the first 12-month period in the UK, the panel component of the data does not appear to be useful in this specific setting.

³¹ In order to align time spans to April 2011, year dummies are arranged such that each year refers to the last two quarters of the previous year and the first two quarters of the actual year. Hence, for instance, the dummy for 2007 takes value 1 in the last two quarters of 2006 and the first two quarters of 2007. Quarter q2 of 2011 is the one where the threshold date falls and is, therefore, excluded.

³² Clustering at the area of residence provides even better results in terms of statistical significance. Moreover, permutation tests run with the Stata command `ritest` confirm the significance of the effects when standard errors are clustered at the country of origin.

the 12-month requirement. Thus, in sections 4.1 and 5 I present separate analyses on the claim of benefits and on labour supply outcomes, using the sub-samples of immigrants who have been in the UK for more than 12 months. Last, in section 4.2 I exploit the unexpected extension of the WRS in April 2009 to show the absence of anticipation effects.

The common trend assumption implies that, in the absence of the treatment, A8 immigrants would have experienced the same trends in their potential outcomes as the EU15-born in the control group. While this is not testable, I perform a wide range of checks in support of the credibility of this assumption. These encompass the inclusion of status-specific linear trends, which should account for potential differences in trends across treated and control units that are unrelated to the treatment, and a battery of placebo tests.³³ These are all discussed in section 4.2. Moreover, as commonly used in this type of approaches (Autor, 2003), I apply the following specification for the event-study analysis on the main outcomes:

$$Y_{icrt} = \alpha + \sum_{\pi=2007}^{2010} \beta_{\pi}(A8_c * year_{\pi}) + \sum_{\tau=2012}^{2014} \beta_{\tau}(A8_c * year_{\tau}) + \mu_c + \sigma_r + \lambda_t + X'_{icrt}\theta + \epsilon_{icrt}. \quad (2)$$

The omitted year is 2011, which coincides with the period immediately preceding the change in regime for the A8 immigrants. This specification allows to test for the presence of parallel trends in the pre-treatment period, namely, if the coefficients associated to the *leads* (β_{π} , with π going from 2007 to 2010) are not statistically different from zero. Moreover, this approach is convenient to understand whether the treatment effect fades, increases or stays constant over time, depending on the estimated coefficients of the *lags* (β_{τ} , with τ going from 2012 to 2014).

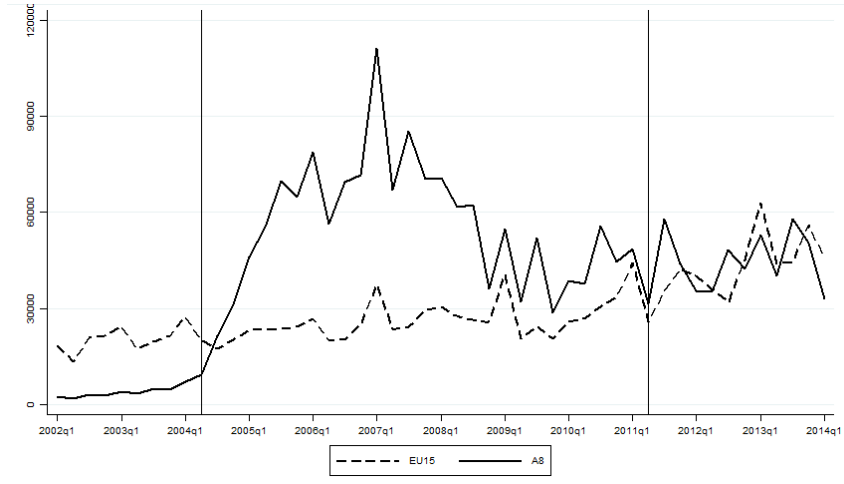
3.2 Potential Magnet and Compositional Effects

As described in the previous section, the two groups of immigrants differ in terms of a few observable characteristics. In turn, they are quite dissimilar from the sample of natives. These differences may partly originate from the sample selection criteria employed, in particular the fact that only recent immigrants are included in the final sample. However, the choice of the treated and control groups should not constitute a problem in this context. First, the core analysis is done by comparing A8 to EU15 nationals, who are all immigrants and are all selected with the same criteria. Second, all countries of origin considered, despite some differences, belong to the same institutional framework, i.e. the European Union.³⁴ Third, all observable characteristics, including the ones that are typically associated to welfare use such as gender, family composition and education, are taken into consideration and included in the set of control variables.

³³ Specifically, I artificially move the treatment date, I check whether the treatment has an impact on unaffected outcomes (income and sickness benefits) and whether the effect survives on a ‘fake’ treatment group (immigrants from ‘potential EU member’ countries).

³⁴ Even though the average GDP per capita is sensibly higher in EU15 countries than in A8 countries, this has been increasing at the same rate for the two groups since 2000 (see Eurostat).

Figure 4: NINo Registrations by Group and Period



Note: Total number of National Insurance Number Registrations of individuals with nationality of an EU15 or an A8 country, raw quarterly data across all UK job centres. Source: Department of Work and Pensions (DWP).

A concern that may arise, especially in view of the large number of immigrants moving to the UK following the 2004 Accession, is that the end of the WRS regime itself could generate an inflow of immigrants from A8 countries, i.e. might lead to magnet effects. In practice, the arrival of the new workforce in large numbers might induce a shock to the labour market and this might, in turn, alter the estimated effects of the end of the restrictions on the employment outcomes. In such case, estimates would be biased away from zero, as individuals might be less likely to work due to the increase in labour supply which might not be absorbed by the existing demand. However, as Figure 4 shows, the number of National Insurance Number (NINo) registrations of A8 citizens increases right after the 2004 Accession and peaks in 2007, but then it decreases to a steady average of around 50,000 registrations per quarter from 2009 onwards.³⁵ Importantly, it does not appear to vary around the 2011 threshold, which suggests that the end of the WRS does not induce a response in terms of number of arrivals to the country. Moreover, I follow the approach used by Monras et al. (2018) and formally test for whether the end of the WRS induces an increase in the number of workers with foreign EU nationality that register to obtain a NINo, according to the following:

$$\ln NINo_{cq} = \gamma A8_c * PostWRS_q + \kappa_c + \phi_q + \varepsilon_{cq}, \quad (3)$$

where $NINo_{cq}$ is the total number of National Insurance Number registration of immigrants from country c occurring in quarter q . Results are presented in Table 5. Columns I and II refer to all periods following the 2004 Accession, while in columns III and IV I exclude the immigration wave that peaked in 2007 and restrict the analysis only to the period post-2008q3. The reported

³⁵ In the UK, the acquisition of a NINo is a necessary condition to work, claim benefits and pay pension contributions. UK residents are assigned their NINo when they turn 16 years old; immigrants must apply for it upon arrival in the country.

Table 5: Absence of Magnet Effects

Dep. Variable	(I) ln NINo	(II) ln NINo	(III) ln NINo	(IV) ln NINo
A8 * PostWRS	-0.354* (0.172)	-0.112 (0.128)	-0.234 (0.146)	0.030 (0.054)
Observations	836	836	396	396
R-squared	0.966	0.984	0.982	0.993
Country-Specific Trends	No	Yes	No	Yes
Period	Post-2004q3	Post-2004q3	Post-2008q3	Post-2008q3

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. All columns include year and country of origin dummy variables.

coefficients are not statistically distinguishable from zero, which suggests the absence of magnet effects due to the lifting of the WRS.³⁶

Another potential issue is that the inflow of immigrants from A8 countries might change in composition due to the change in welfare access rules. From a theoretical point of view, immigrants are expected to self-select into living in a country with a relatively more generous welfare system (Borjas, 1999a; Brücker et al., 2002). In this specific setting, the termination of the restrictions after April 2011 could have played a role in decision to migrate to the UK for A8 nationals. If that was the case, one would expect less skilled individuals migrating from A8 countries in higher proportions after April 2011. Then, the behaviour of the two groups in the UK would possibly follow different patterns before and after April 2011, as the less skilled are generally more likely to claim and less likely to work. Thus, estimates would be biased away from zero and the effect of the change in policy not properly identified.

Ideally, one should verify that the characteristics of the individuals migrating out of the source countries and moving to the UK do not differ systematically before and after the change in policy. However, tracking migrants from one country to another is a very challenging task.³⁷

Breaking down the information on the NINo registrations by gender and age groups suggests that the demographics of the incoming A8-born do not change over time, and especially not around the end of the WRS (Figure A.2).

Some other suggestive evidence can be extracted from the International Passenger Survey on long-term immigrants.³⁸ Two variables in particular can give further insights on the type of incoming workforce from abroad: the reason of migration and the usual occupation prior to migration. Figure A.3 shows the distribution of A8 immigrants interviewed at their arrival to the UK every year in terms of their previous occupation (left) and of the reason why they migrated (right). In both cases I observe that the compositions are constant over time and, most importantly, they do not change from before to after 2011.³⁹

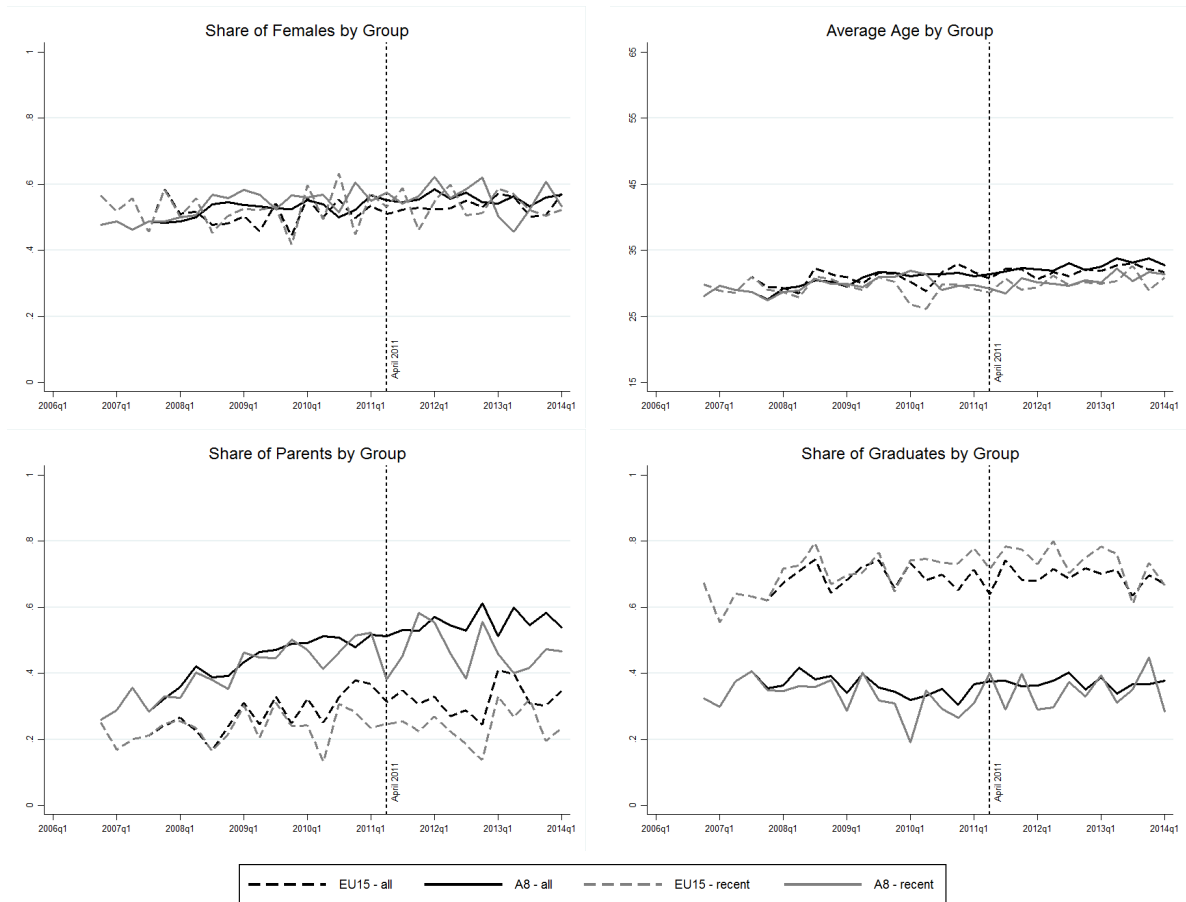
³⁶ The coefficient in column I is negative and statistically significant at 10% level, due to the decrease in the flows in the pre-2009 years. In any case, this would contradict the hypothesis of magnet effects being in place.

³⁷ For instance, the statistical office in Poland (i.e. the main sending country of the A8 group) produces yearly estimates on the number of citizens emigrating for permanent residence to other countries. However, the information provided does not distinguish across skills or educational level of emigrants.

³⁸ Here, the definition of long-term refers to people who intend to stay in the country for at least one year.

³⁹ The two indicators are self-reported and this can pose the usual questions on the reliability of the information they convey. Nevertheless, even if respondents were influenced in their replies by the existing regulations and

Figure 5: Averages by Group and Period



Note: Raw averages. Dashed and solid lines refer to EU15 and A8 immigrants, respectively. Black and grey lines pertain to the whole sample and to the recent immigrants (<2 years in the UK) only, respectively. Source: APS.

Additional descriptives can be computed from the APS sample. Brücker et al. (2002) pinpoint differences in education, age and number of dependent children as the main factors that make immigrants more reliant on social assistance compared to natives (*welfare dependency*).⁴⁰ In Figure 5 I plot the average trends by year, by group and by length of stay in the UK for the observable characteristics that are potentially linked to the propensity to claim benefits: gender, age, having children and education. In each graph, the dashed and solid lines refer to EU15 and A8 immigrants, respectively, while black and grey lines pertain to the whole sample and to the recent immigrants (i.e. those who have been in the UK for less than two years).⁴¹

The distinction between the overall sample and the recent immigrants is made in order to check potential changes in the composition of the samples over time: when the black and grey lines overlap it implies that the recent immigrants and those who arrived in earlier years

legislative framework, one should expect larger shares of people in low-skilled occupations or migrating for non-working reasons in the years after the expiration of the WRS.

⁴⁰ See also Blundell et al. (1988) for a discussion on the determinants of take-up for means-tested benefits in the UK.

⁴¹ Similar plots are obtained when comparing immigrants who have resided in the UK for less than 12 months versus those who have been in the country for less than two years or versus the less recent immigrants (>2 yrs).

behave in the same way; when the lines diverge this indicates that the behaviour of the recent immigrants does not coincide with the one of their predecessors. However, as long as the trends are parallel within category (overall versus recent), this would suggest the absence of a trend in the composition of these individuals that could hypothetically affect their likelihood of claiming benefits or their participation to the labour market.

The graphs for the share of females and the average age do not show any differences in trend in their distribution, as all four lines are essentially overlapping. The graph referring to the share of immigrants with dependent children describes a slightly increasing pattern in the share of parents in the sample. Also, a lower share of recently arrived individuals has children compared to the full sample of immigrants. Yet, the patterns are parallel both across A8 and EU15 recent immigrants (grey dashed and solid lines) and across the two groups in the whole sample (black dashed and solid lines). This also suggests the absence of fertility effects due to the end of the WRS. Finally, the composition of the two groups in terms of education is clearly stable across time, with the share of EU15 graduates that is sensibly higher than the share of A8-born with a degree. This is not only when the whole sample is considered (black lines), but also when only recent immigrants, i.e. those who have been in the UK for less than two years, are taken into account (grey lines).

Overall, the descriptive evidence discussed above suggests the absence of differences in composition across groups that might have been triggered by the change in the welfare eligibility rules. In the following sections, I further address the concerns of potential selection by showing that, once the initial 12-month requirement is met, A8 nationals who migrate after the end of the WRS behave similarly to their peers who have arrived to the country in earlier years.

4 The Effect on Benefit Claims

In this section I present the main results concerning the effect of the restrictions to welfare access on the claim of benefits. I first evaluate the impact of the end of the WRS on the aggregated indices previously discussed and on each type of benefit separately. Then, I discuss a number of robustness checks and placebo tests in support of the main evidence.

4.1 Main Results

The first step consists of estimating the probability of claiming benefits for the individuals in the main sample, i.e. those who are potentially affected by the temporary limitations in their eligibility to welfare support.

Table 6 reports the regression results from the estimation of Equation 1. In the first three columns the aggregate indices of benefit claim are used as outcomes. Specifically, column I concerns the claim of any benefit regardless of the type or the employment status of the individual, including those that were available to A8 immigrants before and after April 2011 (i.e. in-work and sickness benefits). Column II refers to the claim of out-of-work benefits, namely unemployment, family and housing. This is the indicator that fully encompasses the benefits

Table 6: Claim of Benefits

	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
Dep. Variable	Any Benefit	Out-of-work Benefit	Household Benefit	Unempl. Benefit	Family Benefit	Housing Benefit	Income Benefit	Sickness Benefit
A8 * PostWRS	0.076*** (0.024)	0.075*** (0.022)	0.065** (0.023)	0.022* (0.012)	0.047** (0.022)	0.030** (0.013)	0.010 (0.014)	0.003 (0.003)
Observations	4,814	4,814	4,814	4,814	4,814	4,814	4,814	4,814
R-squared	0.219	0.223	0.226	0.044	0.243	0.041	0.124	0.037

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: < 2 years in the UK.

that were temporarily inaccessible to A8 immigrants in the period 2004-2011 and should be regarded as the main outcome of interest. The outcome in column III is defined as whether the individual claims any benefit at the household level, i.e. family and housing benefits. Finally, columns IV-VIII concern the effects of the change in policy on the different types of benefits taken individually.

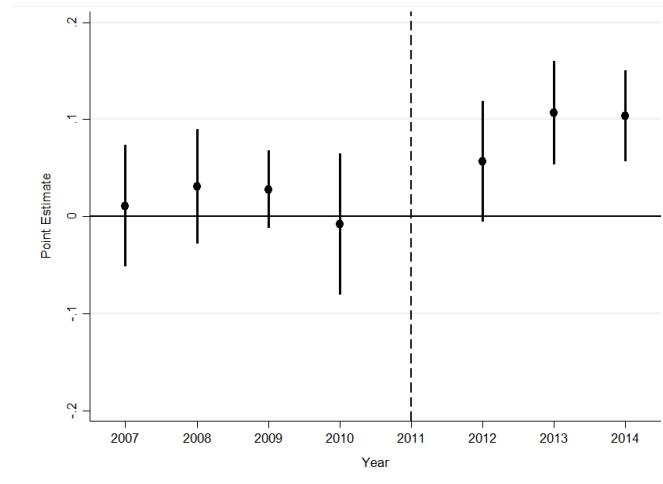
The coefficients associated to the interaction term $A8 * PostWRS$ are positive and significantly different from zero in all except the last two columns. As mentioned above, column II corresponds to the preferred specification. The estimated coefficient reveals that when the WRS scheme expires (i.e. from May 2011 onwards) A8 immigrants are 7.5 percentage points more likely to take up out-of-work benefits. This implies that they have a 149% higher probability of claiming benefits when restrictions to welfare access are removed (column II). An equivalent effect occurs for household benefits, while this decreases slightly (to 136%) when all types of benefits are included in the definition of the dependent variable, i.e. column I, due to the counterbalancing effect of in-work and sickness benefits.

Such considerations are complemented by Figure 6. Here, the graph illustrates the coefficients associated to the interaction between the indicator for belonging to the treated group (A8) and a series of year dummies on the claim of out-of-work benefits. The graph shows that the two groups tend to follow a similar pattern when restrictions are in place and that the *leads* are never statistically different from the 2011 base category. After the end of the WRS, the probability of benefit take-up for A8 immigrants increases significantly by 5.7 in 2012 and by 10.7 and 10.3 p.p. in the years 2013 and 2014, respectively. The gradual increase observed in 2012 is justified by the fact that once eligibility is extended to all A8 immigrants, it might take some time for them to gather the necessary information and for their applications to be processed.

When I break the analysis by type of benefit, I observe that when immigrants are no longer subject to the WRS they claim more unemployment benefits by 2 p.p., more family-related benefits by almost 5 p.p. and more housing support by 3 p.p.⁴² These coefficients can be interpreted as follows. With the expiration of the temporary limitations A8 immigrants claim

⁴² Given that family-related benefits include transfers that are provided conditional on the presence of children, I also restrict the sample to include only individuals who have at least one child. This yields a reduction in the number of observations to around a third. Here, the interaction term implies a larger (not significant) coefficient.

Figure 6: Effect by Year: Out-of-Work Benefits



Note: Coefficients estimated as from Equation 2, with 95% confidence intervals and standard errors clustered at the country of origin. *Leads* are never statistically significant. I do not reject the null hypothesis of all *leads* being jointly equal to zero. Sample: < 2 years in the UK.

significantly more unemployment, family and housing benefits relative to their EU15-born counterparts in the same period. The extent of the increase is 207%, 124% and 164%, respectively. Also, there is no effect on the claim of in-work benefits, i.e. primarily Income Support for low-income workers, and on sickness benefits: the coefficient associated to the treatment effect in both cases is essentially zero and not statistically significant. This is consistent with the eligibility rules for the A8 immigrants, in the sense that prior to 1st May 2011 they were already qualified to claim in-work and sickness benefits and, hence, a significant change was not predicted to occur.

As discussed previously, it might be that, while observable characteristics are accounted for, the change in policy generates selection on the type of immigrant based on unobservable characteristics. In fact, it might happen that A8 nationals moving to the UK after the end of the WRS scheme do so because they are no longer required to work continuously for the first 12 months before being granted full access to welfare. Hence, they might be negatively selected compared to their counterparts who have moved to the UK while the restrictions were in place. If that was the case, one would expect the cohorts who have moved during the WRS years to be less keen on claiming benefits even after they are equalised to their EU15 counterparts, i.e. after they have been (and worked) in the UK for at least one year, in comparison to the recently immigrated cohorts. I analyse this hypothesis in Table 7. Here, I restrict the sample to those respondents for which there is information on both the month and the year of arrival. I then split the sample among those that have been in the UK for 12 months or less and those who have arrived by more than 12 months. The above panel refers to the sample of very recently immigrated respondents, i.e. those who have been in the UK for more than 6 and less than 12 months. As expected, the estimated effect for this sub-sample is larger than the one in

Table 7: Claim of Benefits: By Month of Arrival

Dep. Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
	Any Benefit	Out-of-work Benefit	Household Benefit	Unempl. Benefit	Family Benefit	Housing Benefit	Income Benefit	Sickness Benefit
A8 * PostWRS	0.093*** (0.017)	0.094*** (0.019)	0.075*** (0.015)	0.028** (0.010)	0.051*** (0.017)	0.031*** (0.010)	0.003 (0.012)	0.007 (0.005)
Observations	2,285	2,285	2,285	2,285	2,285	2,285	2,285	2,285
R-squared	0.164	0.158	0.163	0.058	0.170	0.058	0.104	0.095
Sample	≤12 mths	≤12 mths	≤12 mths	≤12 mths	≤12 mths	≤12 mths	≤12 mths	≤12 mths

Dep. Variable	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)
	Any Benefit	Out-of-work Benefit	Household Benefit	Unempl. Benefit	Family Benefit	Housing Benefit	Income Benefit	Sickness Benefit
A8 * PostWRS	0.032 (0.036)	0.030 (0.033)	0.032 (0.032)	-0.004 (0.013)	0.029 (0.029)	0.013 (0.024)	-0.002 (0.024)	-0.001 (0.008)
Observations	1,644	1,644	1,644	1,644	1,644	1,644	1,644	1,644
R-squared	0.345	0.369	0.365	0.084	0.392	0.077	0.200	0.065
Sample	>12 mths	>12 mths	>12 mths	>12 mths	>12 mths	>12 mths	>12 mths	>12 mths

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, education, mixed-origin HH and region, year and country of origin dummy variables. Sample with information on month of arrival.

the main specification, as it should be capturing the effect on the individuals that are actually treated. The lower panel includes only immigrants who have been in the UK for more than 12 months. In principle, if the composition of the immigrant cohorts does not change from before to after the end of the WRS scheme, the effect on these individuals should not persist, as A8 nationals who have worked in the UK for at least 12 months are no longer required to comply with the WRS restrictions. On the contrary, a positive and statistically significant effect would suggest the negative selection of the recent cohorts of immigrants. The estimated coefficient for this sub-group is not statistically different from zero, which implies that the welfare take-up of immigrants who have been in the UK for long enough to fulfil the 12-month restrictions does not differ across groups and across periods. Similar conclusions can be drawn from the results presented in column I, Table A.1, where only immigrants who have lived in the UK for at least two years are considered.

4.2 Robustness Checks

I run several checks in order to verify the robustness of the analysis presented so far and the solidity of the interpretation of the main results. To begin with, I carry out some placebo tests to ensure that the main results do not arise from random chance rather than from a causal relationship. As discussed previously, the use of in-work benefits as a dependent variable is already to be seen as a placebo test, since this category of benefits was accessible to A8 immigrants even during the period of limited eligibility to welfare support. Coherently, I find that the coefficient associated to the end of the restrictions on the claim of in-work benefits is not only not significant, but also its magnitude is close to zero (see Tables 6 and 7). The same applies to sickness benefits, for which the estimated effect is, in fact, null.

Moreover, I run some other placebo tests by focusing on the span prior to the equalisation of A8 to EU15 immigrants (that is, the period before 1st May 2011) and by using several false cut-offs, namely one every six months from October 2010 going backwards to April 2008. Coefficients in Table A.2 confirm the absence of any systematic treatment effect. In view of the contextual information described in Section 2, the lack of significance at the April 2009 cut-off is particularly meaningful to selection bias concerns. Around this date, in fact, the WRS scheme was extended for an additional two-year period without prior notice to the public. Thus, if A8 immigrants moving to the UK right after April 2009 expected to be free to claim benefits and potentially work less (i.e. were negatively selected), one would observe a positive and significant coefficient associated to the interaction $A8 * PostApr2009$, as proof of their change in composition. The estimated coefficient suggests that this hypothesis can be ruled out.

As supplementary placebo test, I select a group of other European countries that are arguably comparable to the A8 group in their socio-economical features and use it as treatment group: Albania, Bosnia-Herzegovina, Croatia, Iceland, Moldova, Norway, Serbia and Montenegro, Turkey, Ukraine, Kosovo. Among these countries, many of them are awaiting to enter the European Union at the time of the analysed period.⁴³ When I employ this sample of countries in place of the original treatment group (A8 countries) I find no consistent and significant treatment effect on the probability of claiming benefits (Table A.3, column I). This result is expected, given that the countries in this sample have not encountered any change in restrictions over the period considered.

Furthermore, one may argue that, given the relatively large number of immigrants from Poland in the A8 group, the effect on the take-up of benefits may be potentially driven by some unobserved characteristics that only Polish immigrants might have. Thus, I run all regressions with two different sub-samples: one where I exclude all immigrants that were born in Poland and one where I exclude all immigrants that were born in countries other than Poland from the A8 group (Table A.3, columns II and III). In both cases, results are in line with the main analysis. Also, when Poland is excluded from the sample the estimated effects appear to be larger in magnitude, which would suggest that the restrictions to welfare access bite proportionally more on immigrants other than those coming from Poland. This is not surprising if one takes into account that the Polish community has been among the largest in the UK since the post-war period. Hence, it is plausible that at their arrival in the UK Polish-born new immigrants may find a well-developed informal network on which to rely in place of (or along with) the official welfare assistance. In the fourth column I exclude the Irish-born from the group of EU15 immigrants, given that Ireland belongs to the Common Travel Area with the UK and the two countries have unique historical ties. The coefficients are again in line with the main estimates. Then, I restrict the sample to the years after the onset of the financial crisis to ensure that

⁴³ Mastrobuoni and Pinotti (2015) use a similar approach. Immigrants coming from A2 countries (Bulgaria and Romania) are not in this sample as they were subject to different transitional restrictions over the period January 2007 - December 2013. Croatia entered the European Union only on July 2013 but Croatian immigrants had restrictions similar to those applied to A2 nationals (Kennedy, 2015). In any case, there are no Croatian-born interviewed in between July 2013 and the end of the period considered.

this does not confound the average estimated effects and still find coherent results (column V). In the last column, I include group-specific linear time trends in order to pick up potential differences in trend across A8 and EU15 immigrants. Also in this case, magnitude and sign of the coefficient of interest are coherent with the main results.⁴⁴

5 The Effect on the Labour Supply

The evidence provided in the previous section proves that removing restrictions to welfare access yields a considerable and significant increase in the claim of out-of-work benefits for A8 nationals. The question that follows is, then, whether there is a response in terms of labour supply. In other words, when immigrants no longer face limitations to welfare support do they work less in view of the relatively increased financial resources? In this section, I investigate whether the extension of the eligibility to out-of-work benefits is complemented by a decrease in the labour supply, both on the extensive and on the intensive margins.

I begin with evaluating the impact of the end of the WRS on the probability for immigrants to be in a certain employment status (Table 8, columns I-III) and then look at other indicators of labour supply on the intensive margin (columns IV-VI). The results suggest that the probability of being in employment is almost 6 p.p. lower due to the end of the restrictions to welfare access (column I). This is largely counterbalanced by an increase in the probability of being inactive, as suggested by the coefficients in columns II and III, although they are not statistically different from zero. The last three columns refer to the intensive margin of the labour supply, where no significant effect is detected. Figure 7 illustrates the estimated coefficients and confidence intervals for the labour supply indicators by year. The graphs confirm the presence of weak effects on the behaviour of A8 immigrants relative to the EU15-born that can be attributed to the change in welfare access policy. Yet, coefficients in the pre-2011 period are never statistically different from zero, which supports the parallel trends assumption in all cases.⁴⁵

Additionally, I consider the sample of individuals for which the information on month and

Table 8: Labour Supply

Dep. Variable	(I) In Employment	(II) Unemployed	(III) Inactive	(IV) Usual Hrs Worked	(V) Full Time Job	(VI) Second Job
A8 * PostWRS	-0.058* (0.033)	0.013 (0.017)	0.045 (0.031)	-0.917 (1.242)	-0.025 (0.045)	0.016 (0.011)
Observations	4,814	4,814	4,814	3,352	3,411	3,410
R-squared	0.169	0.031	0.174	0.133	0.119	0.034

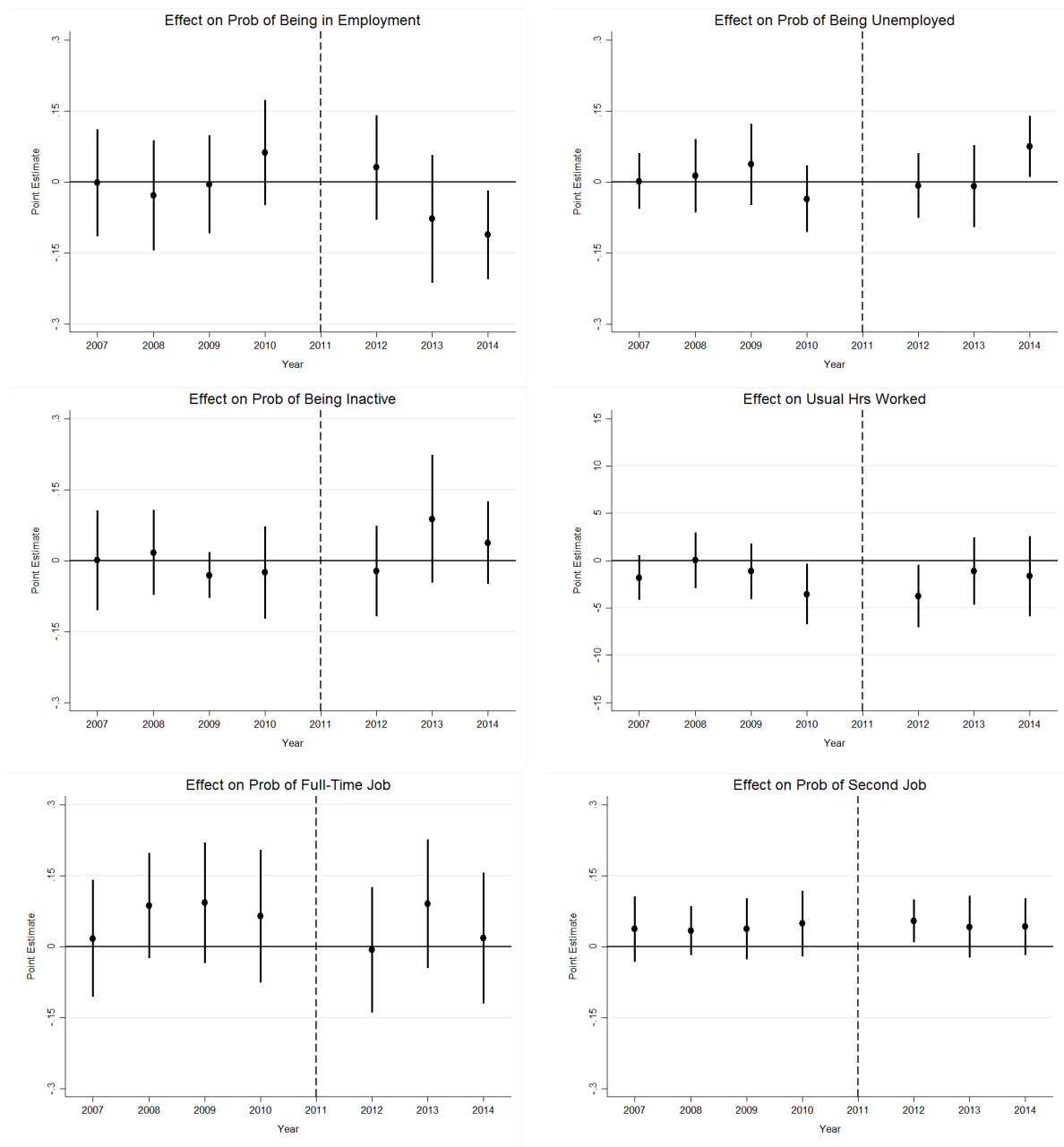
Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: <2 years in the UK, columns IV - VI conditional on being in employment.

⁴⁴ The same results are found when country of origin-specific linear time trends are added to the model.

⁴⁵ The only exception is the coefficient for 2010 on the amount of hours worked, although the trend appears to be reasonably flat across years and the overall effect remains not statistically relevant.

year of arrival are available and I split them into those who have moved to the UK within the past 12 months and those who have been living in the country for longer (Table 9). In the sub-sample of those who have not met the 12-month requirement I find that the probability of being in employment drops by almost 10 p.p. due to the end of the restrictions to welfare access. This is largely counterbalanced by an increase in the probability of being inactive,

Figure 7: Effect by Year: Labour Supply



Note: Coefficients estimated as from Equation 2, with 95% confidence intervals and standard errors clustered at the country of origin. *Leads* are never statistically significant (except the 2010 coefficient for Usual Hours Worked). In all cases, I do not reject the null hypothesis of all *leads* being jointly equal to zero. Sample: < 2 years in the UK.

while the effect on the propensity of being unemployed is basically null (columns III and II, respectively). Likely, such results occur because the acquired eligibility to transfers reduces the financial gain from working compared to not working (Bingley and Walker, 2001; Brewer et al., 2010). These findings are coherent with the hypothesis of an increased labour supply due to the reduced access to social benefits during the transitional restrictions in the years 2004-2011 for individuals whose financial constraint is binding: the drop in the probability of being employed does not come as a consequence of an increase in the number of those in unemployment, which is an involuntary status. Rather, this is fully outweighed by a rise in the inactivity rate.

Conversely, when I consider those who have been in the UK for 13-23 months, the end of the transitional restrictions to welfare access does not yield any significant change in the labour supply outcomes for A8 nationals. This evidence, paired with the results displayed in Table 7, is especially important if one considers the potential negative selection of the cohorts arriving in the post-WRS period, who might be less keen on working given that they are no longer required to continuously work for 12 months before they can claim out-of-work benefits. As a matter of fact, it signals that, compared to their peers who have moved to the UK in earlier years, A8 immigrants that have been living in the country for at least 12 months are not more likely to claim benefits or less likely to work in the post-2011 years. Thus, the impression that recently immigrated cohorts might be negatively selected because of their right to make unrestricted use of welfare can be ruled out by the fact that, once the 12-month period of restrictions is met, they do not behave differently from their A8 counterparts who have arrived while the WRS regime was in place. This is also confirmed by the coefficients in columns II-VII, Table A.1, that are estimated on a sub-sample of less recent immigrants, namely, those having lived in the

Table 9: Labour Supply: By Month of Arrival

Dep. Variable	(I) In Employment	(II) Unemployed	(III) Inactive	(IV) Usual Hrs Worked	(V) Full-Time Job	(VI) Second Job
A8 * PostWRS	-0.097*** (0.033)	0.024 (0.023)	0.074* (0.038)	-1.831 (1.376)	0.002 (0.058)	0.019 (0.017)
Observations	2,285	2,285	2,285	1,432	1,459	1,459
R-squared	0.147	0.042	0.174	0.147	0.143	0.051
Sample	≤ 12 mths	≤ 12 mths	≤ 12 mths	≤ 12 mths	≤ 12 mths	≤ 12 mths

Dep. Variable	(I) In Employment	(II) Unemployed	(III) Inactive	(IV) Usual Hrs Worked	(V) Full-Time Job	(VI) Second Job
A8 * PostWRS	-0.020 (0.041)	-0.014 (0.017)	0.034 (0.041)	0.424 (1.694)	-0.047 (0.043)	-0.004 (0.018)
Observations	1,644	1,644	1,644	1,180	1,199	1,198
R-squared	0.206	0.059	0.217	0.168	0.142	0.054
Sample	> 12 mths	> 12 mths	> 12 mths	> 12 mths	> 12 mths	> 12 mths

Note: *** p<0.01, ** p<0.05, * p<0.10. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, education, mixed-origin HH and region, year and country of origin dummy variables. Sample with information on month of arrival, columns IV - VI conditional on being in employment.

Table 10: Reported Health

Dep. variable	(I)	(II)	(III)
	Health affects work:		
	Kind/Amount	Kind	Amount
A8 * PostWRS	0.017 (0.017)	0.014 (0.016)	0.018 (0.016)
Observations	4,277	4,277	4,277
R-squared	0.078	0.081	0.088

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: < 2 years in the UK.

UK for two years or more.

Finally, another way to check whether A8 nationals tend to retain different unobservable characteristics across the two regimes is to look into their reported health and their ability to work. I check whether A8 nationals are more keen on reporting bad health after the end of the WRS, when they are entitled to claim any type of benefits as their EU15 counterparts. The variable takes value 1 if respondents report that they suffer from health problems that affect either the amount or the type of job they do and 0 if they do not have any health problem or if they do but this does not affect their job. The estimated coefficients from Table 10 and the event-study analysis in Figure A.4 confirm the absence of differences in terms of revealed attitudes across groups, suggesting that there is no unobserved heterogeneity going through the health channel.

6 Heterogeneous Effects: Responses by Gender and Education

In the previous sections I show that the transitional restrictions effectively reduce the take-up of benefits for the affected group and that this indirectly results in a higher propensity to work for A8 immigrants. The last step of this analysis consists of identifying which groups are predominantly affected by the end of the WRS. That is, are there specific categories that are induced to claim more benefits and to work less because of their acquired access to public assistance and their increased financial resources? In this section, I evaluate the effects of the change in welfare access policy by gender and educational attainment.

Understanding whether restrictions to welfare access affect men and women differently is of great relevance for two reasons. First, women are typically more exposed to risks in their labour market opportunities. Hence, if they are subject to reduced eligibility to state-provided assistance this might translate into a deterioration of their well-being. Second, as women are often the second earner within the household, the fact that they may or may not be eligible to welfare assistance might have direct repercussions on their choice to work and on the household finances. If a married woman decides to be in the labour market, the additional earnings produced will stack on top of her spouse's earnings and might push the household total income

above the eligibility threshold for some types of benefits (Atkinson and Micklewright, 1991).⁴⁶ In this instance women have a strong incentive not to work. What is more, such reactions are expected to differ across socio-economic status. Specifically, the above mechanism is likely to occur for high-income households. In the case of low-income households, although basic state-provided assistance might alleviate some of the pressure related to financial constraints, this mitigation might be only partial and therefore women may be still in need of earning a salary.

This mechanism is likely to be reinforced for households with young children, since childcare purchased on the market is relatively expensive: a report by the Family and Childcare Trust estimates that full-time childcare for under twos costs on average 222.36 GBP per week and that families working full-time may spend up to 45% of their disposable income on childcare services (Harding et al., 2017). As a consequence, it is possible that one parent, i.e. the woman, being the typical child-rearer in the household, might choose not to work and stay at home instead. On the one hand, it may be that highly-educated women, who usually have a higher opportunity cost of not working and are less financially constrained, can afford to purchase childcare on the market. However, if the cost of marketable childcare is too high they might, instead, choose to stay out of the labour market, while low-educated women (who may have access to alternative, subsidised or informal childcare) cannot afford not to earn a salary.⁴⁷

In order to appreciate more in depth the dynamics concerning the link between welfare access and labour supply of immigrants, I split the sample by gender and by educational achievement and evaluate the responses separately for individuals with and without dependent children.

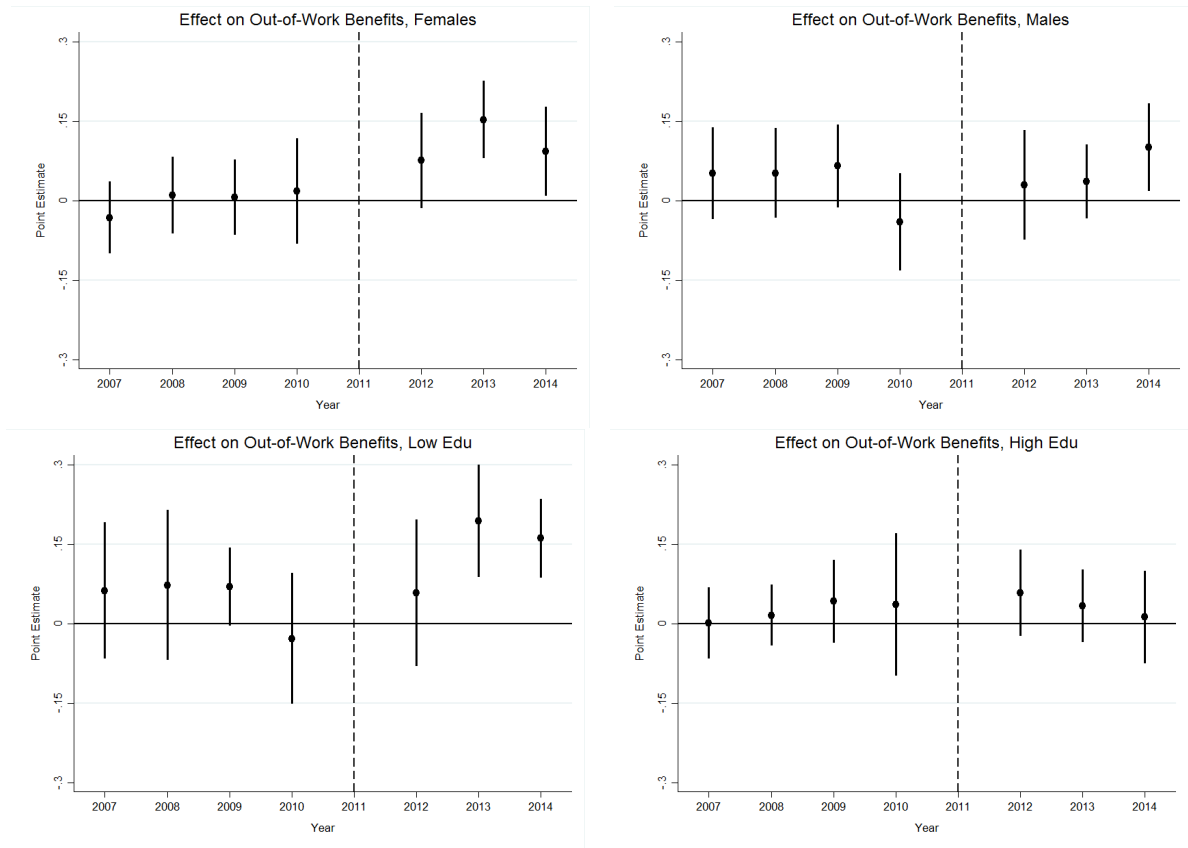
Tables A.4 and A.5 display results from Equation 1 when the outcome is the claim of out-of-work benefits and the sample of recent immigrants is divided by gender and by education. The estimated coefficients imply that the end of the temporary limitations to welfare access predominantly affect the use of public assistance for females. The end of the WRS in 2011 yields a 190% increase in the take-up of out-of-work benefits for this sub-group. Moreover, Drinkwater and Robinson (2013) argue that lower educational levels are associated to a higher probability of claiming benefits by immigrants, although they estimate a relatively small effect of education in the case of A8 immigrants. Indeed, I do find a positive and significant effect of welfare access equalisation on the sub-sample of the less educated by 10 p.p (or by 76%), while immigrants who hold a degree do not seem to change their likelihood to claim benefits. These results indicate that a more restrictive regime in terms of welfare access has the strongest impact on women and on the less educated (and less skilled) immigrants who, in principle, should have more binding financial constraints and, therefore, be more in need of welfare assistance. Education is, in fact, correlated with earnings: the average weekly pay for highly educated and low educated recent immigrants in the sample who work full-time is GBP 454.52 and GBP 269.11, respectively.

Figure 8 shows the event-study analysis of the sub-samples of recent immigrants divided

⁴⁶ In the broader context of taxation, McCaffery (2007) refers to a higher marginal rate of taxation for women than for men. This can have detrimental effects on female employment as the labour supply of women is more elastic than that of men (Alesina et al., 2011).

⁴⁷ Viitanen (2005) finds the cost of childcare negatively affects the probability of working for British mothers.

Figure 8: Effect by Year: Out-of-Work Benefits by Gender and Education



Note: Coefficients estimated as from Equation 2, with 95% confidence intervals and standard errors clustered at the country of origin. *Leads* are never statistically significant. In all cases, I do not reject the null hypothesis of all *leads* being jointly equal to zero. Sample: < 2 years in the UK.

by gender (above) and by education (below). Here, the estimated *lags* confirm the increase in the claim of out-of-work benefits for female and less educated A8 nationals, especially after the second year since their equalisation to EU15 immigrants. The impact on benefits claimed is much less evident for males, where the only coefficient different from zero is found in 2014, while the graph referred to those who have a degree is essentially flat. Moreover, *leads* are never statistically different from zero, which supports the absence of any systematic trends in the period prior to the change in policy for any of the sub-samples considered.

As expected, the reaction in the overall extensive margin of the labour supply is also to be attributed to women and to the less educated. In fact, due to the end of the WRS scheme, which loosens their financial constraint, on average A8 immigrants in these two sub-groups are 14% and 10% less likely to be in employment (Tables A.4 and A.5, column II). That is, the estimated coefficients imply that when the restrictions are relaxed and eligibility to benefits is granted to all European immigrants regardless of their country of origin, A8-born women become less inclined to work and are induced to go into inactivity, while the less educated tend to switch to unemployment. No tangible differences are found on the intensive margin of the labour supply for any of the considered sub-groups.

When I further break down the sub-samples by the presence of dependent children in the household, I observe a strong impact of the lift of the restrictions for parents (columns III - IV), while coefficients referring to immigrants without children (columns V - VI) are hardly different from zero. In fact, while mothers increase their claims by 125% when the restrictions are relaxed, no change in behaviour is observed among women without children. Similarly, the less educated with children increase their claims by 54%, while their childless counterparts are not affected at all. The only exception to this pattern is found in the sub-sample of males who do not have dependent children, who tend to claim 2 p.p. more out-of-work benefits in the post-WRS years. When I consider the labour supply of immigrants with and without children, the effects on the propensity to work appear to be due to the behaviour of mothers, for whom the probability of leaving the labour market once state-provided assistance is available goes up by 39%. Similar behaviour is found in fathers, who are almost 16% less likely to be in employment when restrictions are lifted. Finally, the significant coefficient in column IV of Table A.5 suggests that this is due to low educated immigrants, for whom the ending of the limitations to welfare yields a decrease in employment by 29%.

Overall, these results imply that granting full access to benefits determines an increase in the probability to claim for women and the less educated. At the same time, the receipt of state-provided aid allows these two sub-groups to reduce their labour supply. The fact that these results hold for those A8 nationals who have children suggests that when access to welfare is restricted parents have no other option but to work more. This is in line with what is proposed by Meghir and Phillips (2010), who confirm a high sensitiveness in terms of participation for (low-income) women with young children and lone mothers.⁴⁸ Coherently, while the response of graduates is relatively unaffected by the presence of children, the less educated parents change their behaviour and reduce their propensity to work.⁴⁹

However, no effect is detected in the case of males and of the highly educated. This latter group behaves as predicted by previous contributions: Meghir and Phillips (2010) find that in Britain participation elasticities of highly-educated individuals is virtually null, while low-educated men display some degree of responsiveness to tax and benefit incentives. As far as men are concerned, a substantial share of those coming from a country of the A8 group are in employment (87%), compared to 67% of their EU15 counterparts. Also, when in work, male immigrants of both groups work on average 42 hours per week. Hence, in view of their already considerable employment patterns it is unlikely that the change in welfare access rules can trigger an impact on the propensity to be in employment or on the number of hours worked of A8-born males.

⁴⁸ See also Brewer et al. (2006), Francesconi and Van Der Klaauw (2007) and Lalive et al. (2011).

⁴⁹ Some evidence of a higher responsiveness of the less educated or the less skilled to extended eligibility to benefits is also found by Francesconi et al. (2009) and Lalive et al. (2011).

7 Conclusions

This paper provides an insight on the consequences of the lift of restrictions to welfare access in terms of benefit claims and of labour supply. I use a Differences-in-Differences approach by exploiting a change in policy that took place in 2011 in the UK, when immigrants from the so-called A8 countries, after a transitional period of limitations in their rights to access welfare, were finally equalised to other citizens of the European Economic Area. Specifically, in the period up to 1st May 2011, A8 nationals who moved to the UK had access to some types of public assistance only after they had been in work for 12 months since their arrival.

First, I investigate the effects of being granted access to welfare on the probability of claiming benefits for the group of immigrants that is directly affected by the change in policy (namely, those who have lived in the UK for less than two years). I find that the A8-born are around 149% more likely to claim benefits than other EU nationals when subject to the same eligibility rules, as claims increase by more than 7 percentage points on average due to the lift of the restrictions. This implies that limiting welfare access reduces the take-up of benefits dramatically.

In the second part of the analysis, a labour supply response emerges: those who are no longer subject to the restrictive regime exhibit a lower propensity to work by 6 percentage points. In view of such results, it may then be argued that those who are not entitled to access some types of welfare support may be keen on working more in order to compensate for the foregone receipt of assistance, despite belonging to a group of immigrants who already stand out for their extremely high employment rate, compared both to other foreign-born and to natives.

Furthermore, when I split the sample by gender and education, I observe that the lift of the restrictions significantly affects the propensity to claim for women and the less educated, especially in the presence of dependent children, and this translates into lower participation rates in the labour market for the same sub-groups. As a matter of fact, it appears that the transitional limitations to welfare access tend to disproportionately impact those who are possibly more in need (i.e. those who are more financially constrained). The change in policy affects the claim of benefits of women and of less educated individuals, and these effects appear to be remarkably stronger for those who, having dependent children, are more at risk of being in a disadvantaged condition.

This paper also provides evidence on whether granting welfare access to a selected group of non-natives can induce the so-called magnet effects, that is, attract a large number of immigrants to the country. Based on the records of National Insurance Number Registrations, I show that this is not the case.

I also investigate whether the lift of the restrictions to welfare access might change the composition of the immigrant workforce. I provide extensive descriptive evidence from various sources that does not support such hypothesis. Moreover, I exploit the fact that during the restricted regime A8 nationals had limited access to welfare only in the first year since their arrival to the UK. As the literature predicts, more generous welfare systems tend to attract less-skilled immigrants, who might also have a higher propensity to claim benefits and be less keen on working. Then, one might expect that, after the transitional restrictions expired in

May 2011, A8 nationals moving to the UK would be aware of the end of the WRS scheme and therefore be negatively selected compared to those who migrated during the years 2004-2011. That being the case, statistically relevant effects would persist also for the immigrants having lived in the country long enough to (presumably) have met the 12-month requirement. However, when I focus on this sub-sample, I find that the effect of the restrictions on both benefit claims and labour supply outcomes vanishes. The absence of differences in behaviour after the first year of residence from before to after the end of the WRS signals that compositional effects induced by the change in welfare access policy are negligible in this context.

Finally, given the concerns that have arisen and have been fiercely debated in the past years - peaking (but not ceasing) with the Brexit referendum on June 2016 - a comparison against the UK natives is worth a mention. With respect to a similar sample of natives, A8 immigrants appear to be much less reliant on welfare. Furthermore, as mentioned above, UK nationals have remarkably lower employment rates and higher inactivity rates than A8 immigrants, who also work longer hours and receive lower pay on average.

To my knowledge, this is the first empirical analysis evaluating the effects of the transitional restrictions that were applied to immigrants from the A8 countries after the 2004 Accession. In view of the results herein presented, and of past and future related research, it may be of use for the policy maker to prudently assess all direct and indirect fallouts coming from the application of such restrictions to a group of individuals and to consider the suitability of applying similar schemes to other categories or sub-populations in the future.

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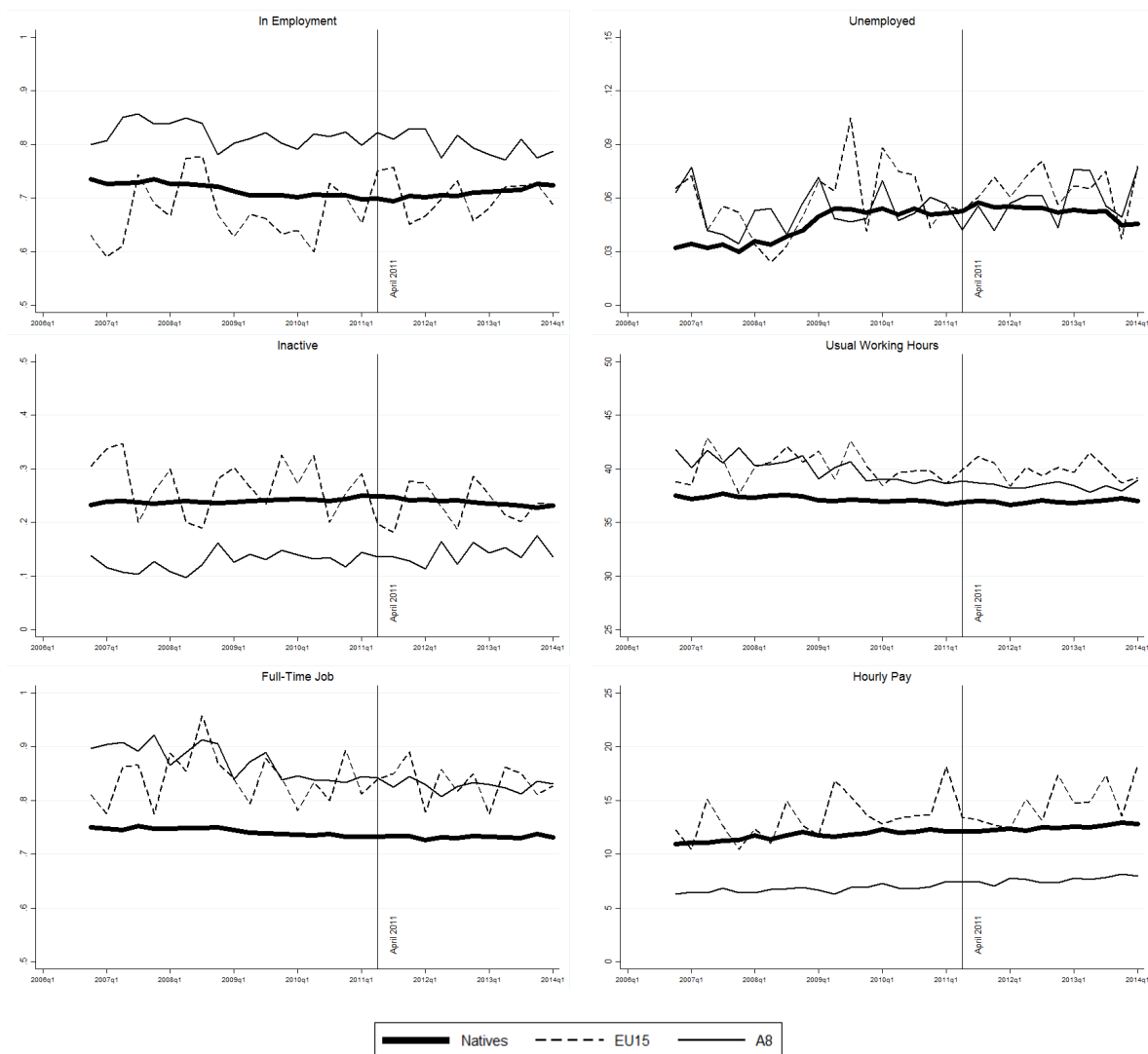
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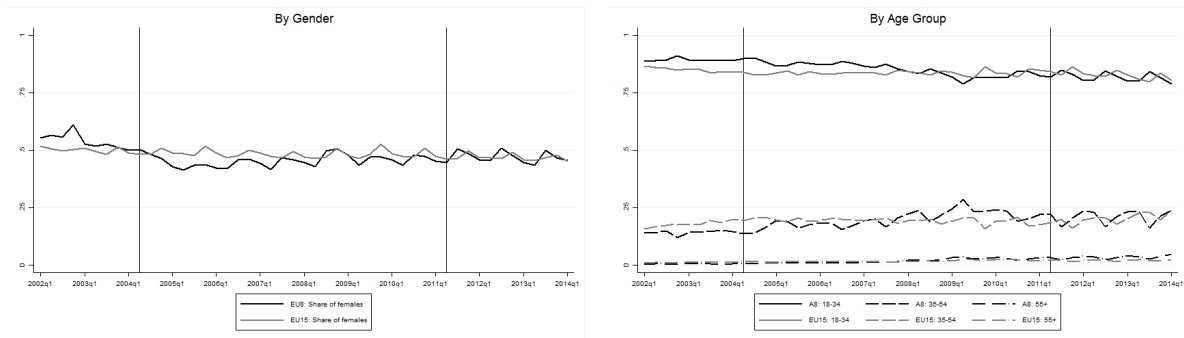
Appendix

Figure A.1: Labour Supply by Group and Year



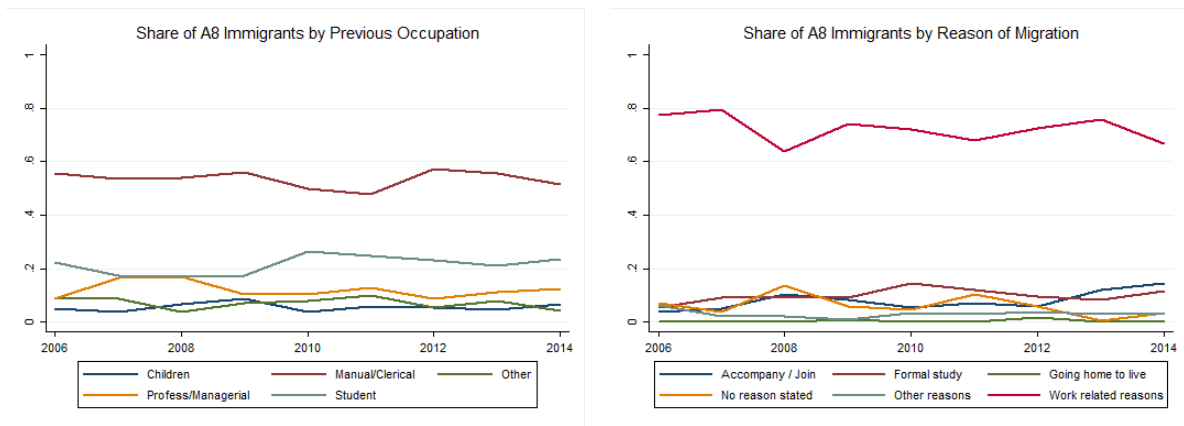
Note: Full sample of natives and EU15 and A8 immigrants. Raw quarterly averages. Source: APS.

Figure A.2: NINo Registrations by Gender and Age



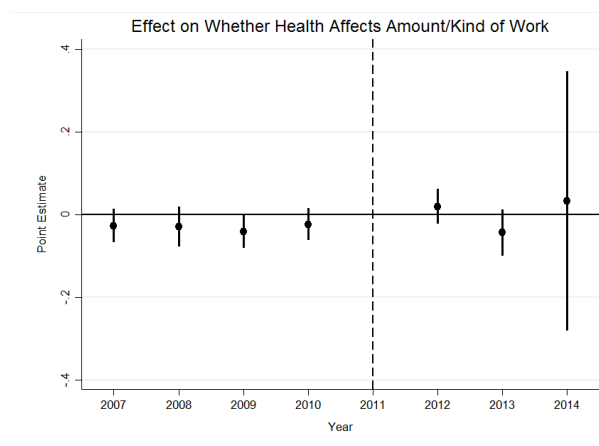
Note: Share of National Insurance Number Registrations of individuals with nationality of an EU15 or an A8 country, by gender and age group, raw quarterly data. Source: DWP.

Figure A.3: Previous Occupation and Reason of Migration of A8 Immigrants by Period



Note: Annual Long-Term International Migration data, estimates from the International Passenger Survey (IPS).

Figure A.4: Effect by Year: Reported Health



Note: Coefficients estimated as from Equation 2, with 95% confidence intervals and standard errors clustered at the country of origin. Leads are never statistically significant. Sample: <2 years in the UK.

Table A.1: Effects on Less Recent Immigrants

Dep. Variable	(I) Out-of-work Benefit	(II) In Employment	(III) Unemployed	(IV) Inactive	(V) Usual Hrs Worked	(VI) Full Time Job	(VII) Second Job
A8 * PostWRS	0.027 (0.016)	-0.009 (0.011)	-0.005 (0.009)	0.014 (0.011)	-0.840 (0.575)	-0.009 (0.016)	0.000 (0.006)
Observations	11,972	11,972	11,972	11,972	9,483	9,638	9,623
R-squared	0.381	0.145	0.017	0.152	0.173	0.144	0.013

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: >2 years in the UK.

Table A.2: Claim of Benefits: Placebos

Dep. Variable	(I) Out-of-work Benefit	(II) Out-of-work Benefit	(III) Out-of-work Benefit	(IV) Out-of-work Benefit	(V) Out-of-work Benefit	(VI) Out-of-work Benefit
A8 * PostApr2008	-0.007 (0.012)					
A8 * PostOct2008		-0.010 (0.011)				
A8 * PostApr2009			-0.015 (0.009)			
A8 * PostOct2009				-0.007 (0.014)		
A8 * PostApr2010					-0.009 (0.014)	
A8 * PostOct2010						-0.003 (0.018)
Observations	3,374	3,374	3,374	3,374	3,374	3,374
R-squared	0.225	0.225	0.225	0.225	0.225	0.225

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: <2 years in the UK. Prior to April 2011 only.

Table A.3: Claim of Benefits: Robustness Checks

Dep. Variable	(I) Out-of-work Benefit	(II) Out-of-work Benefit	(III) Out-of-work Benefit	(IV) Out-of-work Benefit	(V) Out-of-work Benefit	(VI) Out-of-work Benefit
Oth.Ctries * PostWRS	0.050 (0.051)					
A8 * PostWRS		0.114*** (0.023)	0.046*** (0.012)	0.070*** (0.023)	0.075*** (0.022)	0.079** (0.037)
Observations	1,764	2,822	3,718	4,611	4,814	4,814
R-squared	0.173	0.208	0.225	0.224	0.223	0.298
Specification	Other Countries	No Poland	Only Poland	No Ireland	Post Crisis	A8-status linear trends

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: gender, age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: < 2 years in the UK; 'Other Countries' = control group is EU15-born, treatment group is made of natives of 'potential EU members', i.e. Albania, Bosnia-Herzegovina, Croatia, Iceland, Moldova, Norway, Serbia and Montenegro, Turkey, Ukraine, Kosovo; 'No Poland' = Poland excluded; 'Only Poland' = A8 countries but Poland excluded; 'No Ireland' = Ireland excluded; 'Post-crisis' = Only period after 2008q2.

Table A.4: Heterogeneous Effects By Gender

	(I)	(II)	(III)	(IV)	(V)	(VI)
Dep. Variable	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit
A8 * PostWRS	0.023 (0.019)	0.112*** (0.032)	-0.034 (0.072)	0.217*** (0.061)	0.022*** (0.007)	0.036 (0.021)
Observations	2,292	2,521	548	953	1,742	1,568
R-squared	0.149	0.269	0.170	0.197	0.054	0.081
Dep. Variable	In Employment	In Employment	In Employment	In Employment	In Employment	In Employment
A8 * PostWRS	-0.005 (0.035)	-0.085* (0.041)	-0.140* (0.071)	-0.209** (0.077)	0.018 (0.038)	0.006 (0.036)
Observations	2,292	2,521	548	953	1,742	1,568
R-squared	0.207	0.178	0.251	0.136	0.228	0.196
Dep. Variable	Unemployed	Unemployed	Unemployed	Unemployed	Unemployed	Unemployed
A8 * PostWRS	0.021 (0.026)	0.000 (0.021)	0.103 (0.065)	0.045 (0.033)	-0.000 (0.024)	-0.016 (0.026)
Observations	2,292	2,521	548	953	1,742	1,568
R-squared	0.062	0.029	0.154	0.057	0.057	0.054
Dep. Variable	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
A8 * PostWRS	-0.017 (0.028)	0.085* (0.044)	0.038 (0.052)	0.164* (0.088)	-0.018 (0.032)	0.010 (0.044)
Observations	2,292	2,521	548	953	1,742	1,568
R-squared	0.245	0.187	0.206	0.132	0.272	0.213
Dep. Variable	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked
A8 * PostWRS	-0.695 (1.271)	-1.546 (1.666)	-1.284 (2.030)	0.739 (3.174)	0.053 (1.435)	-1.952 (1.640)
Observations	1,801	1,549	448	439	1,351	1,106
R-squared	0.098	0.112	0.244	0.141	0.104	0.119
Children	Any	Any	Yes	Yes	No	No
Gender	Males	Females	Males	Females	Males	Females

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: < 2 years in the UK, Usual Hours Worked conditional on being in employment.

Table A.5: Heterogeneous Effects By Education

	(I)	(II)	(III)	(IV)	(V)	(VI)
Dep. Variable	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit	Out-of-Work Benefit
A8 * PostWRS	0.016 (0.020)	0.096*** (0.028)	0.040 (0.071)	0.144** (0.066)	0.010 (0.007)	0.025 (0.032)
Observations	2,270	2,543	562	941	1,708	1,602
R-squared	0.241	0.228	0.252	0.180	0.047	0.086
Dep. Variable	In Employment	In Employment	In Employment	In Employment	In Employment	In Employment
A8 * PostWRS	0.007 (0.052)	-0.064* (0.037)	-0.136 (0.109)	-0.189** (0.090)	0.042 (0.043)	0.054 (0.048)
Observations	2,270	2,543	562	941	1,708	1,602
R-squared	0.203	0.192	0.291	0.235	0.268	0.148
Dep. Variable	Unemployed	Unemployed	Unemployed	Unemployed	Unemployed	Unemployed
A8 * PostWRS	-0.042*** (0.015)	0.050* (0.029)	0.023 (0.043)	0.079 (0.052)	-0.064*** (0.013)	0.018 (0.033)
Observations	2,270	2,543	562	941	1,708	1,602
R-squared	0.047	0.050	0.112	0.097	0.071	0.066
Dep. Variable	Inactive	Inactive	Inactive	Inactive	Inactive	Inactive
A8 * PostWRS	0.035 (0.044)	0.014 (0.045)	0.112 (0.088)	0.110 (0.104)	0.022 (0.039)	-0.072 (0.047)
Observations	2,270	2,543	562	941	1,708	1,602
R-squared	0.217	0.181	0.284	0.238	0.303	0.145
Dep. Variable	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked	Usual Hrs Worked
A8 * PostWRS	-0.818 (1.187)	-1.384 (1.516)	3.738* (1.954)	-2.561 (3.284)	-2.039 (1.350)	0.405 (2.069)
Observations	1,509	1,842	332	553	1,174	1,286
R-squared	0.193	0.139	0.341	0.258	0.194	0.107
Children	Any	Any	Yes	Yes	No	No
Education	High	Low	High	Low	High	Low

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Robust standard errors (clustered by country of origin) in parentheses. Other controls: age (linear and squared), marital status, no. of children, years in the UK, education, mixed-origin HH and region, year and country of origin dummy variables. Sample: < 2 years in the UK, Usual Hours Worked conditional on being in employment. ‘High’ education refers to ISCED levels 5 and 6 (tertiary education) and ‘Low’ education indicates any schooling achievement below that.