IMMIGRANTS' INTEGRATION IN OECD COUNTRIES: DOES LABOUR MARKET POLICY MATTER?

Draft version

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Abstract

This working paper assesses the quality of immigrants' integration in OECD labour markets by estimating how an immigration background influences the probability of being active or employed and the expected hourly earnings, for given individual characteristics. Based on comparable data and methodologies across 12 OECD countries, immigrants are shown to lag significantly behind natives in terms of employment and/or wages. The differences narrow as years since settlement elapse, witnessing ongoing assimilation, especially as regards wages. Strong differences in immigrant-to-native gaps are also observed across countries, and the paper shows that they may be explained to a significant extent by differences in labour market policies. Given their specificities in terms of unobservable characteristics and behaviour, as well as discrimination, immigrants are indeed more sensitive to policies like unemployment benefits, the tax wedge and the minimum wage. They are in addition shown to be overrepresented among outsiders in the labour market, and as such highly sensitive to the difference in employment protection legislation between temporary and permanent contracts.

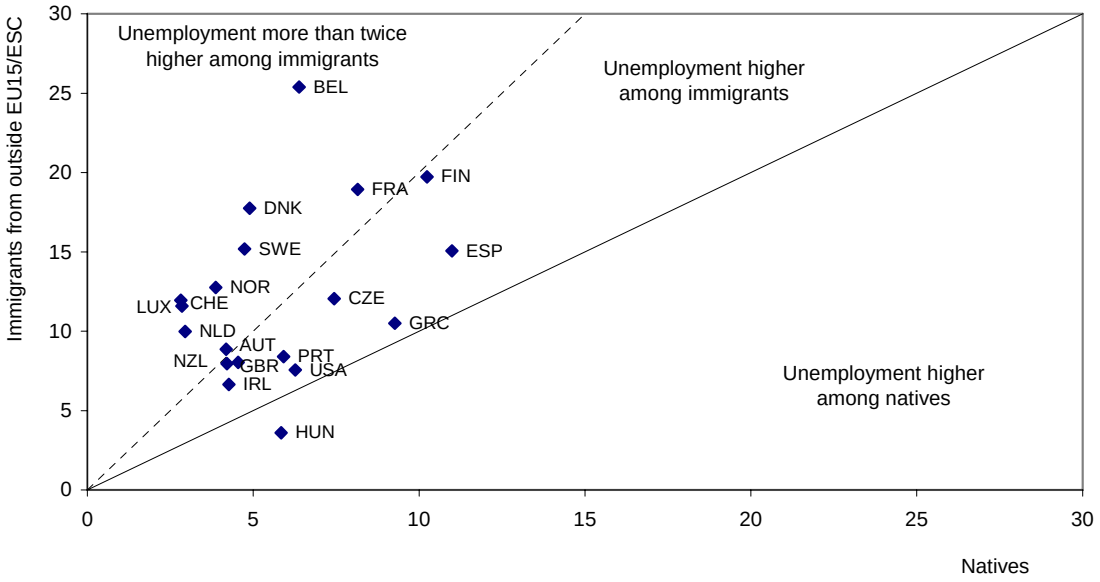
Introduction

1. In the heated debate about immigration, easing integration stands among the most widely shared policy priorities. This encompasses a variety of social and cultural dimensions. Still, the economic integration of immigrants, in particular as far as the labour market is concerned, is of special importance because it largely conditions other channels of integration. This is why the often mediocre labour market outcomes of immigrants observed throughout most OECD countries are alarming.

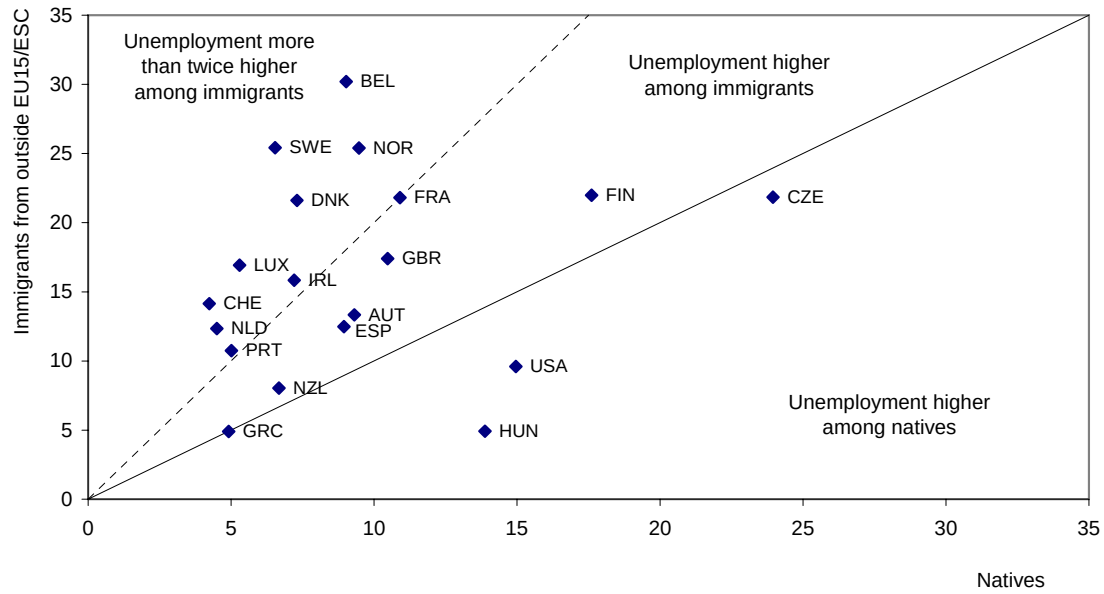
2. To take a single example, the unemployment rate among non-EU/non-English-speaking immigrants is higher than among natives in virtually all OECD countries (Figure 1, Panel A). The difference is sizeable in most cases, and immigrants' unemployment rates are more than twice as high as those for natives in several countries. The crude preliminary evidence given in Figure 1 (Panel B) suggests that differences from natives in terms of personal characteristics (*e.g.*, education, age, gender, experience, and sector of activity) are not the only explanation for these gaps: when computed for low-educated males only, unemployment rates are still significantly higher among immigrants than natives.

Figure 1. Unemployment among non-EU/non-English speaking immigrants and among natives in OECD countries, in 2003

Panel 1.a. Overall unemployment rate, percent



Panel 1.b. Male low-skilled unemployment rate, percent



Note: Solid line: unemployment among immigrants equal to unemployment among natives.
Dotted line: unemployment among immigrants twice as high as unemployment among natives.
The figures only concerns non-EU immigrants in EU countries, and non-English speaking countries in the United States and New Zealand.
Source: Authors' calculations based on European Union Labour Force Survey; US Current Population Survey; NZ Income Survey, Household Labour Force Survey.

3. Following the analytical framework developed in Chiswick (1978), it is common practice to control for a wider range of observable characteristics at the individual level when comparing the labour market outcomes of immigrants and natives. The usual procedure is to estimate, separately for males and females, an equation modelling labour market outcomes (wage, probability of either being active or probability of being employed) at the individual level as a function of, *inter alia*, marital status, educational attainment, labour market experience, area of residence and sector of activity, as well as immigrant-specific variables such as immigration status (possibly by region of origin), duration of stay in the country, language spoken at home, etc. The aim is to measure the eventual residual impact of being an immigrant on labour market performance, once "cleaned out" the other observable socioeconomic differences between individuals.

4. Studies using this approach have provided abundant evidence that in many OECD countries immigrants display *ceteris paribus* less favourable labour market outcomes than natives. Most of these studies focus on a single country and cover wages and/or (un)employment probabilities. A selective overview of empirical evidence is provided in the appendix, where estimates of native/immigrant gaps in labour market outcomes are shown for various OECD countries (Table A.1).[1] These studies show that, although immigrants' integration depends heavily on motivation and status, recently arrived immigrants exhibit lower wage and/or higher unemployment probability in all OECD countries. Immigrants' wages and unemployment probabilities tend to catch-up towards natives over time, but do not necessarily equalise fully.

5. A striking feature emerging from available empirical studies of immigrants' integration is the wide disparity of estimates across countries (and to some extent across estimates for a given country). This is partly due to cross-study differences in terms of data, methodologies, and periods (cohorts); a cross-country study based on harmonised data is required to get rid of these differences, but such evidence remains scant (although Zimmermann and Constant, 2004, gather studies for a number of European countries). The first objective of this paper is to fill this gap, by providing comparable estimates of the labour market integration of immigrants across a number of OECD countries.

6. Beyond these measurement obstacles, the empirical literature clearly suggests that performance gaps between comparable immigrants and natives differ significantly across countries. Several objective disadvantages of immigrants may explain differences with respect to natives in their labour market outcomes (and its change with the duration of stay in the country). These disadvantages are mainly related to the lack of host country specific human capital –notably language proficiency, cultural distance, and social capital–, to the imperfect international skills transferability, and to discrimination. Besides, many countries carry out specific policies devoted at easing the labour market integration of immigrants (for a recent review, see OECD, 2006a). The varied importance of these factors likely explains a large part of the cross-country differences, although this is difficult to assess.

7. Framework conditions, as defined in particular by labour market policies, also shape these cross-country differences in labour market integration. Immigrants, particularly at time of arrival, exhibit different observable and unobservable characteristics, as well as different behaviour (in terms of reservation wage, for example), when compared to natives. As a consequence, framework conditions do not affect immigrants and natives in the same way. Studying this differential effect will be the main aim of this paper. By empirically uncovering the mechanisms at work, we provide insights on the consequences of policy choices with respect to immigrants' labour market integration.

1. The estimates presented are those most likely to compare with the empirical work below; this explains why studies based on migrant-specific datasets are omitted from the table.

8. The paper is structured as follows. We first discuss theoretically the channels through which labour market policies might influence immigrants' integration, by specifying our assumptions on immigrants' distinctive characteristics, and how they are likely to interfere with labour market policies. Based on microeconomic household panel data, we then assess how immigrants integrate in the labour market in a number of OECD countries. The role of framework conditions is then assessed empirically in a cross-country perspective. Special attention is devoted to policies that reinforce labour market dualism, which are found to induce significant distortions on immigrants' relative performance. The last section concludes.

The impact of labour market policies

With the view of understanding the potential role of policies in shaping cross-country differences in immigrants' labour market integration, and based on the literature, five immigrants' specificities are worth emphasising:

- *Immigrants' productivity level at arrival may be lower than that of comparable natives*.[2] The imperfect knowledge of language and of cultural and social norms is potentially a significant handicap for immigrant workers in the years following their entry in the host country. More generally, a productivity difference may arise as a result of some of immigrants' skills being specific to their country of origin. In some cases, it may also result from the lower quality of the education system in the country of origin.

- *Immigrants have lower worker-to-job matching capacities than comparable natives*. In addition to limited social and cultural knowledge, the imperfect recognition of foreign educational skills and experience might hinder immigrants' capacity to find a well-suited employer, and to give him the right signal about their skills. The empirical evidence in Frijtesr *et al.* (2005) indeed suggests that immigrants' are relatively unsuccessful in their search method in the UK, compared to similar natives. Olli Segendorf (2005) points to the poor payoff that immigrants get out of their informal networks in Sweden, in terms of both employment and wage opportunities.

- *Immigrants have different reservation wages from natives.* Labour market behaviour may vary as a result of cultural differences (Fernandez and Fogli, 2005) and, in some cases, of differences in eligibility to unemployment and social benefits (see Fix and Laglagaron, 2002, for a discussion on the existence of a differential access to benefits in a number of OECD countries).

- *Immigrant workers have lower bargaining power than natives*. Immigrants are often overrepresented among low skilled and low-wage earners, as well as among outsiders in the labour market, as argued below. As such, immigrants' interests are likely to be underweighted in the process of labour negotiations. Schmidt *et al*. (1994) build a right-to-manage model in which only native workers appear in the union's objective function. The authors point to evidence, in Germany, of unions' reluctance to incorporate the interests of migrants into their decisions (see also Kuhne, 1992).[3]

2 . By "comparable", we mean sharing the same observable characteristics.

3 . See in addition Reitz *et al.* (2004) for Canada. Note that this does not necessarily imply that immigrants are less likely to be union members. Blackaby *et al.* (2006) report that ethnic minorities (blacks, Indians, and Pakistanis) are more likely to be union members than whites in the UK phenomenon, perhaps due to their perception that unions attempt to reduce labour market discrimination.

- *Immigrants may suffer from labour market discrimination*, the existence of which has been largely documented (see recent evidence in Bertrand and Mullainthan, 2004; Carneiro et al., 2005; Aslund and Skans, 2005, among others).

9. How these specificities interfere with labour market policies can be analysed through various angles. In the following, we give some intuition on two of the potential channels at work, by mobilising relevant modelling frameworks.

Immigrants and natives as imperfect substitutes in a wage bargaining model

10. Immigrants can be assumed to form a separate type of labour, imperfectly substitutable with natives' one (see e.g. Ottaviano and Peri, 2005, or Angrist and Kugler, 2003). By analogy with Jimeno and Rodriguez-Palenzuela's (2002) analysis of "young workers" relative to "adult workers", insights can then be drawn from a simple model, where workers are assumed to be separated in two homogenous, imperfectly substitutable categories (immigrants, natives). Assuming that labour supply is fixed for each category of workers and that the elasticity of substitution between immigrant and native labour is constant ($\sigma > 1$), the difference between unemployment rates of these two categories can be written as follows:

$$(1) \quad u_I - u_N \approx \ln(1-u_N) - \ln(1-u_I) = \lambda + \sigma(\ln w_I - \ln w_N) + \ln L_I - \ln L_N$$

where λ is a constant, subscript *I* refers to immigrants and *N* to natives, *u* denotes unemployment rate and *L* labour supply.

11. Wages w_N and w_I are determined by a collective bargaining process –consider a simple right-to-manage model. Let us assume, based on the previous discussion, that immigrants exhibit lower reservation wage and lower bargaining power than natives. Jimeno and Rodriguez-Palenzuela show that in such case the solution to the Nash maximisation problem defines a contract curve $w_I(w_N)$ increasing and concave. This contract curve is in addition a function of the relative bargaining power of natives compared to immigrants, of their relative productivity and of the aggregate wage. In this context, the influence of labour market policies can be characterised through the following comparative static properties:

- An increase in the relative bargaining power of immigrant workers increases their relative wage, but also their unemployment rate, in comparison to natives.

- An increase in the aggregate wage, resulting for example from an increase in aggregate labour demand or the aggregate reservation wage, decreases the relative wage of natives, while increasing the unemployment rates of immigrant with respect to that of natives.

Immigrants in a dual labour market

12. Immigrants' specificities may also interact with labour market's dualism, the existence and consequences of which have been largely documented, in particular for European countries. For instance, when both short- and long-term jobs are simultaneously created by firms,[4] the lower matching capacity of immigrants can be though of as a handicap in competing for a long-term job.

13. From a policy perspective, we are interested in the institutional arrangements governing different types of contracts, notably long- versus short-term contracts. Blanchard and Landier (2002) provide a

4 . This assumption is made for instance by Cahuc and Postel-Vinay (2002), although in their model fixed-duration contracts are subject to government approval.

useful set-up to think about this issue, by considering an economy where firms create entry-level jobs, and have the possibility to convert them into permanent jobs when they uncover the productivity level of the worker (which is drawn from a known probability distribution). The higher EPL for permanent contracts compared to temporary contracts is reflected in the firing cost being higher for the former. In this framework, Blanchard and Landier show that there is a threshold level of productivity (y^*) above which the firm converts the entry-level job into a permanent one. Below this level, the worker is laid off and comes back to looking for an entry-level job.

14. While this model applies to a single population of workers, some implications can be drawn in the case where we posit the existence of two distinct populations. Specifically, we can assume the immigrant population as being characterised by a lower expected productivity level. This may result from productivity misperception by the employer (including discrimination), lower intrinsic productivity, or poor matching.[5] Under this framework, the probability of an entry-level job being converted in a permanent one is therefore lower for an immigrant than for a native worker. This in turn implies that the share of entry-level (short-term) jobs is higher among immigrants than among natives.

15. Blanchard and Landier show that partial labour market reform (*i.e.*, a reduction in firing costs for entry-level jobs only) results in a higher threshold productivity ($y^{*'}$) level required for a contract to be converted from entry-level into permanent. The immigrant population, as characterized earlier through the parameters of this model, is likely to be overrepresented in the productivity interval [y^*;$y^{*'}$] (in the sense that the probability for a worker's productivity to fall within this interval is higher for an immigrant than for a native), because this interval is presumably below the mode of both natives' and immigrants' productivity distribution. As soon as this is the case, it follows that partial reform of the labour market increases more strongly the share of short-term contracts among immigrants than among natives. Two propositions can thus be drawn from this model:

- Immigrants are likely to be overrepresented among outsiders on the labour market, as reflected in a higher prevalence of short-term (and presumably low-pay) jobs.

- The higher the strictness of the legislation on the use of regular contracts, *relative* to temporary contracts, the more pronounced immigrants' overrepresentation among outsiders, and therefore the wider the differences in the share of short-term jobs, and in wages. The consequences on employment cannot be devised through this model, however.

Explaining cross-country differences in labour market integration of immigrants

16. The few existing integration studies covering several OECD countries (Antecol *et al.*, 2003; Buchel and Frick, 2003;[6] Adsera and Chiswick, 2004; and Peracchi and de Palo, 2006) do not analyse the determinants of cross-country differences in the labour market integration of immigrants.[7] In order to fill this gap, this section presents estimations carried out for a number of OECD countries based on comparable data and methodologies. To ensure cross-country comparability, the same specification is

5 . A poor matching is likely to less-than-fully exploit the worker's skills. Overeducation, for example, is widespread among immigrants, and implies, other things equal, lower wages for an equivalent level of skills (see e.g. Chiswick and Miller, 2005; OECD, 2005).

6. Buchel and Frick do not control for human capital differences across natives and immigrants. Their results are thus descriptive in nature. Observed differences could be explained by differences in terms of skills distribution, both across countries and across natives and immigrants.

7 . Antecol *et al.* (2003) is an exception, but this analysis only covers three countries (Australia, Canada and the United States), and focuses on wage–setting mechanisms and income support system, notably due to insufficient variability across these countries as regards other labour market policies.

estimated separately country by country, relying on the largest common denominator of available variables, even when this entails some simplifications, or data under-utilisation for the countries where further details are available.

Empirical approach

17. The raw data are drawn for each country from longitudinal household surveys covering both immigrants and natives over part of the 1994-2003 period. The data source is the European Community Household Panel (ECHP) for the nine EU countries included in the analysis (Austria, Belgium, Denmark, Finland, France, Germany, Italy, Spain and Portugal); the Panel Study of Income Dynamics (PSID) for the United States; the Household, Income and Labour Dynamics in Australia (HILDA); and the Survey of Labour and Income Dynamics in Canada (SLID) (the data are described in more detail in the Appendix). Throughout the analysis, immigrants are assumed to be those individuals born abroad.[8]

18. Because of changes across cohorts in immigrants' unobserved characteristics and of selective return migration, assimilation effects cannot be accurately identified using cross-section data (see for example Borjas, 1985; Duleep and Doowhan, 2002). Ideally, these twin biases can be avoided through a fixed effects estimation relying only upon changes over time, based on longitudinal data; but this is not possible here since migration status is time invariant. Using longitudinal panel data limits the extent of these biases, but they persist and should be borne in mind while interpreting the results.

19. As is true in all surveys that are not migrant-specific, the estimates of immigrant characteristics based on household data might be particularly sensitive to sampling error as immigrants tend to be geographically clustered and surveys are not specifically designed to model this population. While this might be a cause of concern, the requirement of relying on surveys that cover both migrants and natives for making inferences on integration makes it impossible to focus on immigrant-specific surveys. In addition, such surveys are available for a very limited number of countries.

20. In each wave, a non-negligible number of individuals (referred to as “attritors”) exit definitely the sample (most often 5 to 10%), generally a bit more among immigrants. This raises concerns about a possible attrition bias, since the average characteristics of attritors (either observable or non observable) might differ from the average over all immigrants. As far as immigrants are concerned, the selection through return migration is of special concern. Unfortunately, no consensus exists on the magnitude of the bias arising from selective re-emigration. In a recent study, Constant *et al.* (2004) show that, in Germany, re-emigrants are negatively selected with respect to occupational prestige and to stable, full-time employment; however, selectivity is not significant with respect to human capital or gender, so that return migration does not appear to distort substantially cross-sectional estimates of earnings assimilation. In contrast, Edin *et al.* (2000) find that the stronger re-emigration probability of the least successful immigrants significantly affects measures of assimilation for immigrants from Nordic and other OECD countries.[9] The evidence is thus mixed about the importance of the attrition bias linked to re-emigration.[10]

A formal treatment of the attrition bias embedded in the econometric analysis is difficult to undertake here, given the control for non-random selection already carried out. Still, descriptive analysis shows that

8 . This distinction is not possible in the case of Germany, where nationality is used instead.

9 . Edin *et al.* also find huge differences in emigration rates between economic and political migrants.

10 . These conflicting results may be explained by the theoretical analysis of Borjas and Bratsberg (1996), who argue that the direction of selection in migration depends on whether the immigrants themselves where positively or negatively selected originally. If they were positively selected originally, then return migrants tend to be the worst of the best; the converse is true if they were negatively selected.

immigrants exiting the sample do not differ significantly from the average sample, in terms of observable characteristics (Table 1). This suggests that attrition should not bias excessively the results.

Table 1. Attritors' individual characteristics, by migration status[1]

	Natives			Migrant		
	Non-attritor	Attritor	Ratio	Non-attritor	Attritor	Ratio
Employed[2]						
Germany	0.94	0.94	1.00	0.82	0.86	0.95
Denmark	0.95	0.94	1.01	0.83	0.83	1.00
Belgium	0.95	0.93	1.02	0.89	0.89	1.00
France	0.91	0.85	1.07	0.88	0.75	1.17
Italy	0.87	0.88	0.99	0.86	0.86	1.00
Spain	0.83	0.82	1.01	0.75	0.77	0.97
Portugal	0.96	0.94	1.02	0.94	0.94	1.00
Austria	0.97	0.96	1.01	0.93	0.90	1.03
Finland	0.90	0.90	1.00	0.83	0.77	1.08
Australia	0.95	0.92	1.03	0.93	0.91	1.02
US	0.95	0.95	1.00	0.92	0.94	0.98
Wage[3]						
Germany	11.51	10.87	1.06	9.79	8.93	1.10
Denmark	13.33	12.04	1.11	12.70	11.88	1.07
Belgium	11.90	11.14	1.07	12.01	11.60	1.04
France	10.06	9.33	1.08	9.26	8.74	1.06
Italy	9.22	9.36	0.99	8.91	8.28	1.08
Spain	8.87	8.17	1.09	7.59	7.48	1.01
Portugal	5.45	5.46	1.00	6.40	6.01	1.06
Austria	10.22	9.67	1.06	9.15	8.25	1.11
Finland	9.66	9.50	1.02	10.18	9.84	1.03
Australia	19.59	17.91	1.09	21.20	18.93	1.12
US	19.28	19.21	1.00	13.63	13.08	1.04
Education[4]						
Germany	0.17	0.24	0.71	0.50	0.52	0.96
Denmark	0.21	0.33	0.64	0.40	0.47	0.85
Belgium	0.30	0.39	0.77	0.35	0.42	0.83
France	0.35	0.44	0.80	0.52	0.58	0.90
Italy	0.53	0.60	0.88	0.40	0.45	0.89
Spain	0.59	0.63	0.94	0.29	0.32	0.91
Portugal	0.78	0.77	1.01	0.50	0.55	0.91
Austria	0.23	0.27	0.85	0.33	0.40	0.83
Finland	0.25	0.33	0.76	0.25	0.25	1.00
Australia	0.31	0.36	0.86	0.24	0.34	0.71
US	0.13	0.24	0.54	0.53	0.48	1.10

Note:
1. Weighted data. Data are missing for Canada due to technical reasons.
2. Employed refers to mean employment among active.
3. Hourly wage among employed expressed in Euro PPPs for EU countries, Australian dollar for Australia and US dollar for the United States.
4. Proportion of individuals with less than second stage of secondary education. Data refer to 1994-2001 for ECHP, 2001-2003 for HILDA and 1997, 1999, 2001, 2003 for PSID.
Source: Authors' calculations based on ECHP, HILDA, PSID, SLID.

21. In order to investigate further the potential attrition bias, the wage regressions per country presented below were run while reducing the sample to individuals present at all waves. This sample

restriction resulted in substantially unchanged results, except in a few cases.[11] As a further check, wage regressions were undertaken by limiting the analysis to the first three waves, thus limiting considerably the extent of attrition. The results proved robust to this verification.

Estimating equation

22. The estimations are standard, individual-level equations, where the dependent variable is either the probability of being active or employed, or the hourly wage rate. In each case, the estimations are carried out for data covering both natives and immigrants, and the immigration characteristics define an additional set of dummies. The base specification is as follows:

$$(2) \quad y_{ict} = \alpha_{ct} + \gamma_c X_{ict} + \lambda_c I_{ict} + \varepsilon_{ict}$$

where y is the labour market outcome indicator under consideration for individual i, in country c, and period t. X is a vector of socio-economic controls, I indicates immigrant dummies and α captures country-level, time-varying unobservable characteristics.

23. Two main simplifications were made while carrying out such estimations:

- In order to control for systematic integration differences related to immigrants' country of origin, two categories of immigrants are considered: for European countries, those born within and outside the EU-15 area; for Australia, Canada and the United States, those born in or outside an OECD English-speaking country.[12] In each case, cultural proximity (as well as specific legal treatment in the EU case) justifies such distinction.[13] In practice, the analysis focuses on non-European[14] immigrants (or immigrants whose country of origin is not an OECD English-speaking country), based on the premise that those individuals are the most likely to suffer from weak labour market integration. This premise is confirmed by the econometric exercise, since EU-15 (respectively, OECD English-speaking) immigrants are in almost all cases either statistically undistinguishable from comparable natives, or better performers.

- Length of stay in the host country is measured by distinguishing immigrants that have spent more or less than 15 years in the country,[15] except for the United States, due to data limitations. Though arbitrary, this specification proved to be a useful way to explore assimilation patterns.[16]

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11 . The estimated wage gap was substantially increased for recent cohorts in the case of Italy and Denmark, and for older cohorts in Spain.

12 . Note that Aydemir and Sweetman (2006) perform a very similar distinction in a study on US and Canadian first and second generation immigrants.

13. A finer geographical breakdown would have been desirable, but identification would have had to rely on an insufficient number of observations due to data limitations.

14 . By non-European, it is meant non-EU15. While non-EEA would have been a preferable category, the data do not allow for accessing such a detailed information on country of birth.

15. Immigrants that have spent one year or less in the country are excluded from the analysis because it is not possible to control for the representativeness of the sample on that specific category: recently-arrived immigrants tend to be under-represented in the ECHP, if only because it is a closed longitudinal panel. In part because of the closed nature of the ECHP panel, the bulk of its immigrants sample have spent more than 15 years in the country. This is problematic because outcomes for newcomers are known to differ strongly from those of other immigrants, in particular in terms of employment rates.

24. In order to prevent possible erroneous figures from influencing disproportionately the estimations, standard statistical tests (standardised residuals, Welch distance) are used, based on the initial mincerian OLS regression, to identify outliers, which are subsequently excluded from the estimations. This procedure only concerns ECHP data; it never leads to exclude more than 0.5% of observations, and does not concern non-EU migrants more often than other individuals; the results are robust to the inclusion of these identified outliers. Concerns about data quality in the early waves of the ECHP were addressed by checking the robustness of the results when the first two waves are disregarded. This does not alter significantly the results.

25. The specifications always include time trends. They also include state fixed effects for the United States, and regional fixed effects for Canada. While the results are insensitive to such inclusion for the United States, the opposite is true for Canada, where relevant disparities seem to exist across regions, in terms of immigrants' performance. Standard errors are adjusted for correlation across observations of the same individual in order to take into account the panel structure of the data. This analysis is conducted on a consistent basis for the OECD countries for which required data were available: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Italy, Spain, United States and Australia. A correction for non-random sample selection into activity (see Heckman, 1979) is carried out while studying the probability of being employed, and a correction for non-random selection into employment is made in the analysis of hourly wages.

26. Regressions are run separately for men and women. To control for individual socioeconomic characteristics, all equations include variables on educational attainment (based on ISCED international classification), potential experience and its square value, and marital status. Education is measured through a categorical variable based on three levels: recognised third level education (ISCED 5-7), second stage of secondary level education (ISCED 3, the benchmark in the estimations), less than second stage of secondary education (ISCED 0-2). Labour market experience is only directly available for Australia; for other countries, it was defined as potential experience, computed as age minus age at labour market entry.[17]

27. The additional regressor used for identification purposes in the selection equation is a qualitative variable coding for the sociological characteristics of the household the individual belongs to. This variable is composed of 12 modalities for ECHP countries and for the PSID (in this case it is constructed based on household composition information). Using the number of prime-aged children instead does not affect the results. For Australia, the number of children aged 0 to 4 is used instead due to convergence issues arising with the two-step methodology. For Canada, due to data availability, the number of pre-school-age children in household is used.

Estimation results by country

28. Stylised as well as empirical studies such as those summarised in the Annex Table suggest that differences between immigrants and natives are more pronounced in terms of activity for women, and in terms of employment among active for men. For the sake of brevity, the remaining of the paper thus

16. While assimilation effects are non-linear in nature, their appropriate specification is not obvious (as an illustration, see the counter-intuitive findings in Zimmermann, 2006). In particular, the use of the number of years since migration and its square in the regressions is not really satisfactory, since such function exhibits increasing dependence on the number of years, while assimilation should be an asymptotic phenomenon by nature. Several specifications were tested, but the counterpart of mathematical refinement appeared to be empirical instability, possibly due to the limited number of observations for recently-arrived immigrants in the sample.

17 . In the United States and in Canada, where it is not directly available in the data, age at labour market entry is assumed to be equal to the number of years of education plus six (and at least 15 years).

focuses on these two aspects, in addition to hourly wages.[18] The estimates confirm that differences in labour market performance between immigrants and comparable natives were widespread among OECD countries over the 1994-2003 period (Table 2). Results in the case of European countries have to be interpreted with care, in particular for recently-arrived immigrants, because of the limited representation of this category in the ECHP sample. Nevertheless, where comparisons are possible, the results are consistent with country studies, except otherwise mentioned.

Table 2. Estimated gaps between natives and comparable immigrants (non-EU or non-English speaking OECD immigrants only): employment rate among active men, activity among women, hourly wages

	Denmark	Belgium	France	Italy	Spain	Portugal	Austria	Finland	Germany	Australia	US	Canada[2]
						Male						
Employment rate												
nonEU/nonESC<15YSM(1)	-0.25 ***	-0.05	-0.23 ***	-0.01	-0.09	-0.01	-0.08 **	-0.09 ***	-0.13 ***	-0.09 ***		-0.09 ***
	(4.03)	(1.03)	(3.65)	(0.28)	(1.54)	(0.48)	(2.34)	(2.57)	(4.42)	(2.85)		(3.32)
nonEU/nonESC>15YSM(1)	-0.18 **	-0.12 **	-0.13 ***	0.00	-0.01	0.01	-0.06 **	-0.02	-0.05 ***	-0.04 *	0.00	0.00
	(2.36)	(2.34)	(4.39)	(0.09)	(0.17)	(0.64)	(1.98)	(0.59)	(2.80)	(1.75)	(0.14)	(0.17)
Wage rate												
nonEU/nonESC<15YSM(1)	-0.06	n.s.	-0.22 ***	-0.30 ***	-0.18 **	n.s.	-0.23 ***	-0.08	-0.05 *	-0.13 ***		-0.21 ***
	(0.86)	(0.00)	(4.13)	(6.54)	(2.42)	(0.00)	(6.50)	(0.99)	(1.86)	(4.23)		(6.93)
nonEU/nonESC>15YSM(1)	-0.04	-0.09 **	-0.04	-0.02	-0.04	0.09	-0.05	-0.07 *	0.10 ***	0.02	-0.33 ***	-0.05 **
	(0.51)	(2.15)	(1.08)	(0.43)	(0.70)	(0.94)	(1.23)	(1.70)	(6.06)	(0.47)	(8.95)	(2.00)
						Female						
Activity rate												
nonEU/nonESC<15YSM(1)	-0.06	-0.37 ***	-0.14 *	-0.19 **	0.10 *	-0.11	-0.02	-0.08	-0.15 ***	-0.15 ***		-0.21 **
	(0.98)	(4.41)	(1.70)	(2.56)	(1.77)	(1.22)	(0.38)	(1.64)	(4.22)	(6.17)		(2.42)
nonEU/nonESC>15YSM(1)	-0.08	-0.09	-0.04	-0.01	0.05	-0.11	0.01	0.01	-0.10 ***	-0.14 ***	-0.04 *	-0.06
	(1.59)	(1.38)	(0.76)	(0.17)	(0.76)	(1.32)	(0.19)	(0.21)	(3.70)	(5.96)	(1.68)	(0.95)
Wage rate												
nonEU/nonESC<15YSM(1)	-0.06	n.s.	-0.15 *	0.11	-0.18 *	n.s.	-0.20 ***	-0.09 **	0.13 ***	-0.10 ***		-0.23 ***
	(1.10)	(0.00)	(1.72)	(1.23)	(1.79)	(0.00)	(4.71)	(2.24)	(2.69)	(3.84)		(8.11)
nonEU/nonESC>15YSM(1)	-0.06	-0.08 *	0.02	0.00	-0.07	0.07	0.04	0.04	0.09 ***	0.05 *	-0.27 ***	-0.10 ***
	(1.54)	(1.86)	(0.53)	(0.04)	(0.88)	(0.78)	(0.62)	(0.69)	(3.10)	(1.88)	(6.97)	(3.57)

Note:

Employment rate: Maximum likelihood probit model for the probability of employment, correcting for sample selection into activity, marginal effects reported.
Wage rate: wage regression model with selection into paid employment using full maximum likelihood estimation. Coefficients of dummies for immigrant categories reported (i.e., log differences in wages). "n. s." means not representative due to insufficient number of observations.
Activity rate: Probit of the probability of activity, marginal effects reported.
The specification includes educational attainment, marital status, potential experience and time trends. State fixed effects are included In the case of the United States and Canada.
Standard errors are robust to clustering at the individual level. t-statistics reported in parenthesis.
*significant at 10%; **significant at 5%; ***significant at 1%.
1. EU/Non-EU refers to individuals born/not born in an EU country for all countries but Germany, where the nationality criterion is used. For Australia and Canada, ESC/non-ESC refers to individuals born/not born in an OECD English-speaking country. < or >15YSM refers to less or 15 years since migration. (less or equal to 1 YSM excluded). For the United States, ESC/non-ESC refers to individuals born/not born in an OECD English-speaking country.
2. Weighted estimation.
Source: Authors' calculations based on ECHP, HILDA, PSID, SLID.

18 . Estimates of gaps in terms of women's employment among active, and of men's activity are presented in the Annex.

29. Insignificant employment gaps among actives, together with substantial estimated wage gaps (above 15%) in the United States,[19] Italy and Spain,[20] contrast with small or insignificant wage gaps alongside substantial employment gaps found in Denmark and Germany, and to a lesser extent in Finland. Intermediate gaps in both wages and employment are found in Australia (around 10%), while a moderate employment gap coexists with a substantial wage gap (20% to 25%) in Canada and Austria. Finally, France stands out as an outlier, featuring both high wage and employment gaps.

30. Differences in activity are often significant between immigrant and native women, as a result of both the predominance of family reunification reasons among women's migration motives, and cultural differences.[21] This activity gap of recently-arrived immigrant females with regard to native females is especially marked in Belgium, Canada, Italy, Germany and Australia. A significant wage gap for this category of immigrants is also found in Canada, Austria and Finland.

31. Differences between natives and non-EU or non-OECD English-speaking countries' immigrants are markedly lower for immigrants with more than 15 years of residence in the host country. Although the use of panel data should limit the influence of differences in unobservable personal characteristics across immigrant cohorts, lower estimated gaps for early arrivals may reflect both cohort and assimilation effects. Differences with natives are particularly small in terms of wages, with significant (although moderate) gaps found only for men in Belgium and for men and women in Canada (Table 3).[22] By contrast, significant gaps in male employment probabilities persist in Europe (except in the Mediterranean countries), although smaller than among recently-arrived immigrants: the employment probability among immigrants with more than 15 years of residence is lower than that among natives by around 5% in Germany and Austria, by more than 10% in France and Belgium, and by 18% in Denmark. The fact that employment itself is a factor of integration may explain why employment gaps are more persistent than wage gaps.

The role of labour market policies

32. The persistent employment gap common to Northern Europe (with the only exception of Finland), coupled with the cross-country differences in wage-employment gaps identified for recently-arrived immigrants, suggest that factors other than individual characteristics may be influencing immigrants' labour market performance. As argued above, labour market policies are likely to exert such an influence. In order to investigate this issue empirically, the econometric analysis is now carried out pooling the country-specific data sets analysed in the previous sub-section. The coefficients (γ) of observable characteristics (X) other than the immigration background are assumed to be country-specific, thus allowing a better control for the influence of these characteristics. The immigration background itself (I), in contrast, is modelled both through an effect constant across countries and time, and through an interaction with policy variables (Pol). These interaction terms measure how policy variables influence the immigrant-to-native differences in labour market outcomes. The estimated equation is a restricted version

19 . Results for the United States actually do not refer specifically to immigrants with less than 15 years of residence in the country.

20 . It is noteworthy that no employment gap is found in the three Mediterranean countries (Italy, Spain and Portugal). This finding may be partly linked to the high activity rate of undocumented immigrants, some of which are covered by the household data used here. However, the actual coverage of illegal migrants is unknown and probably low

21. Fernandez and Fogli (2005) show how persistent the cultural influence of the country of origin is in shaping labour market participation behaviour, especially among women.

22 . A significant positive wage gap is found for Germany. The explanation of this surprising result is unclear, but may be related to the under-representation of foreigners in the German sample.

of the equation used in the country-specific analysis above, and also includes country-specific time fixed effects:[23]

$$(3) \quad y_{ict} = \alpha_{ct} + \gamma_c X_{ict} + \lambda I_{ict} + \theta \, Pol_{ct} \times I_{ict} + \varepsilon_{ict}$$

Given the possible multicollinearity between some of them (see *e.g.* Bassanini and Duval, 2006), policy indicators are introduced in the regressions one-by-one, thus allowing insignificant policy variables to be identified.[24] Because statistically significant effects of policy variables might in fact capture the impact of other, omitted but correlated policies, significant policy variables are then tested jointly in the final estimation.[25]

33. Based on the theoretical discussion above, four distinct policy variables are tested. The results, summarised in Tables 3, are consistent with theoretical priors:

- More generous unemployment benefits, as measured through a higher average replacement rate, should increase the aggregate reservation wage. While no significant relation is found with the wage gap between immigrant and native workers, either male or female, more generous unemployment benefits are indeed associated with a lower employment probability of active men among immigrants, in comparison to natives.

- The tax wedge is also likely to influence the reservation wage, both through a negative income effect and through a positive substitution effect between work and leisure, with presumably a stronger impact on the behaviour of women, who are more frequently second earners and are known to exhibit higher labour supply elasticities. No significant effect is found for this policy variable in the case of men, but a higher tax wedge is found to be associated with higher wages and lower activity probability among immigrant women with less than 15 years of residence. This result lacks robustness, however; it is no significant in a multivariate context.[26]

- "EPL dualism", i.e. the relative level of EPL for permanent vs. temporary contracts, in addition to the above-described consequences in a dual labour market, should decrease the relative bargaining power of immigrant workers as compared to natives, as soon as the former more frequently hold temporary contracts (as shown empirically below). It is thus consistent to find that EPL dualism is associated with lower wages, and higher employment or activity probability among immigrants, in comparison to natives. In other words, EPL dualism widens the wage gap, but narrows the employment/activity gap between immigrants and natives. Except for women with more than 15 years of residence, this result is significant and consistent across estimations.

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23. Estimates were carried out using country-specific weights equal to the inverse of the number of migrants in the sample, per wave. This procedure gives an equal weight to each observed policy setting. The Heckman two-stage procedure could not be implemented here, due to computational constraints.

24 . There is still a risk that a policy variable considered separately appears to be insignificant because of an omitted bias link to the omission of other, relevant policy variables, but this risk is likely to be limited.

25 . However, in order to limit the risk of multicollinearity, only one indicator of unemployment benefits (either replacement rate or duration) is considered in these final estimations.

26 . A positive impact on the activity of immigrant women with more than 15 years of residence, in comparison to natives, is even found in that case. This may result from a higher sensitiveness to the negative income effect of taxes, but this effect, unsignificant when EPL dualism is not included, cannot either be considered as a robust result.

- The statutory minimum wage, although not explicitly mentioned in the discussion above, is also worth considering, because its influence on wages and employment probability is most strongly felt among low-productivity workers; given the above-mentioned handicap they suffer in terms of effective or perceived productivity (due in particular to country-specific skills, poorer matching capacities and discrimination), immigrants are likely to be overrepresented in this population. Since a statutory minimum wage is not defined in all countries considered, however, the coverage of this variable is limited. This is why this variable is not tested jointly with other policy variables. A higher minimum wage is found to widen employment or activity gap between immigrants and natives, although this effect is only significant for recent cohorts among women, and for older cohorts among men.

Table 3: Immigrant-to-native gaps in labour market outcomes and interaction with labour market policies – cross-country estimates

Panel A: Men

	Employment rate					Wage rate			
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)
nonEU/nonESC <15YSM (1)	-0.627	-0.656 ***	-0.680 ***	-0.533 ***	-0.652 ***	-0.115 ***	-0.114 ***	-0.105 ***	-0.106 ***
	(9.95)	(10.25)	(10.63)	(5.33)	(10.35)	(5.23)	(4.96)	(4.57)	(2.79)
nonEU/nonESC >15YSM (1)	-0.340	-0.429 ***	-0.420 ***	-0.403 ***	-0.321 ***	-0.032 *	-0.031	-0.032	-0.030
	(5.15)	(5.43)	(5.45)	(4.29)	(4.79)	(1.68)	(1.55)	(1.60)	(0.97)
Interaction terms:									
UB avg. replacement rate x (<15YSM)	-0.015 **				-0.014 **	0.002			
	(2.50)				(2.33)	(1.00)			
UB avg. replacement rate x (>15YSM)	-0.027 ***				-0.027 ***	0.000			
	(3.00)				(3.00)	(0.00)			
Tax wedge x (<15YSM)		0.003					0.003		
		(0.38)					(1.00)		
Tax wedge x (>15YSM)		-0.007					-0.004		
		(0.78)					(1.33)		
EPL difference x (<15YSM) (2)			0.225 **		0.222 *			-0.078 **	
			(1.97)		(1.95)			(2.29)	
EPL difference x (>15YSM) (2)			0.229 **		0.274 **			0.009	
			(2.22)		(2.45)			(0.32)	
Minimum wage x (<15YSM)				-1.419					0.314
				(1.24)					(0.88)
Minimum wage x (>15YSM)				-2.579 ***					0.050
				(2.88)					(0.18)
Observations	200,713	200,713	200,713	100,266	200,713	139,277	139,277	139,277	68,265
R-squared						0.62	0.62	0.62	0.62
N_clust	44,050	44,050	44,050	23,295	44,050	33,926	33,926	33,926	17,881
ll	-38,826	-38,857	-38,849	-20,572	-38,815				
Nb of countries	10	10	10	5	10	10	10	10	5

Panel B: Women

	Activity rate					Wage rate				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
nonEU/nonESC <15YSM (1)	-0.309 ***	-0.315 ***	-0.341 ***	-0.280 ***	-0.343 ***	-0.113 ***	-0.103 ***	-0.084 ***	-0.139 ***	-0.084 ***
	(5.33)	(5.43)	(5.88)	(2.80)	(5.91)	(5.14)	(4.68)	(3.82)	(3.09)	(3.82)
nonEU/nonESC >15YSM (1)	-0.072	-0.093	-0.104 *	-0.131	-0.098	-0.008	-0.020	-0.020	-0.022	-0.020
	(1.18)	(1.52)	(1.70)	(1.58)	(1.63)	(0.36)	(1.00)	(1.00)	(0.73)	(0.95)
Interaction terms:										
UB avg. replacement rate x (<15YSM)	0.007					0.001				
	(1.17)					(0.50)				
UB avg. replacement rate x (>15YSM)	-0.006					-0.002				
	(1.20)					(1.00)				
Tax wedge x (<15YSM)		-0.015 **			0.008		0.006 **			-0.0005
		(2.14)			(0.89)		(2.00)			(0.16)
Tax wedge x (>15YSM)		0.007			0.022 **		-0.0002			-0.0005
		(1.00)			(2.20)		(0.11)			(0.17)
EPL difference x (<15YSM) (2)			0.411 ***		0.462 ***			-0.139 ***		-0.143 ***
			(4.28)		(3.79)			(3.31)		(2.65)
EPL difference x (>15YSM) (2)			0.093		0.247 *			-0.001		-0.004
			(1.01)		(1.93)			(0.03)		(0.08)
Minimum wage x (<15YSM)				-3.046 ***					0.241	
				(3.94)					(0.54)	
Minimum wage x (>15YSM)				-1.192					0.564 *	
				(1.52)					(1.75)	
Observations	218,919	218,919	218,919	111,059	218,919	101,347	101,347	101,347	48,394	101,347
R-squared						0.63	0.63	0.63	0.67	0.63
N_clust	45,743	45,743	45,743	24,795	45,743	26,819	26,819	26,819	13,869	26,819
ll	-106,625	-106,634	-106,622	-56,753	-106,608					
Nb of countries	10	10	10	5	10	10	10	10	5	10

Notes:

* significant at 10%; ** significant at 5%; *** significant at 1%. Coefficients reported. Standard errors are adjusted for correlation across observations of the same individual. Estimations follow equation (3), using a log linear model for wages, a probit model of the probability of employment among active men, and a probit model of the probability of activity among women. Estimation are weighted using country specific weights (see text for details). For the sake of brevity, all variables unrelated to non-EU/non-ESC immigration background are omitted; complete results are available upon request. All coefficients shown refer to non-EU (resp. non-ESC) immigrants. The estimations exclude the US because of lack of data on years since migration in the PSID.

1. EU/Non-EU refers to individuals born/not born in an EU country for all countries but Germany, where the nationality criterion is used. For Australia, ESC/non-ESC refers to individuals born/not born in an OECD English-speaking country. < or >15YSM refers to less or 15 years since migration. (less or equal to 1 YSM excluded).

2. EPL differences refers to the difference between EPL on regular employment and EPL on temporary employment, divided by EPL on temporary employment, .

Source: Author's calculations based on OECD data for policy variables, ECHP and HILDA for microeconomic data. United States not included due to date limitation on years since migration.

Immigrant workers and precarious contracts

34. The significant and robust relationship found between immigrant-to-native gaps and EPL dualism calls for a closer examination of the status of immigrant workers in a context of labour market dualism. Table 4 shows that the proportion of individuals that declare themselves to be in a "fixed-term or short-term contract" or "casual work with no contract" (which we will term precarious contracts in what follows) is markedly higher among immigrants who arrived less than 15 years ago than among natives in all European countries covered by the ECHP, except Italy and Finland. The difference is less clear for immigrants with more than 15 years of residence, however.

Table 4. Proportion of non-EU15 born immigrants among individuals declaring to hold fixed-term, short-term contracts, or casual work with no contract

	Native	Non EU >15YSM	Non EU <15YSM
Germany	0.10	0.07	0.18
Denmark	0.11	0.13	0.16
Belgium	0.09	0.12	0.12
France	0.10	0.07	0.17
Italy	0.10	0.10	0.10
Spain	0.33	0.32	0.48
Portugal	0.14	0.18	0.17
Austria	0.05	0.10	0.16
Finland	0.14	0.11	0.15

Note: Weighted Data. The individuals are employed working in paid employment more than 15 hours per week.
Non-EU refers to individuals not born in EU15 countries except in the case of Germany where the nationality criterion is used. > or < 15 YSM refers to more or less than 15 years since migration.

Source: Author's calculations based on ECHP.

35. Probit regressions across the EU countries allow assessing to what extent this different prevalence of precarious contracts stems from different individual characteristics or from the immigration background itself.[27] The independent variables used are the same as for employment probability (in equations 3 and 4), and estimates are run separately for men and women. The estimates show that non-EU15 immigrant employees display significantly higher probabilities of holding a fixed-term employment contract: for given individual characteristics, being a recently-arrived immigrant (either man or woman) increases the probability for an employee to hold a precarious contract by approximately 7% (Table 5).[28] After more than 15 years in the host country, the immigration background still matters significantly for

27. Non-European countries are not considered because comparable information is not available in the surveys used. Within each country, the sample is smaller than in the previous estimations because the information about contract type is not always available. Carrying out the regression across all available countries, while assuming the impact of the immigrant status to be country-invariant, is thus preferable in order to achieve robust identification..

28 . The results are robust to substituting age to experience as an explanatory variable.

men (the probability is almost 4% higher for immigrants than for natives), while it becomes insignificant for women. These findings are consistent with the insights drawn from Blanchard and Landier's (2002) model, under the assumption that immigrants have lower effective and/or perceived productivity.

Table 5: Impact of migration status on the probability of holding a precarious employment contract – cross-country estimates

	Male		Female	
	(a)	(b)	(a)	(b)
nonEU/nonESC <15YSM (1)	0.079 ***	0.423 ***	0.068 ***	0.278 ***
	(3.95)	(5.79)	(3.09)	(2.65)
nonEU/nonESC >15YSM (1)	0.036 **	0.178 **	0.021	0.043
	(2.00)	(2.31)	(0.91)	(0.51)
Interaction terms:				
EPL differences x (<15YSM) (3)		0.281 *		0.070
		(1.95)		(0.39)
EPL differences x (>15YSM) (3)		-0.018		0.258 **
		(0.15)		(2.00)
Observations	117,547	117,547	88,280	88,280
Nb of cluster	28,745	28,745	23,009	23,009
Log likelihood	-39,208	-36,762	-33,350	-32,084

Note:

a. Probit of the probability of holding a precarious employment contract. Marginal effects reported.

b. Estimations follow equation (3), using a probit model of the probability of holding a precarious employment contract. Coefficients reported.

Standard errors are robust to clustering at the individual level. Weighted estimation (probability weighting), with country specific weights (see Text for details).

36. A further question is whether this different prevalence of precarious contracts depends upon the institutional setting. This is tested by adding to the estimating equation an interaction term between the immigration background and EPL dualism. For both recent cohorts of men and older cohorts of women, EPL dualism is indeed found to be associated with a higher immigrant-to-native difference in the probability to hold a precarious contract, for given observable characteristics. This result is consistent with OECD (2004), in which it is shown that deregulation of temporary work has a disproportionate impact on the incidence of temporary work for the youth and the low skilled, hence for workers likely to be overrepresented among outsiders. It also in line with the prediction of a Blanchard and Landier (2004) model, in which it can be shown that in the presence of two distinct populations –specifically distinguished by their expected productivity level- the overrepresentation among entry-level jobs of the population displaying lower expected productivity increases as a result of partial labour market reform.

Conclusion

37. In all countries studied, this paper showed that immigrants lag significantly behind comparable natives in terms of wages or employment, or both. The differences narrow as years since settlement elapse, witnessing ongoing assimilation, especially as regards wages. Still, the integration of immigrants in OECD labour market remains a challenge. While targeted policies might be considered, it is worth assessing whether general-purpose labour market policies matter in this respect. From a theoretical point of view, we argued that there are good reasons to think that they should matter, given the specificities of immigrants in

terms of unobservable characteristics and behaviour (and even in terms of behaviour faced with, since discrimination is not uncommon). The empirical assessment confirmed these priors, showing various channels through which general labour market policies influences immigrants' outcomes in the labour market, in comparison to natives' ones. It also highlighted the overrepresentation of immigrants among outsiders, when labour market dualism prevails.

38. Further investigation would be useful to understand better the links between labour market policies and immigrants' integration in the host labour market. Still a preliminary conclusion can be drawn from a policy point of view, stating that sound policies in general are good for immigrants in particular. Besides, given their specificities, immigrants tend to be especially sensitive to the effect of some policies, such as unemployment benefits and the tax wedge, and most of all to labour market dualism.

APPENDIX

39. The following table provides a selective overview of the literature findings on immigrants versus natives wage and employment gaps in a number of OECD countries."

Table A1. Overview of the main empirical estimates of immigrant/native employment and wage gaps

	Country	Dependent variable	Controls (1)	Method	Data source	Native-to-immigrant estimated gap (2)
OECD (2006a)	AUS	Employment population ratio	Imm, YSM (sample: men, 25-64)	Descriptive statistics	Survey of education and work	2004, non OECD immigrants - difference in % points: * after 0-5 years: -34% * after 6-10: -10% * after >10: -2%
Miller and Von (2005)	AUS	Earnings function	Imm, S	Regression analysis	1996 census and housing sample	Year 1996: Non English-speaking migrants: from -9 to -12%
Hum and Simpson (2001)	CAN	Hourly wage growth	Exp, Reg Visible minority	Weighted least squares	SLID (panel)	Panel 1993-97: 0%
Meurs, Pailhé and Simon (2005)	FRA	Unemployment prob	E, A, S	Probit	INSEE, *Enquête Étude de l'Histoire Familiale* , 1999	Year 1999 (arrived after age of 10): +2.7 (odds ratio of unemployment)
				Probit		Year 1999 (arrived before age of 10): +1.8 (odds ratio of unemployment)
Constant and Massey (2005)	GER	Weekly Earnings	E, Exp, YSM nationality Occupation (score) Separate estimation (immigrants/natives)	Regression on occupation, prestige and controls	GSOEP Guestworkers sample	Period 1984-1997: * with no experience: -62% * with 10 years experience in Ger: -35% * with 23 years experience in Ger: 0%
Amuedo and De la Rica (2006)	SPA	Unemployment prob	E, A, S	Probit	Population Census	Marginal effect in 2001: * on arrival: -14% * after 3 years: +6% * africans on arrival: -9.8% * africans after 3 years: +4.8%
Hammarstedt and Palme (2006)	SWE	Earnings	A, G, occupation, sector of employment, local labor market	Matching	Statistics Sweden	Period 1975-1980, first generation arrived between 1916-70: -5% from Nordic countries to -25% from Africa
Dustmann and Fabbri (2005)	UK	Employment among active	S,A, E, Reg, R	Regression analysis	British LFS 1992-2004	Coefficients: * men employment differential for bangladeshi: -0.12 * men employment differential for black african: -0.13
		Activity				Coefficients: * women participation differential for black african: -0.58 * women participation differential for bangladeshi: -0.12
		Gross hourly wage				Men percentage difference for black african: -22% Men percentage difference for bangladeshi: -38% Women percentage difference for black african: -16% Women percentage difference for bangladeshi: -11%

Table A1 (cont'd). Overview of the main empirical estimates of immigrant/native employment and wage gaps

	Country	Dependent variable	Controls (1)	Method	Data source	Native-to-immigrant estimated gap (2)
Borjas (2006)	US	Wage	E, A	Pseudo panel through synthetic cohort method (SCM)	US Census CPS First generation immigrant	Year 2000: -10.1%
Borjas (1994)	US	Wage	E, A, W	SCM	1970, 1980, 1990 US Census	Year 1990: -25%
Borjas (1987)	US	Log wage	S, C, YSM	SCM	US Census 1970, 1980	In 1980 for immigrants arrived in 1979: +11% from France to -50% from China
Balkan and Field-Hendrey (1991)	US	Wage Female	E, A, S, YSM Selectivity bias into employment	OLS correcting for selectivity bias	US Census, PSID	1970 sample: -14.4% on arrival 1980: +9.8% after 10 years
Duleep and Dowhan (2002)	US	Earnings adjusted for native/ foreign born education and age differences	E, A, C assimilation effect	Non parametric adjustment to descriptive statitics	CPS	1984-1994 and various cohorts (1984-85 till 1990-1991) * -30% on arrival for 84-85 cohort; median * -30% after 10 years, ídem * -42% on arrival for 84-85 cohort; 30th percentile * -18% after 10 years, ídem
Schawn (2005)	US	Log wage	S, E, R	Mincer regression non parametric estimation with Oaxaca's decomposition (1973)	CPS	Year 1999: -6% due to diff coefficients between black/white
Peracchi and de Palo (2006)	Pooled: DNK, BEL, FRA, IRE, ITA, SPA, POR, AUT	1) Activity prob	S, E Country FE Wave FE	Logit for the probability of activity	ECHP waves 1-8	Period 1994-2001 - coefficients: * women's activity rate: -0.30
		2) Employment prob		Logit for the probability of activity		* men's employment rate: -0.48
		3) Wage		OLS Mincerian Regression		* male employees'earnings: -0.03
Adsera and Chiswick (2004)	Pooled: EU15	Log earnings from work net of taxes	S, E, YSM, O, L Destination country fixed effects, interacted with foreign origin and non-EU birth	Regression analysis	ECHP waves 1-7	Non-EU men at time of arrival: Belgium: -46%; France: -50%; UK: -54%; Sweden: -82% (simulated differences in earnings of foreigners at arrival, as percentage of the earnings of natives of the same gender; earnings are calculated for an individual with 10 years of experience, high school diploma, married and with one child).

Notes:

1. A: age; C: cohort effects; E: education; Exp: experience; G: gender; Imm: immigration status; L: language; O: area of origin; R: race; Reg: regional effects; S: socio-economic characteristics; W: wage structure, YSM: years since migration

2. Unless otherwise stated, the figures refer to the difference in labour market outcome between natives and immigrants (labour market outcome of immigrants minus outcome of

Data

40. The raw data used in this empirical analysis is drawn for each country from longitudinal household surveys covering both immigrants and natives over part of the period 1994-2003. The European Community Household Panel (ECHP; see Eurostat, 2003a and 2003b for a detailed documentation of the User Database used here; and Peracchi, 2002, for a discussion of its main statistical properties) constitutes the basis for this work, since it provides standardised data, built from a common questionnaire, for all EU-15 countries. The ECHP is a closed panel without refreshment covering, among other issues, demographics, labour force, income, education and migration. The sampling includes immigrants, without oversampling. Due either to missing data on immigration background or to inconsistencies (Sweden) or insufficient sampling of immigrants (United Kingdom, Ireland), only nine EU countries are included in the analysis:[29] Austria, Belgium, Denmark, Finland, France, Germany, Italy, Spain and Portugal.

41. The Panel Study of Income Dynamics (PSID) is used for the United States. While the survey covers a longer period, only the four waves posterior to 1997 (1997, 1999, 2001 and 2003) are used in the analysis, due to the reshuffling of the survey in 1997 (including partial refreshment). For Australia, the Household, Income and Labour Dynamics in Australia (HILDA) is used, over the period 2001-2003. This survey is actually the most detailed among those used here, and some of its features are not used in the analysis only to maximise comparability. Canada is studied through the second wave of the Survey of Labour and Income Dynamics (SLID), for the period 1996-2001. However, since the SLID is not directly accessible but only workable at arms length, it was impossible to include it in the second-stage analysis.

42. Throughout the analysis, immigrants are assumed to be those individuals born abroad.[30] Since information about country of birth was missing for Germany, immigrants are defined as foreigners in that case.[31] Only individuals in working age, between 20 and 64, are considered. A summarised presentation of the sample is provided in Tables A.2 to A.4.

29 . Data is missing for Austria in the first wave, and for Finland in the first two waves.

30 . This means that repatriates are unduly considered as immigrants. Although this cannot be systematically corrected, people who arrived in France in 1962 and in Portugal in 1974-76 were not considered, because these two periods correspond to massive inflows of repatriates.

31 . For the sake of comparability with Germany, corresponding analysis based on nationality was carried out for France and Austria in addition to the standard one.

Table A2. Sample description: number of observations[1]

	Natives	Migrants	Total
Germany	66 690	1 578	68 268
Denmark	27 669	1 054	28 723
Belgium	30 677	2 664	33 341
France	66 151	4 991	71 142
Italy	99 009	1 876	100 885
Spain	82 762	1 516	84 278
Portugal	62 223	1 186	63 409
Austria	31 529	2 381	33 910
Finland	32 547	1 097	33 644
Australia	25 358	7 737	33 095
US	37 235	2 740	39 975
Canada	148 403	20 035	168 438
Total	710 253	48 855	759 108

Note: Data refer to 1994-2001 for ECHP, 2001-2003 for HILDA and 1997, 1999, 2001, 2003 for PSID, 1996-2001 for SLID.
1. Data refer to total number of observations because individuals are observed at different periods.
Source: European Community Household Panel (ECHP), Household, Income and Labour Dynamics in Australia (HILDA) and Panel Study of Income Dynamics (PSID), Survey of Labour and Income Dynamics (SLID).

Table A3. Sample description: number of individuals[1]

	Natives	Migrants	Total
Germany	11 636	458	12 094
Denmark	5 569	256	5 825
Belgium	5 849	549	6 398
France	12 672	1 022	13 694
Italy	17 652	364	18 016
Spain	16 993	359	17 352
Portugal	11 216	241	11 457
Austria	6 578	569	7 147
Finland	8 029	310	8 339
Australia	10 250	3 223	13 473
US	11 948	849	12 797
Canada	21 826	2 939	24 765

Note: Data refer to 1994-2001 for ECHP, 2001-2003 for HILDA and 1997, 1999, 2001, 2003 for PSID, 1996-2001 for SLID.
1. Number of individuals observed in the panel per country.
Source: European Community Household Panel (ECHP), Household, Income and Labour Dynamics in Australia (HILDA) and Panel Study of Income Dynamics (PSID), Survey of Labour and Income Dynamics (SLID).

Table A4. Proportion of migrants in the sample

	Migrant[1] (% of total)
Germany	1.8
Denmark	4.1
Belgium	7.7
France	7.6
Italy	2.0
Spain	1.7
Portugal	2.1
Austria	8.3
Finland	3.3
Australia	26.6
US	7.7
Canada	18.0
Total	6.5

Note:
1. Weighted data. Data refer to 1994-2001 for ECHP, 2001-2003 for HILDA and 1997, 1999, 2001, 2003 for PSID, 1996-2001 for SLID.
Source: European Community Household Panel (ECHP), Household, Income and Labour Dynamics in Australia (HILDA) and Panel Study of Income Dynamics (PSID), Survey of Labour and Income Dynamics (SLID).

43. The data present a number of inconsistent observations, at the individual level. For ECHP data, consistency checks, and correction or deletion when needed, were undertaken regarding longitudinal consistency of individual characteristics[32] (country of birth, sex, education). Similar corrections were undertaken for the PSID, HILDA, and the SLID, although fewer inconsistencies were found in those cases.

44. OECD labour market policy indicators include EPL on regular contracts, EPL on temporary contracts, average replacement rate, minimum wage, and tax wedge. The average replacement rate is defined as the mean unemployment benefit replacement rate across various types of families, income levels and unemployment durations.The minimum wage is defined as a ratio of statutory minimum wage to median wage, in percentage. The average labour tax wedge is defined as net taxes as a ratio of labour costs for a one-earner family at the average production worker. The source is Bassanini and Duval (2006).

Definition of variables

45. In the country analysis, employment is considered among actives. In the ECHP, activity and employment variables are defined according to the variable "ILO main activity status at the time of interview". An individual is defined as being active if he/she declares to be either "normally working (working 15+ hours/week), or "currently working (working less than 15 hours/week)" or "unemployed". Thus, an individual is inactive if he/she declares to be "discouraged worker" or "economically inactive". An individual is considered to be employed if he/she declares to be either "normally working" (working 15+ hours/week), or "currently working (working less than 15 hours/week)". He/she is not employed if they declare themselves to be "discouraged workers", "economically inactive" or "unemployed". Finally, an individual is defined as unemployed if he/she declares to be "unemployed" and is not considered as

32 . Swedish data are eliminated because of widespread inconsistencies in the longitudinal follow-up of individuals.

unemployed if he/she declares to be either “normally working” (working 15+ hours/week), “currently working (working less than 15 hours / week)”, “discouraged worker”, or “economically inactive”.

46. HILDA data directly provide activity and employment status; thus an individual is considered inactive if he/she is “not in the labour force”, and active if he/she is “employed” or “unemployed.” In the PSID, an individual is considered active if he/she is “working now”, “temporarily laid off”, or “unemployed” and inactive if he/she is “keeping house”, “disabled”, “retired”, or “student”.

47. SLID data present a similar categorisation, but further divided in order to account for situations in which the individual changes status during the year. When an individual change status during the year, the categorisation is based on the status held for the largest number of week.

48. Gross hourly wage rates are considered among employees only; self-employed and students are excluded from the corresponding estimations. For European countries, observations for which the euro PPP corrected monthly wage rate is lower than 100 are excluded. A similar sampling procedure is undertaken for Australia, Canada, and the United States.

Estimating the probability to hold a precarious contract

49. The probit model for the probability of holding a precarious contract is estimated with ECHP data only, because the dependent variable could not be consistently constructed with the other datasets. An individual is defined as holding a precarious contract if he/she declares to be in a "fixed-term or short-term contract" or "casual work with no contract",[33] whereas the complementary situation corresponds to “permanent employment”. The variable is only defined for individuals that declare themselves as “working with an employer in paid employment (15+ hours / week)”, so that estimates might suffer from selection bias, which cannot be addressed through sample selection techniques due to the complexity of the cross-country non-linear microeconometic estimations.[34]

50. Country data are stacked. The same country-specific weights as in the general cross-country analysis are used. Given the limited number of observations on non-EU immigrants for which the dependent variable is available and for the sake of robustness, the main coefficient of interest denoting the impact of being immigrant (λ) is assumed to be country-invariant. All other model’s coefficients are country-specific. The specification follows:

$$y_{ict} = \alpha_c + \beta_{ct} + \gamma_c X_{ict} + \lambda I_{ict} + \varepsilon_{ict} \quad \text{(A.1)}$$

where all variables are defined as in the main paper and *y* refers to the binary variable coding for the nature of the employment contract. Estimates are run separately for men and women. Immigrants with more than 15 years of residence are not considered for Germany, however, because they are defined based on nationality instead of country of birth, which may be a source of bias in this population among which naturalisation is not uncommon.

33 . A last category, called “some other working arrangement”, is not included in the definition of the binary variable because it is not clear what this variable refers to nor whether its precise meaning is consistent across countries.

34 . To the extent that selection into employment tends to be stronger among immigrants, however, this selection bias should overstate the performance of immigrants, *i.e.* likely underestimate the impact of being immigrant on the probability of holding a precarious contract. The results presented here can thus be safely considered as a lower bound.

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