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# Labor Market Outcomes of Natives and Immigrants: Evidence from the ECHP

Franco Peracchi  
Domenico Depalo

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University of Rome “Tor Vergata”

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## Abstract

This paper analyzes the evidence provided by the European Community Household Panel (ECHP), a longitudinal household survey which covers a wide range of topics, giving comparable information across the member states of the European Union before the 2004 enlargement. The ECHP allows us to follow the process of integration into the European labor markets of the cohorts of immigrants that reached Western Europe before the mid-1990s.

Our goal is to provide a detailed description of labor market outcomes for those countries for which reliable data are available, distinguishing between natives and immigrants, and conditioning on a variety of personal characteristics. In particular, we ask two questions that we consider important. First, whether there are significant differences in labor market outcomes of natives and immigrants, and to what extent these differences may be accounted for by differences in the observed characteristics of the two groups. Second, how much of the residual differences in labor market outcomes of natives and immigrants—namely those differences that are not accounted for by differences in observed characteristics—persist after a sufficiently long residence of immigrants in the host country.

We find that labor market outcomes differ significantly between natives and immigrants, especially those from non EU-15 countries: other things being equal, immigrants tend to have worse labor market outcomes than natives, although the impact of most covariates (age, educational attainments and marital status) is strikingly similar between the two groups. Further, the differences between natives and immigrants diminish as the length of stay in the country increases. After about 20 years of residence, most differences between immigrants and natives are gone.

Our positive conclusions may not generalize to the cohorts of immigrants that reached Western Europe after the mid-1990s. They may also be difficult to generalize to the non-negligible fraction of immigrants who dropped out of the ECHP sample or could not be included into the first wave of the survey because of problems with the sampling frame, non-contact, language difficulties, or refusal to participate.

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## 1 Introduction

Almost all Western European countries are experiencing an increasing inflow of immigrants. The statistics released by the OECD for the period 1994–2001 show that the ratio of immigrants (no matter how defined) has grown steadily in all Western European countries considered, except Belgium. These immigration flows are changing the societies of receiving countries in several respects. At the same time, however, the countries of Western Europe are also experiencing other important demographic changes, as they all are ageing population societies. A key issue, therefore, is how the combined effect of these demographic changes affects labor market outcomes.

In this paper we analyze the evidence provided by the European Community Household Panel (ECHP), a longitudinal household survey organized and co-ordinated by Eurostat, which covers a wide range of topics, giving comparable information across the member–states of the European Union before the 2004 enlargement (EU-15). Our goal is to provide a detailed description of labor market outcomes (activity rates, employment rates, unemployment rates, and earnings) for those countries for which reliable data are available, distinguishing between natives and immigrants, and conditioning on a variety of personal characteristics, such as gender, age, birth cohort, education, marital status, and the length of stay in the country of current residence.

In particular, we ask two questions that we consider important. First, we ask whether there are significant differences in labor market outcomes of natives and immigrants and to what extent these differences may be accounted for by differences in the observed characteristics of the two groups. Second, we ask whether there is evidence of integration of immigrants into the labor markets of Western European countries. More precisely, we ask how much of the residual differences in labor market outcomes of natives and immigrants, namely those differences that are not accounted for by differences in observed characteristics, persist after a sufficiently long residence of immigrants in the host country.

The remainder of the paper is organized as follows. After a brief review of the literature in Section 2, Section 3 describes the ECHP data. Section 4 presents some descriptive statistics. Section 5 presents the results of our regression analysis. Finally, Section 6 offers some conclusions.

## 2 A brief review of the literature

The research on immigrants' assimilation deals with an old and debated issue. The seminal articles—Chiswick (1978), Borjas (1985) and LaLonde and Topel (1992)—are all based on U.S. data and all use

the information included in the U.S. Census. Differences in the results obtained—over-assimilation or under-assimilation—depend on the amount of information available and the type of controls introduced.

Over-assimilation was attributed to the fact that migrant workers are positively selected: that is, they tend to be more entrepreneurial, more talented, and less risk averse. In fact, two alternative explanations may be given for the cross-sectional evidence that immigrants tend to catch up and overtake natives. One is that immigrants belong to cohorts of different quality. The other has to do with different economic cycle upon arrival. Using only a single cross-section, one cannot distinguish between these two alternative explanations.

Borjas (1985) showed evidence of under-assimilation of immigrants in the United States, which he attributed to the lower “quality” of the most recent cohorts. The different quality of cohorts at the time of immigration may be due to various factors: changes in immigration policy so that individuals with different characteristics are selected; different economic conditions in the destination country, which alters the nationality mix of immigrants and thus gives rise to change in their productivity; and changes in the composition of the cohorts due to non-random repatriation. The same result of under-assimilation was obtained by LaLonde and Topel (1992), but it was attributed to the worse economic conditions in the receiving country at the time of arrival. Fundamentally, when the foreigners entered the labor market, they offered their labor at a lower entry wage and had few career prospects.

The solution adopted was to control for vintage, cohort, and time effects, while controlling for similar natives who entered the labour market at about the same time. This pushed the research toward the use of synthetic cohort data and then of panel data, which are more suited for longitudinal analyses.

Research in Europe starts a little later and is mainly based on national panel data, such as the British Household Panel Study (BHPS) or the German Socio-Economic Panel (GSOEP).

As for the choice of controls, the first set of relevant variables is related to the human capital of the immigrant. This set of variables includes the immigrant’s education before and after arrival, acquisition of human capital on the job before and after immigration, and the proficiency in the language of the destination country, which also favors the second generation’s integration.

Chiswick (1991) found that a crucial factor for assimilation into the British labour market is knowledge of the natives’ language, a result confirmed in a more recent study by Shields and Wheastley Price (2002). In a study involving Denmark, Neilson, Rosholm, Smith and Husted

(2001), found that a foreigner's job assimilation increases, not with the number of years that she has been in the country, but with the number of years that she has been working in the country. These authors thus emphasize that workers increase their human capital only when they are working. For the Dutch case, Kee (1994) concludes that one reason of the lack of assimilation is that few immigrants continue their studies in the receiving country.

The results of the large number of empirical studies on this issue are difficult to compare because the data sets are not easily compared. Further, it is difficult to measure the quality of the education received in the origin country. The variable "years of education" is a very rough indicator of the human capital of an immigrant, which may explain why years of education in the destination country, when such information is available, performs much better in explaining the foreign wage upgrading. The variable "country of origin" may be a proxy for the average quality of human capital or the foreign worker's potential linguistic proficiency. Finally, the variable "years of presence in the destination country" could be a proxy for a foreigner's increase in general human and social capital, which also favor the assimilation process.

A second set of explanatory variables refers to the labour market variables that help predict a worker's future prospect. The level of the business cycle upon arrival in the destination country is crucial for immigrants' assimilation, but so is the sector of employment, which is affected in different ways by technological innovation. Rosholm, Scott, and Husted (2000) found that, both in Sweden and Denmark between 1985 and 1995, job opportunities for male immigrants deteriorated. However, they used a panel of administrative data that showed that the worsening situation was independent of the different market trends in the two countries. It was instead due to structural changes in the labor market, favoring the demand for workers with high interrelation and communication skills, which meant that immigrants were at a disadvantage.

A third set of variables refer to the migration and the assimilation policies implemented to favour migrants integration. The study on the Netherlands by Pennix, Schoorl and van Praag (1994) highlights two perverse effects that may have reduced a foreigner's ability to assimilate and to achieve wage integration after the mid-1970s. First, the slowdown of GDP growth may have made new immigrants difficult to absorb. Second, immigrants are different in nature: not necessarily in terms of their human capital, but because they are political refugees or family members joining their kin. This has changed the nature of immigration, transforming it from labor migration to residential migration. Additional policies have been implemented to reduce the slowdown of foreign assimilation: for instance, the attempts to discourage their agglomeration in particular

areas, which is considered as a cause of low linguistic proficiency and as reducing the incentive to move in search of better job opportunities. In Northern European countries, the distribution of refugee immigrants around the country seems to be less efficient in integrating foreigners than the previous agglomeration.

### 3 The data

This section describes the data set that we use, discusses our definition of immigrant, presents some comparisons with other data sources, and provides details on the construction of the outcome variables and the covariates used in the empirical analysis.

#### 3.1 Brief description of the ECHP

The ECHP is a multi-country longitudinal household survey based on a standardized questionnaire. The survey involves annual interviews of a representative sample of households and individuals in each country. The total duration of the ECHP is eight years, running from 1994 to 2001. In the first wave (1994), a sample of almost 130,000 people aged 16+ years was interviewed in the then 12 Member States of the European Union. Austria, Finland, and Sweden were added later: respectively in 1995, 1996, and 1997. Data for Sweden have been derived from the Swedish Living Conditions Survey and transformed into the ECHP format. For Germany, Luxembourg, and the United Kingdom, the public use files contain data from two different panels. One is the original ECHP for its first three waves; the other is obtained from already existing national panels (GSOEP for Germany, PSELL for Luxembourg, and BHPS for the United Kingdom). In this section we review only some key features of the ECHP and refer to Peracchi (2002) for additional details.

The target population of the ECHP consists of people living in private households throughout the national territory of each country. Depending on the sampling frame adopted, we may have noncoverage of small proportion of the target population, such as households recently arrived in a country (Ireland, Italy) or nonresidents unable to speak the national language (Greece, the Netherlands). The definition of household is based on the standard criteria of “sharing the same dwelling” and “common living arrangements”. A sample person is anybody in the first wave who is still alive, plus children born afterward in a sample household. Sample persons are eligible for personal interview if they are aged 16+ on December 31 of the year before the survey.

Within each country, the original sample of households and persons is followed over time at annual intervals. The households carried forward from wave  $j$  to wave  $j + 1$  are those interviewed

Table 1: Data availability on immigrant status.

Variable	Label	Countries where unavailable
PM005A	Last foreign country of residence (11 mod.)	DE, EL, I, NL, A, FIN
PM005B	Last foreign country of residence (7 mod.)	DE, EL, NL, FIN
PM005C	Last foreign country of residence (2 mod.)	DE, EL, NL
PM007A	Foreign country of birth (11 mod.)	DE, EL, I, NL, A, FIN
PM007B	Foreign country of birth (7 mod.)	DE, EL, NL, FIN
PM007C	Foreign country of birth (2 mod.)	DE, EL, NL
PM008	Citizenship	UK (first 3 waves)

in wave  $j$ , plus those not interviewed because of non-contact, physical incapacity, or inability to respond, or whose refusal is considered less than final. To these households, are added the new households formed by at least one sample person. A household is excluded if it gives formal refusal in the previous wave, or moves outside the European Union (though, in this case, the household is “traced” in case members return) or is not interviewed for two consecutive waves. Sample persons who move or join a new household are followed up at their new location. Lastly, the survey also covers all persons cohabiting with any of the original sample person in the same household.

These rules are meant to reflect the demographic changes in the population and to keep the panel cross-sectionally representative of the population. Unfortunately, this would only be true in the absence of new immigration and if sample attrition is purely random. Since the ECHP does not employ refreshment samples, its cross-sectional representativeness tends to deteriorate over time due to both non-random sample attrition and to the presence of demographic changes arising from the arrival of new immigrants.

### 3.2 Definition of immigrant status

Three questions in the ECHP questionnaire provide information on immigrant status (Table 1). The first is “previous foreign country of residence before coming to the present country” (variable PM005), the second is “foreign country of birth” (variable PM007), and the third is “citizenship” (variable PM008).

For the first two variables (PM005 and PM007), three versions are available with different level

of detail. The most detailed version (variables PM005A and PM007A) provides a breakdown into 14 geographical areas (EU-15; other European countries; Africa details unknown; North Africa; West Africa; Central, East and South Africa; America details unknown; North America; Central and South America; Asia details unknown; Near and Middle East; other Asian Countries; Australia, Oceania and other countries; any country not elsewhere classified). This version is not available for Austria, Finland, Germany, Greece, Italy, Luxembourg, Netherlands and Sweden. The intermediate version (variables PM005B and PM007B) provides a breakdown into seven geographical areas (Africa; Asia; America; EU-15; other European countries; Australia, Oceania, and other countries; any country not elsewhere classified). This version is not available for Finland, Germany, Greece, Luxembourg, the Netherlands, and Sweden. The coarsest version (variables PM005C and PM007C) provides a breakdown into only two geographical areas (EU-15; other foreign country). This version is not available for Germany, Greece, Luxembourg, the Netherlands and Sweden. In this paper, we work with the breakdown into seven geographical areas (PM005B and PM007B) because it provides sufficient geographical detail on the country of origin.

How different is the information provided by the two variables, last foreign country of residence and foreign country of birth? Should there be a perfect correspondence between these two variables, it would be immaterial which one is used in defining immigrant status.

To assess the degree of correspondence, we proceed in two steps. First, we check for inconsistencies across waves by examining whether the variable “foreign country of birth” is time invariant.<sup>1</sup> Second, we drop the observations for which we have inconsistencies across waves, and tabulate the distribution of the people ever in the sample by the two variables, foreign country of birth and last foreign country of residence. This is done in Table 2.<sup>2</sup> The table shows that most observations lie on the main diagonal, meaning that there is a very strong correspondence between the two variables.

A third variable, citizenship (PM008) may also be used to define immigrant status (see, for example, De Giorgi and Pellizzari 2005). This variable has a rather coarse classification in four categories: “National”, “Other EU-15 citizen”, “Non EU-15 citizen”, and “Not national, citizenship unknown”. Its main advantage is that data are available for all countries and all waves, except for the first three waves of the United Kingdom.

Table 3 compares the percentage of immigrants in the first ECHP wave of each country according

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<sup>1</sup> Considering all waves, the foreign country of birth changes over time for only 289 out of 113,838 individuals, whereas the last foreign country of residence changes over time for 452 out of 113,838 individuals.

<sup>2</sup> All sample statistics presented in this paper are computed without making use of the survey weights. The results obtained using the survey weights differ little and are available upon request.



Table 2: Joint distribution of last foreign country of residence and foreign country of birth (percentage relative frequencies, all waves).

Last foreign country of residence	Foreign country of birth								Total
	Mis.	Not ap.	EU-15 Euro.	Other Euro.	Africa	America	Asia	Austr.	
missing	0.39	99.61	0.00	0.00	0.00	0.00	0.00	0.00	100.00
not applicable	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00
Community	0.31	40.44	55.33	1.54	1.20	0.63	0.49	0.06	100.00
Other European Countries	0.27	19.77	1.17	77.53	0.18	0.54	0.54	0.00	100.00
Africa	0.07	27.60	1.19	0.28	70.29	0.14	0.42	0.00	100.00
America	0.21	56.44	2.04	0.64	0.86	39.48	0.21	0.11	100.00
Asia	0.00	11.40	2.57	0.74	2.57	0.00	82.72	0.00	100.00
Australia	0.00	75.00	1.56	0.00	1.56	0.00	0.00	21.88	100.00
Total	0.02	95.89	1.76	0.81	0.93	0.35	0.23	0.01	100.00

to the three possible definitions of immigrant status. The second column uses citizenship, the third uses foreign country of birth, and the fourth uses last foreign country of residence. All these percentages are weighted using the personal weights provided by the ECHP (variable PG002). The table shows that a definition of immigrant status based on citizenship generally leads to a lower percentage of immigrants relative to the other definitions. Further, the use of citizenship would also lead to a considerable loss of information on country of origin relative to the other two possible definitions.

In what follows, we define immigrant status based on foreign country of birth. This choice has several advantages. First, it conforms to the international standard definition of immigrant. Second, it is not affected by problems of return migration of those who lived abroad and come back to their home country (such as Spaniards who worked in Germany and then return to Spain). Third, it is not affected by national differences in the naturalization process (OECD 2005, p. 7). After dropping the 289 observations for which we have inconsistencies across waves and the 18 observations (4 in Belgium and 14 in Portugal) for which the information on foreign country of birth is missing, we are left with a sample of 113,531 individuals observed from a minimum of one year to a maximum of eight years.

Table 4 shows, for each country considered, the share of people ever in the sample by foreign country of birth. People who do not move represent the great majority in all countries. The fraction of immigrants in the sample ranges from a minimum of about 2% in Italy and Spain to a maximum of about 8% in Austria, Belgium, and France. In the remaining countries, they represent less than

Table 3: Percentage of immigrants by country according to different definitions of immigrant (weighed data, first ECHP wave of each country).

Country	Citizenship	Foreign born	Foreign residence
Denmark	3.00	4.34	6.60
Netherlands	1.37		
Belgium	6.65	8.53	10.07
France	5.34	10.11	11.26
Ireland	1.53	4.69	10.46
Italy	.08	1.90	2.64
Greece	1.01		
Spain	.77	1.92	5.32
Portugal	1.36	3.58	8.85
Germany (SOEP)	5.74		
Luxembourg(PSELL)	32.41	34.00	34.97
Austria	5.85	10.10	10.10
Finland	1.30		
Sweden	4.87		
UK (BHPS)	2.20	.40	.45

5% of the total population. Unlike Table 3, here we do not use the population weights. Further, since we consider the people ever in the sample, the percentages in this table are affected by the higher rate of panel attrition among immigrants (see Section 3.3).

Table 5 shows, for each country considered, the distribution of immigrants by country of birth. The table shows that, except for Austria, France, Portugal and, Spain, the majority of immigrants come from other EU-15 countries but, with the exception of Austria and Ireland, immigrants from non-European countries represent at least 25% of the total. In France and Portugal, the majority of immigrants come from Africa; In Spain from America; And in Austria from other European

Table 4: Distribution of the sample by foreign country of birth (percentage relative frequencies).

Country	Natives	EU-15	Other	Africa	America	Asia	Austr.	Total
Austria	92.19	1.78	5.32	0.15	0.14	0.41	0.00	100.00
Belgium	91.97	4.75	1.07	1.69	0.26	0.26	0.00	100.00
Denmark	96.06	1.21	1.01	0.24	0.27	1.20	0.01	100.00
France	92.80	2.77	0.66	3.22	0.10	0.46	0.00	100.00
Ireland	95.55	3.87	0.03	0.08	0.29	0.11	0.08	100.00
Italy	98.22	0.64	0.55	0.29	0.25	0.03	0.03	100.00
Portugal	97.37	0.71	0.03	1.40	0.46	0.03	0.00	100.00
Spain	98.15	0.73	0.13	0.21	0.75	0.02	0.00	100.00
Total	95.90	1.76	0.81	0.93	0.35	0.23	0.01	100.00

Table 5: Distribution of the immigrant sample by country of birth (percentage relative frequencies).

Country	EU-15	Other Euro.	Africa	America	Asia	Austr.	Total
Austria	22.82	68.19	1.94	1.80	5.26	0.00	100.00
Belgium	59.14	13.36	21.04	3.23	3.23	0.00	100.00
Denmark	30.69	25.52	6.21	6.90	30.34	0.34	100.00
France	38.43	9.13	44.68	1.36	6.41	0.00	100.00
Ireland	87.03	0.56	1.69	6.58	2.44	1.69	100.00
Italy	35.64	30.77	16.41	13.85	1.79	1.54	100.00
Portugal	27.05	0.99	53.35	17.37	1.24	0.00	100.00
Spain	39.56	7.28	11.17	40.78	0.97	0.24	100.00

countries. In Denmark, immigrants from other EU-15 countries and immigrants from Asia each represent about 30% of the total. The share of immigrants from Australia is always very small (except possibly for Ireland and Italy, where it could be “return migration”).

We can also identify trends in the composition of the immigrant sample. On one hand, in all countries except Italy and Portugal, there is a steady increase in the share of EU-15 immigrants. On the other hand, for most countries, we observe an opposite downward trend for the share of immigrants from other European countries and from outside Europe.

### 3.3 Comparison with other data sources

To what extent is the picture from the ECHP consistent with the information obtained from other data sources?

It turns out that the picture for the first wave (1994) in Table 6 is broadly consistent with the information provided by the OECD for the year 1994.<sup>3</sup> It is worth noting that the OECD data are somewhat heterogeneous because “data on the flows and the stock of migrants and related issues . . . are derived from a wide variety of sources and the nature of these sources varies across countries. This makes the application of standardised definitions difficult and hence particular attention needs to be paid to the characteristics of the data, especially in the context of international comparisons” (OECD 2005, pag. 1).

Table 7 shows the fraction of foreign people on the total population by country for each single year between 1994 and 2001, as reported by the OECD. In 1994, the OECD data are remarkably close to the ECHP data, except for Ireland, Portugal, and Spain, where the fraction of non-natives in the ECHP is substantially larger than the fraction of foreigners in the OECD data. In 2001,

<sup>3</sup> Data have been downloaded from the OECD web site [http://www.oecd.org/topicstatsportal/0,2647,en\\_2825\\_494553\\_1\\_1\\_1\\_1](http://www.oecd.org/topicstatsportal/0,2647,en_2825_494553_1_1_1_1)

Table 6: Fraction of immigrants by country and wave (percentage relative frequencies).

Country	Year							
	1994	1995	1996	1997	1998	1999	2000	2001
Austria		8.27	7.61	6.70	6.68	6.33	6.43	6.18
Belgium	9.00	8.64	8.28	8.16	7.85	7.65	7.36	6.74
Denmark	4.00	3.91	3.69	3.41	3.30	2.79	2.92	2.93
France	8.75	7.98	7.42	6.86	6.56	6.27	5.83	5.57
Ireland	4.61	4.66	4.36	4.21	3.95	3.71	3.62	3.46
Italy	1.72	1.75	1.76	1.69	1.59	1.52	1.50	1.41
Portugal	2.69	2.66	2.46	2.42	2.21	2.34	2.31	2.08
Spain	1.86	1.75	1.66	1.51	1.54	1.51	1.51	1.51

Table 7: Fraction of foreign people on total population by country and year (percentage relative frequencies). Source: OECD.

Country	Year							
	1994	1995	1996	1997	1998	1999	2000	2001
Austria	8.90	9.00	9.04	9.08	9.13	9.20	9.34	9.40
Belgium	9.10	9.00	8.97	8.86	8.70	8.80	8.40	8.21
Denamrk	3.80	4.20	4.70	4.70	4.80	4.88	4.80	5.00
France						5.60		
Ireland	2.69	2.69	3.20	3.13	3.00	3.20	3.30	3.90
Italy	1.60	1.70	2.00	2.10	2.10	2.17	2.43	2.36
Portugal	1.58	1.70	1.70	1.76	1.78	1.90	2.08	2.17
Spain	1.18	1.27	1.37	1.60	1.83	2.00	2.20	2.74

however, the differences between the two data sources tend to be large, and the fraction of non-natives in the ECHP tends to be much smaller than the fraction of foreigners in the OECD data.

The reason for this phenomenon is twofold. The first is the lack of refreshment samples in the ECHP. The second is the differential rate of panel attrition between natives and immigrants. Because of the lack of refreshment samples in the ECHP, the survey cannot capture the trend towards an increasing inflow of immigrants in all countries considered. Further, higher attrition for immigrants may lead to a downward trend in the sample fraction of immigrants on the total population.

In fact, Table 6 reveals a steady decline of the sample fraction of immigrants in all countries considered. In absolute terms, this decline is biggest in France and Belgium. In the first (1994) wave, both countries had about 9% of immigrants, while in the last (2001) wave the share of immigrants was down to 6.7% in Belgium and 5.6% in France.

Table 8: One year attrition rates by year and immigrant status (percentage).

Country	Immigrant status	Year						
		1995	1996	1997	1998	1999	2000	2001
Austria	Natives		3.27	3.90	5.75	6.10	7.52	5.94
Austria	Immigrants		6.21	9.05	7.66	8.39	6.15	7.87
Belgium	Natives	2.49	3.43	5.28	6.31	6.86	6.56	9.53
Belgium	Immigrants	2.20	3.53	4.28	7.81	7.39	9.68	15.90
Denmark	Natives	3.97	6.63	7.51	9.29	6.56	6.19	4.34
Denmark	Immigrants	8.85	10.67	10.12	12.34	12.84	8.93	3.61
France	Natives	3.08	2.93	5.44	5.56	5.80	7.15	5.91
France	Immigrants	2.95	3.10	6.59	6.64	6.30	7.59	5.84
Ireland	Natives	4.92	6.11	6.38	6.77	11.03	17.43	11.50
Ireland	Immigrants	4.68	8.88	6.80	8.02	14.47	17.62	14.45
Italy	Natives	2.17	2.11	5.38	5.56	5.36	6.84	9.41
Italy	Immigrants	1.83	2.03	5.69	6.52	6.52	6.35	13.56
Portugal	Natives	1.78	2.86	3.28	4.42	4.08	4.61	4.08
Portugal	Immigrants	2.33	5.44	4.29	10.43	3.36	4.32	9.33
Spain	Natives	4.41	4.72	6.26	7.24	7.18	8.26	6.74
Spain	Immigrants	6.29	6.38	11.13	8.30	7.34	9.22	10.66

Table 8 shows one-year percentage attrition rates by country, wave, and immigrant status, with attrition rates defined as the ratio of the number of people lost to the sample between waves  $j$  and  $j + 1$  to the number of people included in the sample in wave  $j$ . Attrition rates differ considerably, not only by country and immigrant status, but also over time. In particular, we observe the highest attrition rates in Denmark and Ireland, and the lowest attrition rates in Italy (except for the last wave), Portugal and Spain. In some countries (mainly Belgium, Ireland, and Italy), attrition rates tend actually to increase over time.

### 3.4 Sample selection

Since we are mainly interested in labor market outcomes (labor force participation, employment, unemployment, and earnings), we restrict attention to the working age population, which we conventionally define as people aged 20–64. The resulting sample consists of 89,799 individuals in eight countries (Austria, Belgium, Denmark, France, Ireland, Italy, Portugal, Spain), observed from a minimum of one year to a maximum of eight years (seven years in Austria). For all countries, 50% or more of the individuals in the sample are observed for at least six years. Additional sample selection criteria will be used later, when analyzing the earnings of natives and immigrants.

## 3.5 Construction of labor market outcomes

This section provides some details on the definition and construction of the labor market outcomes—employment status and earnings—that represent the object of the regression analyses in Section 5. Tabulations are based on our working sample of eight countries.

### 3.5.1 Current employment status

To simplify the analysis, we distinguish only between employed and non-employed people. This distinction is based on the ILO main activity status at the time of the interview (variable PE003), which classifies people into five categories: people working 15+ hours/week (“normally working”), people working less than 15 hours/week (“currently working”), unemployed, discouraged workers, and economically inactive. We classify people as employed if they are “normally working” or “currently working”, and as non-employed otherwise.

For employed people, we further distinguish between full-time and part-time workers on the one hand, and between employees and self-employed on the other. The distinction between full-time and part-time workers is based on hours worked per week in the main and additional jobs (variable PE005). Our threshold for full-time work is 35 hours per week.

The distinction between employees and self-employed is instead based on the type of employment (variable PE004). This variable distinguishes between five different categories: working with an employer in paid employment, working with an employer in paid apprenticeship, working with an employer in training under a special scheme related to employment, self-employment, and unpaid work in a family enterprise. Based on this classification, we classify people as self-employed if they are in self-employment or are unpaid workers in a family enterprise, and as employees otherwise.

### 3.5.2 Employment status last year

We classify a person as full-year worker, part-year worker, or non-worker using the information on main activity status in each single month of the last calendar year (variables PC001–PC012).<sup>4</sup> More precisely, a person is classified as a full-year worker if his/her main activity status was employment (paid employment, whether part-time or full-time; paid apprenticeship; or training under special schemes related to employment; self-employment; or unpaid work in family enterprise) in all 12 months of the previous year. A person is classified as a part-year worker if he/she is not a full-year

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<sup>4</sup> Notice that, from wave 2 to wave 7, main activity status in France is based on the 12 months prior to the survey and not on the previous calendar year.

worker and his/her main activity status was employment in at least one month. A person who is neither a full-year worker nor a part-year worker is classified as a non-worker.

### 3.5.3 Earnings

The ECHP contains information on two earnings concepts: annual earnings in the last calendar year (PI110) and monthly earnings on the current main job (PI211M), or “current monthly earnings” for short. All amounts are in national currencies and current prices and, except for France, are net of social security contributions and income taxes.<sup>5</sup> The information on these two earnings concepts is asked at different places in the ECHP questionnaire: annual earnings in the last calendar year are asked in the income part of the questionnaire, while current monthly earnings are asked in the employment part. Annual earnings in the previous calendar year are the sum of wage and salary earnings (PI111) and self-employment income (PI112). Wage and salary earnings are themselves the sum of two components: regular wage and salary earnings (monthly wages, 13th and 14th salary, extra payments for overtime, holiday pay, earnings from an additional job, and other earnings not specified separately, PI1111), and lump sums (PI1112).

All monetary amounts have been converted to euros and adjusted using Purchasing Power Parities for the year considered (see, for example, Adsera and Chiswick 2004).<sup>6</sup>

The issue of imputation is rather tricky, mainly because little is known about ECHP imputation at the personal income level. Nicoletti and Peracchi (2005) show that the percentage of nonrespondents is much higher for self-employment income than for wages and salaries. Further, wages and salaries are mainly affected by partial item-nonresponse, while self-employment variable is affected mainly by full item-nonresponse.

They also show that the imputation procedure adopted in the ECHP to solve the full nonresponse problem produces seriously underestimated values for wages and salaries. However, because the percentage of full nonrespondents is quite low, the bias in the average wage and salary computed using all individuals is likely to be small. On the other hand, although full item nonresponse for self-employment earnings is high, conditional and unconditional mean and percentiles of self-employment income do not differ significantly for respondents and full item nonrespondents. In conclusion, wages and salaries of full item nonrespondents appear to be underestimated in the ECHP, but the number of cases involved is relatively small, and so statistics computed for the full

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<sup>5</sup> Current monthly earnings are also available as gross (variable PI211MG).

<sup>6</sup> As a robustness check, we also converted all monetary amounts to euros and to constant 2000 prices using the CPI (source OECD).

sample and the subset of respondents do not differ much. For self-employment income, instead, full item nonresponse is very frequent, but there is no evidence of bias.

## **3.6 Construction of the covariates**

This section provides some detail on the definition and construction of the key covariates (year of birth, gender, marital status, education, and labor market experience) that will be used later in the regression analyses of Section 5.

### **3.6.1 Year of birth**

Because of the anonymization criteria adopted by the ECHP, year of birth (variable PD001) is top-coded for all countries and all waves: people born earlier than 1909 are recorded as born in 1909. As a result, for all countries, a person’s age (variable PD003) is top-coded at 85 years in wave 1, at 86 years in wave 2, and so on.

### **3.6.2 Marital status**

The reference period for marital status (PD005) is the time of the interview. The ECHP distinguishes between five categories: married, separated, divorced, widowed, and never married. To simplify the analysis we distinguish only between people with a spouse (married) and people without a spouse (the other four categories).

### **3.6.3 Education**

Measuring educational attainments is complicated and somewhat controversial. The ECHP provides three alternative measures: the highest level of general or higher education completed (PT022), the age when the highest level of general or higher education was completed (variable PT023), and the age when full-time education was stopped (variable PT024).

The first variable (“education level”) is relevant if educational attainments are conventionally defined following the International Standard Classification of Education (ISCED) because its three levels “lower than (upper) secondary education”, “(upper) secondary education completed”, and “first stage of tertiary education completed” correspond, respectively, to ISCED levels 0–1, 2 and 3–5.

The other two variables would be relevant if educational attainments were measured in terms of “years of education”. Combined with the information on the “year of arrival in the country of



present residence” (variable PM006), they could also be useful in distinguishing between the type of education received in the home and the host country.

Unfortunately, the information on these two variables is incomplete. Age when full-time education was stopped is not given until 1998 (in France until 2001). For both these variables, the panel documentation (Eurostat 2003c, pp. 355–356) also reports problems in wave 5 for Portugal.

### 3.6.4 Labor market experience

For those who ever worked, we construct a measure of labor market experience by taking the difference between the age in wave  $j$  (variable PD003) and the age when the person began her working life, that is, started her first job or business (variable PE039).<sup>7</sup>

In the case of immigrants, it would be important to know the years of labor market experience in the host country. Unfortunately, this information cannot be recovered precisely. A useful piece of information would be the “year of start of current job” (variable PE011), but several problems arise. First, this question is asked only to those who report themselves as “normally working (15+ hours/week)” when asked about their “ILO main activity status at time of interview” (variable PE003). Second, the codes are also rather imprecise. Of the six categories available, one looks fairly reliable (“1981 to 2002”), while the other five categories are “started in 1980 or before”, . . . , “started in 1984 or before”. For these reasons, we do not distinguish between labor market experience abroad and in the country of current residence.

### 3.6.5 Length of stay

For people whose migration trajectory (variable PM001) is “person born in the country of present residence, lived abroad before coming to this region”, “person born abroad, still lived in the same foreign country before coming to the country of present residence”, or “person born abroad, lived in another foreign country before coming to the country of present residence”, we construct a measure of the length of stay in the current country as the difference between the year of the current wave and the “year of arrival in the country of present residence” (variable PM006). For people born in the country of present residence, the variable PM006 is coded as “not applicable”.<sup>8</sup>

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<sup>7</sup> Because of the ECHP anonymization criteria, age is top-coded at 85 years in wave 1, 86 years in wave 2, and so on, for all countries, while age at first job is top coded for all countries and waves at 60 years. As we are mostly concerned with workers aged 20–64, these top-coding rules are relatively unimportant.

<sup>8</sup> Because of the ECHP anonymization criteria, the variable PM006 is top-coded at 1909. Again, as we are mostly concerned with age 20–64, these top-coding rules are unimportant.

### 3.7 Data availability

In this section we analyze data availability to have a clear view of which variables can actually be used. We focus on the age range 20–64.

For working status, there are very few missing data. Most of them belong to the native sample (106 out of the 122 cases of missing values) and are more frequent for Belgium (49 missing values).

The indicator for full-year/part-year employment contains a relatively small fraction of missing values (5% or less). About two-thirds of them are for France, mostly for the sample of natives and concentrated in the second wave. Some missing values are also found for Belgium, Italy, and Spain. In Belgium, their pattern is fairly stable over time, except for the first wave. In Italy there is some variability over time. In Spain the number of missing values falls after wave 6 (1999).

A small fraction of missing data can also be found for the self-employment indicator. The large number of not applicable values for this variable is due to the fact that this question is asked only if the ILO main activity status at the time of interview (PE003) is either “normally working” (people working 15+ hours/week) or “currently working” (people working less than 15 hours/week).

The variable current monthly earnings has no missing values, but this is because missing data have been imputed. Unfortunately, the public use files provides no information on which cases have been imputed.

As for the covariates, year of birth and gender contain no missing values and appear to be highly reliable for all countries. We checked for inconsistencies across waves, but found none.

For marital status, some missing values are present but they represent a very small fraction of the data: 30 out of 71136 observations. Somewhat surprisingly, all missing values are for natives.

Education level is available for more than 99% of the observations. Again missing values are more frequent for natives than for immigrants.

Labor market experience contains neither “missing” nor “not applicable” values since we construct the variable only for those who ever worked.

Our measure of length of stay in the host country also has very few missing values, except in France for the sample of natives. As largely expected, we find a large fraction of “not applicable” among the natives but none among the immigrants. This may be viewed as a check for the reliability of this variable. Another useful check consists in comparing the year of birth (PD001) and the “year of arrival in the country of present residence” (PM006). For the age range 20–64, we only found 10 people (47 observations) whose year of arrival in the country of current residence is prior to the year of birth (2 each in Austria, Denmark and Ireland, and 4 in Italy). These observations were

dropped. Finally, in Ireland and Portugal, the relatively large fraction of natives with available information on the length of stay variable (about 6% of the sample of natives) simply reflects the relatively large fraction of natives who lived abroad before returning to their country of birth.

## 4 Descriptive statistics

This section presents some preliminary descriptive analyses of the available data. Section 4.1 focuses on our basic labor market outcomes, and Section 4.2 focuses on the length of stay, which is one of our key covariates. These descriptive statistics should be interpreted with care because, due to the lack of refreshment samples in the ECHP and the higher attrition rates among the foreign-born population, they may be biased towards better integrated immigrants.

### 4.1 Basic labor market outcomes

We begin with descriptive statistics for our basic labor market outcomes, namely our two measures of employment status (current employment status and employment status last year) and our two measures of earnings (monthly wages on the main job in the current month and average earnings last year).

#### 4.1.1 Employment status

We present, separately by country, gender, and immigrant status, descriptive statistics for our two measures of employment. These statistics have been computed for the sample of people aged 20–64, after dropping the few cases with missing values for the relevant variables.

Table 9 shows the distribution by current employment status (employed and not employed). The “employment” column gives estimates of the employment rate of the working-age population by country, gender, and immigrant status. The table shows that men always have substantially higher employment rates than women. With some exceptions (Italy and Spain for men; and Ireland, Italy, Portugal and Spain for women), natives have higher employment rates than immigrants. Furthermore, the employment rate differentials between men and women tend to be larger for immigrants than for natives.

Table 10 shows the distribution of the employed by full-time/part-time status. For both natives and immigrants, part-time appears to be much more important among women than among men. Further, part-time tends to be more important among immigrants than among natives, especially for men.

Table 9: Distribution of the sample by current employment status (percent, all waves).

Country	Men			Women		
	Empl.	Not empl.	Total	Empl.	Not empl.	Total
Natives						
Austria	78.7	21.3	100.0	59.4	40.6	100.0
Belgium	80.3	19.7	100.0	61.9	38.1	100.0
Denmark	85.6	14.4	100.0	74.9	25.1	100.0
France	74.6	25.4	100.0	56.1	43.9	100.0
Ireland	79.4	20.6	100.0	49.8	50.2	100.0
Italy	71.8	28.2	100.0	41.3	58.7	100.0
Portugal	82.1	17.9	100.0	59.2	40.8	100.0
Spain	72.2	27.8	100.0	38.8	61.2	100.0
Immigrants						
Austria	75.9	24.1	100.0	53.0	47.0	100.0
Belgium	70.4	29.6	100.0	44.5	55.5	100.0
Denmark	67.5	32.5	100.0	56.6	43.4	100.0
France	70.1	29.9	100.0	47.0	53.0	100.0
Ireland	73.5	26.5	100.0	52.5	47.5	100.0
Italy	78.8	21.2	100.0	46.8	53.2	100.0
Portugal	77.5	22.5	100.0	62.3	37.7	100.0
Spain	73.2	26.8	100.0	47.2	52.8	100.0
Total						
Austria	78.5	21.5	100.0	58.9	41.1	100.0
Belgium	79.4	20.6	100.0	60.4	39.6	100.0
Denmark	85.0	15.0	100.0	74.1	25.9	100.0
France	74.2	25.8	100.0	55.5	44.5	100.0
Ireland	79.2	20.8	100.0	49.9	50.1	100.0
Italy	71.9	28.1	100.0	41.4	58.6	100.0
Portugal	82.0	18.0	100.0	59.3	40.7	100.0
Spain	72.2	27.8	100.0	39.0	61.0	100.0

Table 10: Distribution of the employed by full-time/part-time status (percent, all waves).

Country	Men			Women		
	Full-time	Part-time	Total	Full-time	Part-time	Total
Natives						
Austria	96.3	3.7	100.0	63.7	36.3	100.0
Belgium	93.8	6.2	100.0	60.8	39.2	100.0
Denmark	93.1	6.9	100.0	65.3	34.7	100.0
France	87.4	12.6	100.0	64.7	35.3	100.0
Ireland	88.2	11.8	100.0	53.5	46.5	100.0
Italy	92.5	7.5	100.0	70.7	29.3	100.0
Portugal	90.4	9.6	100.0	68.9	31.1	100.0
Spain	90.4	9.6	100.0	67.0	33.0	100.0
Immigrants						
Austria	95.1	4.9	100.0	66.1	33.9	100.0
Belgium	92.4	7.6	100.0	59.9	40.1	100.0
Denmark	86.9	13.1	100.0	69.6	30.4	100.0
France	90.2	9.8	100.0	63.6	36.4	100.0
Ireland	85.7	14.3	100.0	45.4	54.6	100.0
Italy	89.0	11.0	100.0	61.8	38.2	100.0
Portugal	86.6	13.4	100.0	63.2	36.8	100.0
Spain	89.0	11.0	100.0	60.7	39.3	100.0
Total						
Austria	96.2	3.8	100.0	63.9	36.1	100.0
Belgium	93.7	6.3	100.0	60.7	39.3	100.0
Denmark	92.9	7.1	100.0	65.5	34.5	100.0
France	87.6	12.4	100.0	64.6	35.4	100.0
Ireland	88.1	11.9	100.0	53.0	47.0	100.0
Italy	92.5	7.5	100.0	70.5	29.5	100.0
Portugal	90.3	9.7	100.0	68.7	31.3	100.0
Spain	90.4	9.6	100.0	66.9	33.1	100.0

Table 11: Distribution of the employed by self-employment status (percent, all waves).

Country	Men			Women		
	Employee	Self-empl.	Total	Employee	Self-empl.	Total
Natives						
Austria	84.0	16.0	100.0	82.4	17.6	100.0
Belgium	84.2	15.8	100.0	87.6	12.4	100.0
Denmark	91.1	8.9	100.0	95.8	4.2	100.0
France	87.7	12.3	100.0	92.9	7.1	100.0
Ireland	72.6	27.4	100.0	90.5	9.5	100.0
Italy	69.8	30.2	100.0	78.7	21.3	100.0
Portugal	73.1	26.9	100.0	74.4	25.6	100.0
Spain	76.2	23.8	100.0	81.6	18.4	100.0
Immigrants						
Austria	90.5	9.5	100.0	91.0	9.0	100.0
Belgium	83.4	16.6	100.0	90.2	9.8	100.0
Denmark	90.3	9.7	100.0	94.0	6.0	100.0
France	85.4	14.6	100.0	93.4	6.6	100.0
Ireland	73.8	26.2	100.0	89.7	10.3	100.0
Italy	77.7	22.3	100.0	80.5	19.5	100.0
Portugal	72.8	27.2	100.0	86.3	13.7	100.0
Spain	60.0	40.0	100.0	74.0	26.0	100.0
Total						
Austria	84.4	15.6	100.0	83.0	17.0	100.0
Belgium	84.1	15.9	100.0	87.8	12.2	100.0
Denmark	91.0	9.0	100.0	95.7	4.3	100.0
France	87.6	12.4	100.0	92.9	7.1	100.0
Ireland	72.7	27.3	100.0	90.5	9.5	100.0
Italy	69.9	30.1	100.0	78.7	21.3	100.0
Portugal	73.1	26.9	100.0	74.8	25.2	100.0
Spain	76.0	24.0	100.0	81.5	18.5	100.0

Table 11 shows the distribution of the employed by employee/self-employment status. For both natives and immigrants, self-employment appears to be more important among men than among women. For men, self-employment tends to be more important among immigrants than among natives, whereas for women the opposite tends to be true.

Table 12 shows the distribution of employment status in the last calendar year. We distinguish between those who worked at least one month last year (“worked”) and those who did not (“not worked”). For all countries, the fraction of non-workers is much higher among women than among men, irrespective of immigrant status. Further, with the only exception of Italy, the fraction of non-workers is higher among immigrants than among natives.

Table 13 shows the distribution by full-year/part-year status of those who worked at least one

Table 12: Distribution of the sample by employment status in the last calendar year (percent, all waves).

Country	Men			Women		
	Worked	Not worked	Total	Worked	Not worked	Total
Natives						
Austria	82.3	17.7	100.0	58.2	41.8	100.0
Belgium	80.9	19.1	100.0	60.7	39.3	100.0
Denmark	87.2	12.8	100.0	77.3	22.7	100.0
France	80.3	19.7	100.0	64.3	35.7	100.0
Ireland	82.1	17.9	100.0	49.4	50.6	100.0
Italy	73.0	27.0	100.0	42.9	57.1	100.0
Portugal	83.6	16.4	100.0	60.0	40.0	100.0
Spain	76.2	23.8	100.0	41.2	58.8	100.0
Immigrants						
Austria	80.9	19.1	100.0	53.7	46.3	100.0
Belgium	71.7	28.3	100.0	43.9	56.1	100.0
Denmark	70.9	29.1	100.0	58.6	41.4	100.0
France	77.4	22.6	100.0	53.3	46.7	100.0
Ireland	77.8	22.2	100.0	51.2	48.8	100.0
Italy	79.1	20.9	100.0	48.5	51.5	100.0
Portugal	79.3	20.7	100.0	63.4	36.6	100.0
Spain	77.1	22.9	100.0	49.9	50.1	100.0
Total						
Austria	82.2	17.8	100.0	57.9	42.1	100.0
Belgium	80.1	19.9	100.0	59.3	40.7	100.0
Denmark	86.6	13.4	100.0	76.5	23.5	100.0
France	80.1	19.9	100.0	63.5	36.5	100.0
Ireland	81.9	18.1	100.0	49.5	50.5	100.0
Italy	73.1	26.9	100.0	43.0	57.0	100.0
Portugal	83.5	16.5	100.0	60.1	39.9	100.0
Spain	76.2	23.8	100.0	41.3	58.7	100.0

Table 13: Distribution of people working in the last calendar year by full-year/part-year status (percent, all waves).

Country	Men			Women		
	Full-year	Part-year	Total	Full-year	Part-year	Total
Natives						
Austria	88.0	12.0	100.0	86.2	13.8	100.0
Belgium	92.2	7.8	100.0	86.1	13.9	100.0
Denmark	86.8	13.2	100.0	80.6	19.4	100.0
France	87.9	12.1	100.0	83.4	16.6	100.0
Ireland	86.6	13.4	100.0	75.9	24.1	100.0
Italy	91.0	9.0	100.0	85.8	14.2	100.0
Portugal	92.4	7.6	100.0	88.0	12.0	100.0
Spain	82.0	18.0	100.0	72.7	27.3	100.0
Immigrants						
Austria	84.6	15.4	100.0	82.3	17.7	100.0
Belgium	91.2	8.8	100.0	86.7	13.3	100.0
Denmark	73.2	26.8	100.0	72.6	27.4	100.0
France	89.0	11.0	100.0	87.6	12.4	100.0
Ireland	81.5	18.5	100.0	73.4	26.6	100.0
Italy	91.6	8.4	100.0	81.9	18.1	100.0
Portugal	88.0	12.0	100.0	82.9	17.1	100.0
Spain	77.0	23.0	100.0	72.7	27.3	100.0
Total						
Austria	87.8	12.2	100.0	85.9	14.1	100.0
Belgium	92.1	7.9	100.0	86.1	13.9	100.0
Denmark	86.4	13.6	100.0	80.3	19.7	100.0
France	88.0	12.0	100.0	83.6	16.4	100.0
Ireland	86.4	13.6	100.0	75.7	24.3	100.0
Italy	91.0	9.0	100.0	85.7	14.3	100.0
Portugal	92.2	7.8	100.0	87.8	12.2	100.0
Spain	81.9	18.1	100.0	72.7	27.3	100.0

month in the last calendar year. For both natives and immigrants, the fraction of full-year workers is substantially higher among men than among women. In general, the fraction of full-year workers is greater among natives than among immigrants. Working women are much more likely to be part-year workers than men, no matter the immigrant status. If we distinguish by immigrant status, there is some evidence that part-year work is more frequent among immigrants than among natives.

#### 4.1.2 Earnings

Tables 14 through 17 present, separately by country, gender and immigrant status, descriptive statistics for our two measures of earnings: current monthly earnings and average monthly earnings in the last calendar year. This second measure is the ratio of annual earnings last year and months



worked last year (12 for full-year workers and less than 12 for part-year workers). We do not instead divide by usual hours of work per week (variables PE005 or PE005A) in order to obtain a measure of hourly earnings.

The statistics considered are the mean, the standard deviation (SD), the 25th percentile (p25), the median or 50th percentile (p50), and the 75th percentile (p75). Each statistic has been computed for the subsample of workers aged 20–64, after dropping cases with monthly wages or monthly earnings below 100 euros. Tables are presented separately by gender and for various categories of workers. For current monthly earnings, we distinguish between all workers, full-time workers, part-time workers, employees, and self-employed workers. For average monthly earnings in the last calendar year, we distinguish only between full-year and part-year workers.<sup>9</sup>

Current monthly earnings are always higher for men than for women, irrespective of immigrant status. The relative difference between male and female earnings varies by country, but is around 20% for full-time or full-year workers, and somewhat larger for part-time or self-employed workers. Natives tend to have higher mean earnings than immigrants, but the differences are not large. The variability of earnings (measured by either the standard deviation or the interquartile range) tends to be higher for men than for women. Interestingly, the variability of earnings also tends to be higher for immigrants than for natives.

Cross-country variability is substantial. Portugal has the lowest earnings of all countries considered, no matter what measure or subsample (men/women, natives/immigrants) is considered. In Belgium, Denmark, France, and Ireland, the mean of current monthly earnings of a male worker is above 1300 euros; in Austria it is 50–100 euros lower; while in Spain and Italy, it is about 150–200 euros lower. Some care is needed with cross-country comparisons, however, because here we do not condition on important covariates. For example, monthly earnings are on average higher in Spain than in Italy. Conditioning on education shows that this is true only for the highest educational level, which represents a higher fraction of workers in Spain than in Italy, but not for the other educational levels. An inspection of percentiles helps revealing some of these differences. Continuing with our comparison of Italy and Spain, the 25th percentile is higher for Italy in all the samples, the median is more or less the same for the two countries, while the 75th percentile is much higher in Spain as a consequence of the larger fraction of more educated people.

A more complete description of the distribution of earnings is provided by nonparametric estimates of the density of monthly earnings by country and immigrant status. The results obtained

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<sup>9</sup> For brevity we report only two measures of earnings. Tables for the other measures of earnings are available upon request.

Table 14: Descriptive statistics for current monthly earnings by country and immigrant status. Men.

Country	Mean	SD	p25	p50	p75
Natives					
Austria	1290.1	394.9	1024.6	1229.5	1505.8
Belgium	1348.5	389.2	1065.7	1284.3	1585.9
Denmark	1309.7	375.8	1067.5	1290.1	1548.3
France	1405.4	626.1	961.4	1252.8	1719.9
Ireland	1377.6	588.7	955.6	1292.7	1746.7
Italy	1105.6	314.7	897.1	1061.3	1277.6
Portugal	690.9	303.9	485.8	600.5	810.1
Spain	1173.4	497.4	826.4	1059.5	1436.5
Immigrants					
Austria	1185.1	383.0	921.7	1129.4	1402.2
Belgium	1290.0	372.8	1040.1	1211.6	1444.6
Denmark	1200.1	393.3	962.4	1166.5	1437.7
France	1339.0	598.7	899.3	1150.6	1649.7
Ireland	1394.5	634.9	945.9	1285.2	1799.5
Italy	1067.8	328.2	845.4	1014.4	1224.4
Portugal	819.9	374.6	546.6	708.5	1033.1
Spain	1090.6	488.6	749.3	1014.1	1351.4
Total					
Austria	1283.5	395.0	1015.0	1219.6	1504.8
Belgium	1344.4	388.4	1064.7	1271.2	1575.1
Denmark	1306.9	376.6	1060.4	1283.4	1548.3
France	1400.8	624.4	957.1	1245.5	1718.4
Ireland	1378.2	590.5	955.6	1292.1	1747.1
Italy	1104.9	315.0	895.6	1061.3	1277.6
Portugal	694.3	306.7	485.8	603.3	814.5
Spain	1172.3	497.4	826.4	1057.7	1435.1

(not presented here for brevity, but available upon request) confirm the main indications from Tables 14–17 namely that, if we confine attention to full-time or full-year workers, the distribution of monthly earnings of immigrants is shifted a little to the left and is possibly more spread out than for natives, but that differences tend to be small.

## 4.2 Length of stay

This section focuses on one of the main covariate of our analysis: Namely the length of stay in the country of current residence.

Table 18 presents sample statistics for the length of stay measured at the time of the first interview (except for Austria, year 1994 for most individuals in the sample). The statistics considered are again the mean, the standard deviation (SD), the 25th percentile (p25), the median or 50th

Table 15: Descriptive statistics for current monthly earnings by country and immigrant status. Women.

Country	Mean	SD	p25	p50	p75
Natives					
Austria	916.1	386.8	649.8	874.3	1125.6
Belgium	1047.6	354.6	797.0	1020.7	1263.0
Denmark	1080.9	329.8	861.6	1074.0	1283.4
France	1135.7	536.6	749.9	1046.1	1426.7
Ireland	1000.6	517.4	605.4	921.9	1276.8
Italy	940.7	284.7	758.9	934.0	1109.2
Portugal	634.1	340.9	409.2	506.3	742.8
Spain	966.4	498.3	595.2	860.2	1238.7
Immigrants					
Austria	890.9	351.2	683.1	849.3	1104.7
Belgium	1023.9	366.6	751.2	990.6	1234.3
Denmark	1030.8	374.9	774.2	1007.4	1293.1
France	1064.1	546.7	683.6	928.6	1304.2
Ireland	937.8	555.6	465.0	825.4	1258.5
Italy	892.4	300.2	670.7	883.9	1070.8
Portugal	764.6	375.7	444.2	686.5	1004.0
Spain	933.2	552.8	525.5	787.3	1166.0
Total					
Austria	914.1	384.2	650.2	868.1	1125.2
Belgium	1046.1	355.4	794.1	1020.4	1259.4
Denmark	1079.3	331.5	861.1	1072.5	1283.4
France	1131.5	537.4	746.4	1037.6	1419.0
Ireland	996.9	519.9	597.1	916.4	1276.7
Italy	939.5	285.2	758.9	934.0	1109.2
Portugal	639.0	343.2	409.8	509.7	759.3
Spain	965.7	499.5	593.1	859.3	1235.6

Table 16: Descriptive statistics for average monthly earnings in the last calendar year by country and immigrant status. Full-year male workers.

Country	Mean	SD	p25	p50	p75
Natives					
Austria	1509.7	506.9	1158.9	1418.2	1796.3
Belgium	1541.7	491.4	1204.9	1457.1	1809.9
Denmark	1393.1	403.7	1110.5	1345.9	1649.4
France	1465.7	641.7	1006.9	1310.2	1790.6
Ireland	1410.7	589.6	982.3	1312.5	1781.4
Italy	1236.5	381.3	994.3	1183.9	1424.9
Portugal	776.7	366.2	536.5	674.9	906.6
Spain	1251.9	518.1	878.4	1124.9	1512.5
Immigrants					
Austria	1399.8	500.0	1042.0	1302.9	1663.4
Belgium	1670.6	769.9	1197.9	1447.7	1839.5
Denmark	1332.8	430.0	1060.1	1266.5	1573.0
France	1378.1	644.7	915.3	1194.6	1668.0
Ireland	1484.9	688.6	975.5	1334.2	1904.4
Italy	1155.2	352.7	936.0	1109.7	1338.4
Portugal	948.8	491.7	590.4	774.9	1197.3
Spain	1175.4	489.8	844.0	1049.3	1397.3
Total					
Austria	1502.9	507.5	1150.0	1408.8	1790.5
Belgium	1549.2	505.2	1204.0	1457.1	1814.7
Denmark	1391.5	404.3	1108.0	1345.5	1647.8
France	1459.3	642.6	997.4	1304.2	1782.8
Ireland	1412.8	593.2	981.2	1312.5	1784.5
Italy	1234.6	380.5	992.1	1180.8	1423.6
Portugal	781.1	370.9	537.9	676.5	917.6
Spain	1251.1	518.0	878.3	1124.3	1510.9

Table 17: Descriptive statistics for average monthly earnings in the last calendar year by country and immigrant status. Full-year female workers.

Country	Mean	SD	p25	p50	p75
Natives					
Austria	1095.0	462.7	778.2	1018.1	1346.6
Belgium	1165.8	411.2	881.1	1129.1	1406.4
Denmark	1125.4	337.0	893.2	1094.1	1323.6
France	1169.0	533.8	785.9	1087.9	1458.7
Ireland	1051.5	485.2	693.5	963.1	1308.0
Italy	1041.8	328.4	835.9	1036.1	1230.0
Portugal	718.9	406.7	451.3	570.6	851.6
Spain	1069.6	501.7	700.1	956.1	1367.5
Immigrants					
Austria	1067.0	415.7	796.6	1004.0	1333.4
Belgium	1231.0	553.3	875.7	1118.4	1394.3
Denmark	1145.2	368.5	881.3	1119.1	1403.1
France	1101.8	588.3	691.8	957.0	1371.4
Ireland	1042.8	526.6	614.4	975.5	1361.3
Italy	971.8	319.6	728.7	991.2	1174.2
Portugal	928.7	511.9	515.1	810.2	1197.2
Spain	1030.1	603.2	593.0	890.3	1248.5
Total					
Austria	1093.0	459.0	781.1	1017.0	1345.1
Belgium	1167.9	416.1	880.2	1128.5	1405.3
Denmark	1126.2	338.2	891.9	1094.4	1326.3
France	1164.5	537.4	777.8	1079.6	1452.7
Ireland	1051.4	488.1	689.6	964.2	1310.4
Italy	1040.4	328.5	833.3	1034.9	1229.2
Portugal	725.8	412.2	452.1	574.4	864.9
Spain	1069.0	504.0	697.5	954.8	1366.4

Table 18: Descriptive statistics for the length of stay of immigrants by country and gender.

Country	Mean	SD	p25	p50	p75
Male					
Austria	16.9	15.1	5.0	12.0	24.0
Belgium	24.1	13.3	14.0	25.0	33.0
Denmark	14.9	11.9	5.0	11.5	22.0
France	25.1	12.0	19.0	26.0	32.0
Ireland	20.2	12.0	14.0	21.0	26.0
Italy	22.5	13.5	14.0	22.0	30.0
Portugal	16.8	9.3	11.5	18.0	20.0
Spain	16.5	12.5	5.0	16.0	24.0
Female					
Austria	16.9	16.2	4.0	10.0	26.0
Belgium	22.0	13.2	10.0	22.0	32.0
Denmark	16.3	12.8	5.0	15.5	25.0
France	22.9	12.4	14.0	24.0	32.0
Ireland	20.9	12.4	14.0	21.0	27.0
Italy	18.5	12.4	8.0	18.0	26.0
Portugal	16.4	8.4	10.0	18.0	20.0
Spain	15.7	12.6	5.0	14.0	24.0
Total					
Austria	16.9	15.7	4.0	11.0	25.0
Belgium	23.0	13.3	12.0	23.0	32.0
Denmark	15.7	12.4	5.0	14.0	24.0
France	24.0	12.3	16.0	25.0	32.0
Ireland	20.6	12.2	14.0	21.0	27.0
Italy	20.1	13.0	10.0	20.0	27.0
Portugal	16.6	8.9	10.0	18.0	20.0
Spain	16.1	12.6	5.0	15.0	24.0

percentile (p50), and the 75th percentile (p75). Each statistic has been computed using the subsample of people aged 20–64, excluding the few cases for which the year of arrival in the country of current residence was prior to the year of birth.

Our sample of immigrants consists of people who have spent a considerable amount of their life in the country of current residence. The mean length of stay at the time they enter the sample is at least 15 years, with large differences across countries. For men, the mean length of stay ranges from a minimum of 15 years in Denmark and 16 years in Austria and Spain to a maximum of 24 years in Belgium and France. For women, it ranges from a minimum of slightly less than 16 years in Spain to a maximum of 22 years in France.

In Belgium, France and Italy the average length of stay of men is higher than in other countries, and is also higher than for women. In Denmark and Ireland, on the contrary, women have a higher average length of stay than men. In Austria, Portugal, and Spain there are virtually no differences between men and women.

## 5 Regression analysis

This section presents the results of fitting simple regression models to the individual data to summarize the way in which basic labor market outcomes vary between natives and immigrants depending on the country of residence and other observable personal characteristics.

For each labor market outcome, we consider both models for the pooled data and separate models for immigrants and natives. The models for immigrants contain a richer set of covariates than the models for natives, as we control for additional variables: typically a measure of the length of stay in the host country and indicators for the area of origin. All models are fitted separately for men and women.

### 5.1 Labor force status

In this section we present results for the probability of being in various labor force states: Namely, active (participating to the labor force as either employed or unemployed), employed, or unemployed. The estimated models summarize the observed variability by country, gender, and immigrant status in, respectively, the activity rate (the ratio of active people to total population), the employment rate (the ratio of employed people to total population), and the unemployment rate (the ratio of unemployed to active people).

Labor force states are defined on the basis of “ILO main activity status at the time of interview”

(PE003): unemployed, employed (normally working or currently working), and active (employed or unemployed).

After the sample selection criteria mentioned in Section 3, the total sample for our age group of interest (20–64 years) consists of 87,901 individuals (445,404 observations). Of these, 84,081 individuals (427,163 observations) are natives and 3,820 individuals (18,064 observations) are immigrants: 1,625 of them (7,958 observations) from EU-15 countries and 2,195 of them (10,122 observations) from non EU-15 countries. The ratio of immigrants to natives is 4.5% in terms of individuals and 4.2% in terms of observations.

The basic model used throughout in this section is the linear logit model

$$\eta(X) = \ln \frac{\pi(X)}{1 - \pi(X)} = \alpha + \beta X, \quad (1)$$

where  $\eta(X)$  and  $\pi(X)$  are, respectively, the conditional log-odds ratio and the conditional probability of being in a certain labor force state given a vector  $X$  of covariates that always includes age and its square, dummies for schooling attainments, a dummy for not having a spouse, and dummies for the country of current residence and the calendar year.

The model for the pooled data also includes an immigrant dummy (equal to zero for natives and to one for immigrants) to summarize the differences between natives and immigrants. The model for the immigrant sample includes additional controls for the length of stay in the host country and the area of origin. To allow for possible nonlinearities, the length of stay enters as a set of dummies: Namely “less than 5 years”, “between 5 and 9 years”, “between 10 and 14 years”, “between 15 and 19 years”, and “more than 20 years”.<sup>10</sup>

Tables 19, 20 and 21 report the estimated coefficients for the various models and their significance levels. The model coefficients have been estimated by maximum likelihood, after dropping observations with missing covariates. Significance levels are based on estimated asymptotic standard errors that are robust to heteroskedasticity and to clustering arising from the panel structure of the data. At the bottom of the table are the test statistics for the joint significance of the key covariates in the model (age, education, calendar time, country of residence, country of origin, and length of stay).

The intercept of each model corresponds to the log-odds for the reference person: Namely an individual aged 35, with basic education only, with a spouse, observed in year 2001 (the last wave of the ECHP), residing in Italy. For the model fitted to the pooled data, the reference person is a

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<sup>10</sup> As a robustness check, we also control for length of stay through a quadratic term. The results are very similar between the two model specifications and are available upon request.



native. For the model fitted to the subsample of immigrants, the reference person is an immigrant from an EU-15 country who has been living in the current country for less than five years.

### 5.1.1 Activity rate

Table 19 reports the estimated coefficients of logit models for the activity rate. The goodness of fit of the model is moderate, with pseudo  $R^2$  of about .25 for men and .15 for women indicating a considerable amount of heterogeneity that we do not control for. Goodness of fit is always better for men than for women.

The sign and magnitude of most coefficients conform to expectations. Activity rates are higher for men than for women. They are also higher for natives than for immigrants, but the differences by immigrant status are much smaller than those by gender.

For both men and women, our estimates indicate an inverse U-shaped relationship between activity rate and age. Interestingly, the coefficient on the linear age term is larger for immigrant men than for native men. This means that the profile of the age-activity relationship is initially steeper for immigrant men than for native men, but then falls less rapidly for the former than for the latter.

Other things being equal, activity rates are higher for people with tertiary education than for people with basic education only. Interestingly, the coefficient on the dummy for tertiary education is much larger for women (except in the case of EU-15 immigrants) and immigrant men than for native men, implying bigger educational differences for women and immigrant men than for native men.

Not having a spouse is associated with lower activity rates for men and higher activity rates for women. The effect of marital status is larger for native men than for native women, whereas for immigrants is higher for women than for men.

The dummies for the country of residence are always strongly statistically significant for natives, but not for immigrants. On the other hand, the dummies for the country of origin are never jointly statistically significant (at the 5% level).

There is a strong upward trend in the activity rate for native women. Other things being equal, activity rates for native women are higher at the end of the period considered than at the beginning.

For immigrants, the length of stay in the host country is a key variable, especially among females. Initially, non EU-15 immigrant women tend to have lower activity rates than natives. This gap progressively diminishes as the length of stay in the country increases. On the other hand,

Table 19: Estimated coefficients of logit models for the activity rate by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	3.053 ***	0.130 ***	3.073 ***	0.118 ***	2.130 ***	0.225	2.636 ***	-0.597 **
Age	0.104 ***	0.055 ***	0.103 ***	0.055 ***	0.106 ***	0.004	0.128 ***	0.058 ***
Age square	-0.007 ***	-0.004 ***	-0.007 ***	-0.004 ***	-0.007 ***	-0.003 ***	-0.008 ***	-0.004 ***
Tertiary ed	0.546 ***	1.409 ***	0.526 ***	1.420 ***	1.167 ***	1.069 ***	0.840 ***	1.480 ***
Secondary ed	-0.109 ***	0.544 ***	-0.131 ***	0.548 ***	0.519 **	0.332 **	0.226	0.443 ***
Not spouse	-1.065 ***	0.528 ***	-1.096 ***	0.522 ***	-0.376 *	0.570 ***	-0.686 ***	0.711 ***
Austria	0.146 ***	0.398 ***	0.163 ***	0.396 ***	0.030	0.425	-0.494	0.396
Portugal	0.433 ***	0.763 ***	0.443 ***	0.773 ***	-0.080	-0.022	-0.590	0.342
Denmark	0.730 ***	1.073 ***	0.781 ***	1.119 ***	0.618	0.148	-1.029 **	0.354
France	-0.026	0.438 ***	-0.029	0.453 ***	-0.075	0.541 **	-0.385	-0.469 *
Ireland	0.646 ***	-0.029	0.644 ***	-0.035	0.437	-0.119	0.725	-0.680
Spain	0.108 ***	-0.069 **	0.109 ***	-0.070 **	0.108	-0.327	-0.639	0.313
Belgium	0.016	0.270 ***	0.079	0.320 ***	-0.896 **	-0.270	-1.015 **	-0.701 **
Immigrant	-0.288 ***	-0.301 ***						
Year 1994	0.105 ***	-0.025	0.115 ***	-0.016	-0.215	-0.172	-0.166	-0.059
Year 1995	0.002	-0.087 ***	0.011	-0.078 ***	-0.298	-0.189	-0.225	-0.216 *
Year 1996	-0.000	-0.085 ***	0.005	-0.080 ***	-0.246	-0.148	-0.194	-0.122
Year 1997	-0.026	-0.048 ***	-0.024	-0.045 ***	-0.163	-0.126	-0.106	-0.037
Year 1998	-0.045 **	-0.085 ***	-0.040 *	-0.082 ***	-0.397 **	-0.219 **	-0.179	-0.062
Year 1999	-0.087 ***	-0.045 ***	-0.079 ***	-0.041 ***	-0.535 ***	-0.106	-0.285 *	-0.125
Year 2000	-0.042 **	-0.037 ***	-0.042 **	-0.036 ***	-0.010	-0.057	-0.072	-0.082
Length 5-9					0.299	0.147	0.605 **	0.433 ***
Length 10-14					0.511	-0.073	0.151	0.430 **
Length 15-20					0.775 *	0.383	0.416	0.243
Length 20+					0.828 **	0.562 **	0.348	0.995 ***
Asia							-0.140	-0.098
America							0.558	-0.061
Africa							0.269	0.286
Pseudo $R^2$	0.244	0.158	0.244	0.161	0.277	0.152	0.275	0.139
No. Obs.	219278	226126	210948	216215	3471	4487	4786	5336
1000*Log lik.	-75.002	-128.730	-72.015	-122.674	-1.145	-2.599	-1.660	-3.108
Tests of significance of various covariates								
Age	8965.6 ***	4940.3 ***	8560.3 ***	4739.5 ***	178.6 ***	123.9 ***	233.3 ***	91.5 ***
Education	302.9 ***	2260.0 ***	293.0 ***	2150.9 ***	16.4 ***	30.1 ***	12.2 **	78.9 ***
Time	79.7 ***	75.1 ***	76.6 ***	68.8 ***	15.9 *	5.3	4.8	8.8
Country	311.1 ***	1204.6 ***	314.3 ***	1212.6 ***	19.4 **	17.2 *	13.2	36.7 ***
Length of stay					5.2	14.2 **	6.6	37.2 ***
Origin							4.0	3.6

for men the trend is not as clear as for women.

### 5.1.2 Employment rate

Table 20 reports the estimated coefficients of logit models for the employment rate. The goodness of fit of the model is lower than for the activity rate, especially for men, with pseudo  $R^2$  that are now always lower than .20. As before, goodness of fit is always better for men than for women, and always better for natives than for immigrants.

Qualitatively, the results obtained are very similar to those for the activity rate. An important difference is the much larger size of the coefficient on the linear age trend for women.

Another difference is the fact that, unlike activity rates, employment rates are now ordered by education levels: other things being equal, they are highest for people with tertiary education, lower for people with only secondary education completed, and even lower for people with basic education only.

The effect of calendar time and length of stay in the host country are stronger than in the case of the activity rate, whereas the dummies for the length of stay in the host country are now always jointly statistically significant. The effect of the other variables in the model (marital status, country of residence, and country of origin) are much the same as for the activity rate.

### 5.1.3 Unemployment rate

Table 21 reports the estimated coefficients of logit models for the unemployment rate. The goodness of fit of the model is lower than for the activity and employment rates, with pseudo  $R^2$  that are between .08 and .13.

In general, the sign of the coefficients is the opposite than for the activity rate and the employment rate. Thus, the relationship between unemployment rate and age is U-shaped for natives, and monotonically declining for EU-15 immigrant women. When considering EU-15 immigrant men, the polynomial in age is not jointly statistically significant (at the 10% level).

Other things being equal, unemployment rates are ordered by education levels: they are lowest for people with tertiary education, higher for people with only secondary education completed, and even higher for people with basic education only.

Not having a spouse is associated with higher unemployment rates for men and lower unemployment rates for women. The dummies for the country of residence are always strongly statistically significant for natives but not for immigrants.

Table 20: Estimated coefficients of logit models for the employment rate by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	2.174 ***	-0.374 ***	2.199 ***	-0.385 ***	1.036 **	-0.250	1.530 ***	-1.231 ***
Age	0.098 ***	0.072 ***	0.097 ***	0.072 ***	0.092 ***	0.025 *	0.106 ***	0.062 ***
Age square	-0.006 ***	-0.004 ***	-0.006 ***	-0.004 ***	-0.005 ***	-0.003 ***	-0.006 ***	-0.004 ***
Tertiary ed	0.632 ***	1.405 ***	0.624 ***	1.414 ***	1.218 ***	1.275 ***	0.648 ***	1.458 ***
Secondary ed	0.114 ***	0.624 ***	0.095 ***	0.627 ***	0.601 ***	0.469 ***	0.277 *	0.531 ***
Not spouse	-1.057 ***	0.337 ***	-1.100 ***	0.325 ***	-0.276	0.459 ***	-0.496 ***	0.659 ***
Austria	0.437 ***	0.679 ***	0.463 ***	0.684 ***	0.182	0.606 *	-0.188	0.649 ***
Portugal	0.795 ***	1.052 ***	0.796 ***	1.061 ***	0.550	0.434	0.021	0.583 **
Denmark	0.807 ***	1.186 ***	0.886 ***	1.222 ***	-0.060	0.251	-1.240 ***	0.560 **
France	0.172 ***	0.517 ***	0.172 ***	0.529 ***	0.269	0.693 **	-0.490 *	-0.386
Ireland	0.596 ***	0.272 ***	0.613 ***	0.267 ***	-0.111	0.191	0.536	-0.468
Spain	-0.018	-0.175 ***	-0.014	-0.173 ***	-0.400	-0.466	-0.569	-0.072
Belgium	0.302 ***	0.479 ***	0.363 ***	0.528 ***	-0.449	-0.101	-0.940 ***	-0.561 *
Immigrant	-0.478 ***	-0.353 ***						
Year 1994	-0.228 ***	-0.218 ***	-0.214 ***	-0.212 ***	-0.584 ***	-0.300 **	-0.537 ***	-0.277 **
Year 1995	-0.150 ***	-0.197 ***	-0.145 ***	-0.190 ***	-0.348 *	-0.236 *	-0.282 *	-0.354 ***
Year 1996	-0.161 ***	-0.179 ***	-0.156 ***	-0.173 ***	-0.355 **	-0.265 **	-0.354 **	-0.284 ***
Year 1997	-0.159 ***	-0.158 ***	-0.155 ***	-0.154 ***	-0.271	-0.196 *	-0.372 **	-0.216 **
Year 1998	-0.123 ***	-0.157 ***	-0.118 ***	-0.151 ***	-0.531 ***	-0.218 **	-0.174	-0.311 ***
Year 1999	-0.103 ***	-0.083 ***	-0.099 ***	-0.080 ***	-0.406 ***	-0.134	-0.172	-0.182 **
year 2000	-0.036 **	-0.043 ***	-0.039 **	-0.042 ***	0.001	-0.056	0.061	-0.090
Length 5-9					0.403	-0.002	0.341	0.523 ***
Length 10-14					0.377	-0.262	0.109	0.455 **
Length 15-20					0.828 **	0.076	0.265	0.363 *
Length 20+					0.873 ***	0.360	0.605 **	1.253 ***
Asia							0.116	-0.115
America							0.458	-0.063
Africa							0.267	0.244
Pseudo $R^2$	0.194	0.143	0.196	0.146	0.169	0.130	0.183	0.137
No. Obs.	219278	226126	210948	216215	3471	4487	4786	5336
1000*Log lik.	-95.390	-134.175	-91.192	-127.906	-1.607	-2.703	-2.290	-3.187
Tests of significance of various covariates								
Age	7860.6 ***	3955.1 ***	7568.1 ***	3807.9 ***	128.3 ***	89.4 ***	183.3 ***	70.6 ***
Education	384.5 ***	2554.7 ***	364.8 ***	2432.2 ***	26.7 ***	45.9 ***	11.9 **	82.9 ***
Time	123.8 ***	215.1 ***	104.4 ***	192.7 ***	27.8 ***	7.9	23.5 **	15.8 *
Country	713.5 ***	2089.2 ***	736.8 ***	2076.9 ***	13.9	24.2 **	26.8 ***	45.8 ***
Length of stay					10.4 *	11.1 *	8.8	55.5 ***
Origin							1.4	2.2

Table 21: Estimated coefficients of logit models for the unemployment rate by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	-2.900 ***	-1.554 ***	-2.922 ***	-1.551 ***	-1.880 ***	-1.697 ***	-2.307 ***	-0.654
Age	-0.040 ***	-0.057 ***	-0.040 ***	-0.057 ***	-0.017	-0.038 ***	-0.022 *	-0.025 **
Age square	0.002 ***	0.001 ***	0.002 ***	0.001 ***	-0.000	-0.000	0.002 **	-0.000
Tertiary ed	-0.648 ***	-0.980 ***	-0.657 ***	-0.986 ***	-1.112 ***	-1.609 ***	-0.377 *	-0.903 ***
Secondary ed	-0.370 ***	-0.508 ***	-0.355 ***	-0.505 ***	-0.595 ***	-0.742 ***	-0.316 *	-0.545 ***
Not spouse	0.956 ***	0.247 ***	1.011 ***	0.266 ***	0.340	0.133	0.260	-0.325 *
Immigrant	0.677 ***	0.338 ***						
Austria	-1.309 ***	-1.584 ***	-1.405 ***	-1.663 ***	-0.404	-0.810	-0.307	-1.085 ***
Portugal	-1.431 ***	-1.548 ***	-1.412 ***	-1.558 ***	-1.271 **	-1.356 ***	-1.260 ***	-0.820 **
Denmark	-0.866 ***	-1.081 ***	-0.992 ***	-1.098 ***	0.287	-0.293	1.101 ***	-0.731 *
France	-0.507 ***	-0.490 ***	-0.528 ***	-0.499 ***	-0.823 *	-0.686 *	0.538 *	0.102
Ireland	-0.454 ***	-1.194 ***	-0.488 ***	-1.205 ***	0.514	-0.902 ***	-0.403	-0.026
Spain	0.165 ***	0.282 ***	0.161 ***	0.274 ***	0.783	0.519	0.321	0.575
Belgium	-0.898 ***	-0.910 ***	-0.988 ***	-0.952 ***	-0.569	-0.283	0.661 *	-0.024
Year 1994	0.721 ***	0.602 ***	0.713 ***	0.603 ***	1.074 ***	0.568 *	0.841 ***	0.679 ***
Year 1995	0.447 ***	0.409 ***	0.453 ***	0.408 ***	0.485	0.312	0.353	0.632 ***
Year 1996	0.472 ***	0.365 ***	0.472 ***	0.355 ***	0.607 *	0.516 *	0.499 **	0.671 ***
Year 1997	0.419 ***	0.404 ***	0.414 ***	0.399 ***	0.498	0.356	0.643 ***	0.651 ***
Year 1998	0.289 ***	0.324 ***	0.286 ***	0.312 ***	0.748 **	0.213	0.153	0.848 ***
Year 1999	0.156 ***	0.187 ***	0.164 ***	0.183 ***	0.178	0.307	-0.044	0.345
Year 2000	0.031	0.056 *	0.044	0.055	-0.048	0.059	-0.346	0.114
Length 5–9					-0.345	0.285	-0.132	-0.431 *
Length 10–14					0.003	0.708 *	-0.087	-0.303
Length 15–20					-0.580	0.688 *	-0.047	-0.378
Length 20+					-0.712 **	0.294	-0.798 ***	-1.314 ***
Europe							0.220	-0.023
Asia							-0.206	
Africa							-0.004	-0.013
America								-0.024
Pseudo $R^2$	0.118	0.129	0.123	0.132	0.121	0.110	0.084	0.111
No. Obs.	182475	133720	175631	127968	2880	2556	3898	3151
1000*Log lik.	-42.919	-44.374	-40.704	-42.254	-0.770	-0.807	-1.216	-1.160
Tests of significance of various covariates								
Age	484.6 ***	1369.2 ***	458.6 ***	1324.4 ***	3.7	12.4 **	6.0 *	8.2 *
Education	278.7 ***	689.8 ***	265.2 ***	660.5 ***	13.8 **	31.2 ***	4.4	17.4 ***
Time	532.4 ***	393.7 ***	484.5 ***	379.9 ***	29.8 ***	6.9	37.3 ***	17.5 *
Country	1318.4 ***	2391.4 ***	1324.1 ***	2325.7 ***	37.3 ***	27.9 ***	47.2 ***	34.3 ***
Length of stay					7.8	5.7	15.6 **	30.6 ***
Origin							0.4	0.005

There is a strong downward trend in the unemployment rate for natives: other things being equal, unemployment rates are lower at the end of the period considered than at the beginning.

Finally, the longer an immigrant has been residing in the host country, the lower is the unemployment rate. This variable is jointly statistically significant only for EU-15 immigrants (at the 5% level) and non EU-15 immigrant men (at the 10% level)

## 5.2 Earnings

The basic model used throughout in this section for the conditional mean of log monthly earnings is the linear regression model

$$\mu(X) = \alpha + \beta X, \tag{2}$$

where  $\mu(X)$  is the conditional mean of log monthly earnings given a vector  $X$  of covariates which always contains the number of years of labor market experience and its square, dummies for schooling attainments, a dummy for not having a spouse, and dummies for the host country and the calendar year. When we pool the data, we also introduce an immigrant dummy (equal to zero for natives and to one for immigrants) to summarize the differences between natives and immigrants. When we fit the model to the immigrant sample, we instead introduce additional controls for the length of stay in the host country and the area of origin. As in Section 5.1, we control for length of stay through a set of dummies.

We consider four different definitions of earnings: namely, current monthly earnings of an employed person, current monthly earnings of a full-time employee, average monthly earnings last year of an employed person, and average monthly earnings last year of a full-year employee.

The intercept of each model corresponds to the mean of log monthly earnings for the reference person: namely, an individual with 20 years of labor market experience, basic education only, with a spouse, observed in year 2001 (the last wave of the ECHP), residing in Italy. For the model fitted to the pooled data, the reference person is a native. For the model fitted to the subsample of immigrants, the reference person is an immigrant from an EU-15 country who has been living in the current country for less than five years.

The model coefficients have been estimated by ordinary least squares (OLS), after dropping observations with missing covariates and with monthly earnings below 100 euros.<sup>11</sup> The resulting

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<sup>11</sup> This sample selection criterion leads to the exclusion of less than 1% of the observations with strictly positive monthly earnings. To check the robustness of the OLS estimates, all models were also estimated by least absolute deviations (LAD). The LAD results are not reported here because they are very similar to the OLS results, but are available upon request.

“wage samples” consist of 214,659 observations for current monthly earnings and 224,751 observations for average monthly earnings last year. Significance levels are based on estimated asymptotic standard errors that are robust to heteroskedasticity and to clustering arising from the panel structure of the data.

Because of the close similarity of the estimated coefficients across the different earnings concepts, we divide this subsection in two parts: the first analyzes current monthly earnings, the second analyzes average monthly earnings last year.

### 5.2.1 Current monthly earnings

Tables 22 and 23 report the estimated coefficients for, respectively, current monthly earnings of an employed person and current monthly earnings of a full-time employee. In terms of sample size, full-time employees represent 79.7% of the wage total sample. Lower panels report the tests of significance of various covariates.

The  $R^2$  are quite high for all models, reaching 50% for native full-time male employees. Goodness of fit is always better for men than for women, and always better for natives than for immigrants.

The sign and magnitude of most coefficients conform to prior expectations. In particular, male workers earn on average more than female workers with similar characteristics. The “gender gap” (the difference in mean log wages of men and women) is about 35–50%, and is remarkably similar for natives and EU-15 immigrants.

For male workers, the “college premium” (the difference in mean log wages of workers with tertiary education and workers with only basic education) is about 50%, whereas the “high-school premium” (the difference in mean log wages of workers with secondary education and workers with only basic education) is about 20%. Educational premia are higher for female workers (60–65% and 30% for the college and the high-school premium, respectively). Interestingly, although different by gender, educational premia are remarkably similar for natives and immigrants.

The estimated coefficients of the quadratic term in labor market experience imply a concave earnings-experience profile. However, unlike the relationships between age and labor force state probabilities, the estimated relationship between experience and mean log earnings is surprisingly similar both for men and women, and for natives and immigrants.

Not having a spouse is associated with a negative wage premium for men but a positive wage premium for women. For natives, the negative wage premium for men is nearly three times larger

Table 22: Estimated coefficients of linear model for current monthly earnings of an employed person by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	7.120 ***	6.725 ***	7.123 ***	6.727 ***	7.007 ***	6.480 ***	6.751 ***	6.642 ***
Experience	0.010 ***	0.008 ***	0.010 ***	0.008 ***	0.011 ***	0.006 **	0.011 ***	0.009 ***
Exp. square	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.000 ***	-0.001 ***
Tertiary ed	0.525 ***	0.658 ***	0.523 ***	0.659 ***	0.605 ***	0.655 ***	0.492 ***	0.614 ***
Secondary ed	0.199 ***	0.303 ***	0.197 ***	0.303 ***	0.194 ***	0.301 ***	0.187 ***	0.274 ***
Not spouse	-0.149 ***	0.056 ***	-0.152 ***	0.053 ***	-0.203 ***	0.091 *	-0.043	0.117 ***
Immigrant	-0.030 **	-0.031 **						
Austria	0.046 ***	-0.164 ***	0.052 ***	-0.166 ***	-0.021	-0.116	0.073	-0.072
Belgium	0.035 ***	-0.105 ***	0.034 ***	-0.111 ***	0.050	0.081	-0.026	-0.105
Denmark	-0.010	-0.031 ***	-0.007	-0.031 ***	-0.148 *	0.097	0.056	-0.069
France	0.129 ***	0.002	0.131 ***	0.002	0.012	0.065	0.139 **	-0.021
Ireland	0.143 ***	-0.118 ***	0.142 ***	-0.111 ***	0.093	-0.121	0.453 ***	-0.442 **
Spain	-0.028 ***	-0.147 ***	-0.028 ***	-0.145 ***	0.021	-0.163	-0.084	-0.208 ***
Portugal	-0.435 ***	-0.359 ***	-0.442 ***	-0.364 ***	-0.286 ***	-0.244 ***	-0.154 **	-0.272 ***
Year 1994	-0.226 ***	-0.220 ***	-0.227 ***	-0.221 ***	-0.118 ***	-0.156 ***	-0.208 ***	-0.242 ***
Year 1995	-0.204 ***	-0.204 ***	-0.204 ***	-0.205 ***	-0.102 ***	-0.145 ***	-0.200 ***	-0.223 ***
Year 1996	-0.173 ***	-0.175 ***	-0.174 ***	-0.174 ***	-0.090 **	-0.157 ***	-0.170 ***	-0.193 ***
Year 1997	-0.149 ***	-0.142 ***	-0.150 ***	-0.142 ***	-0.073 **	-0.107 ***	-0.112 ***	-0.145 ***
Year 1998	-0.126 ***	-0.124 ***	-0.126 ***	-0.123 ***	-0.062	-0.130 ***	-0.112 ***	-0.123 ***
Year 1999	-0.073 ***	-0.068 ***	-0.074 ***	-0.067 ***	-0.053	-0.099 ***	-0.060 ***	-0.090 ***
year 2000	-0.033 ***	-0.031 ***	-0.034 ***	-0.030 ***	-0.006	-0.075 **	-0.012	-0.019
Length 5–9					0.148	0.076	0.132 **	-0.029
Length 10–14					0.056	0.049	0.165 **	0.008
Length 15–20					-0.012	0.031	0.211 ***	0.035
Length 20+					0.100	0.110	0.276 ***	0.065
Africa							0.014	0.059
America							-0.060	0.017
Asia							-0.026	0.023
No. Obs.	123688	90971	119092	86978	1946	1880	2650	2113
Adj. $R^2$	0.442	0.332	0.447	0.336	0.405	0.245	0.311	0.295
RMSE	0.383	0.466	0.381	0.465	0.410	0.520	0.435	0.476
Tests of significance of various covariates								
Job Exper.	1345.1 ***	904.2 ***	1302.3 ***	867.6 ***	19.4 ***	8.3 ***	19.6 ***	24.7 ***
Education	2782.6 ***	3100.2 ***	2683.3 ***	2950.9 ***	63.1 ***	56.6 ***	48.3 ***	77.9 ***
Time	579.8 ***	270.1 ***	570.8 ***	265.1 ***	1.8	2.7 **	8.7 ***	5.8 ***
Country	702.9 ***	227.7 ***	708.7 ***	222.9 ***	5.2 ***	4.6 ***	4.5 ***	3.8 ***
Length of stay					1.8	0.7	5.6 ***	0.7
Origin							0.8	0.3



Table 23: Estimated coefficients of linear model for current monthly earnings of a full-time employee by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	7.132 ***	6.871 ***	7.135 ***	6.873 ***	7.134 ***	6.874 ***	6.809 ***	6.772 ***
Experience	0.010 ***	0.009 ***	0.010 ***	0.009 ***	0.012 ***	0.011 ***	0.011 ***	0.010 ***
Exp. square	-0.000 ***	-0.001 ***	-0.000 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.000 **	-0.000 **
Tertiary ed	0.523 ***	0.528 ***	0.520 ***	0.527 ***	0.603 ***	0.535 ***	0.521 ***	0.504 ***
Secondary ed	0.195 ***	0.246 ***	0.192 ***	0.246 ***	0.185 ***	0.206 ***	0.203 ***	0.207 ***
Not spouse	-0.131 ***	-0.008	-0.134 ***	-0.010 *	-0.175 ***	0.049	-0.012	0.043
Immigrant	-0.020	-0.006						
Austria	0.037 ***	-0.013	0.043 ***	-0.009	0.043	-0.067	0.065	-0.018
Belgium	0.030 ***	0.008	0.029 ***	0.005	0.058	0.130 *	-0.011	0.063
Denmark	0.005	0.008	0.007	0.009	-0.118	0.039	0.066	0.010
France	0.124 ***	0.039 ***	0.127 ***	0.038 ***	0.006	0.045	0.135 **	0.132 **
Ireland	0.168 ***	0.078 ***	0.165 ***	0.077 ***	0.146 **	0.133 *	0.504 ***	0.251
Spain	-0.026 ***	-0.068 ***	-0.026 ***	-0.066 ***	0.043	-0.080	-0.008	-0.094
Portugal	-0.474 ***	-0.495 ***	-0.480 ***	-0.500 ***	-0.364 ***	-0.370 ***	-0.215 ***	-0.253 ***
Year 1994	-0.229 ***	-0.217 ***	-0.230 ***	-0.217 ***	-0.168 ***	-0.205 ***	-0.193 ***	-0.186 ***
Year 1995	-0.206 ***	-0.197 ***	-0.206 ***	-0.198 ***	-0.172 ***	-0.160 ***	-0.196 ***	-0.168 ***
Year 1996	-0.175 ***	-0.172 ***	-0.175 ***	-0.172 ***	-0.133 ***	-0.169 ***	-0.181 ***	-0.143 ***
Year 1997	-0.152 ***	-0.134 ***	-0.152 ***	-0.135 ***	-0.130 ***	-0.099 **	-0.129 ***	-0.077 **
Year 1998	-0.126 ***	-0.113 ***	-0.127 ***	-0.114 ***	-0.099 ***	-0.114 ***	-0.109 ***	-0.064 **
Year 1999	-0.074 ***	-0.060 ***	-0.074 ***	-0.060 ***	-0.098 ***	-0.097 **	-0.071 ***	-0.037
year 2000	-0.031 ***	-0.026 ***	-0.031 ***	-0.026 ***	-0.051 **	-0.045	-0.015	0.005
Length 5-9					0.138	-0.012	0.069	-0.021
Length 10-14					-0.000	-0.045	0.101	0.042
Length 15-20					-0.071	-0.090	0.122 **	-0.019
Length 20+					0.017	-0.045	0.231 ***	0.067
Africa							-0.015	-0.107 **
America							-0.045	-0.102
Asia							0.039	-0.122
No. Obs.	112466	58541	108335	56111	1770	1084	2361	1346
Adj. $R^2$	0.491	0.479	0.495	0.484	0.480	0.384	0.378	0.389
RMSE	0.348	0.357	0.346	0.355	0.359	0.397	0.385	0.374
Tests of significance of various covariates								
Job Exper.	1279.5 ***	958.4 ***	1238.2 ***	922.2 ***	21.2 ***	16.4 ***	20.0 ***	15.9 ***
Education	2616.4 ***	1857.9 ***	2489.8 ***	1746.4 ***	63.6 ***	39.1 ***	59.8 ***	56.3 ***
Time	669.5 ***	282.5 ***	658.9 ***	277.5 ***	5.4 ***	3.4 **	8.8 ***	3.7 ***
Country	845.3 ***	473.9 ***	835.6 ***	470.6 ***	9.2 ***	10.1 ***	7.7 ***	3.9 ***
Length of stay					2.1	0.3	7.0 ***	1.4
Origin							0.4	2.0

than the positive wage premium for women, whereas for EU-15 immigrants the magnitude of the two premia is about twice. Interestingly, for non EU-15 immigrants, the premium for not having a spouse is not significant for men, whereas it is about 20% for women.

Most country dummies are strongly statistically significant, revealing sizeable cross-country differences in mean earnings. For native men, the two extremes are France and Ireland on the one hand, with monthly earnings that are 10–15% higher than most other countries, and Portugal on the other hand, with monthly earnings that are about 40% lower. For native women, the two extremes are instead France and Italy on the one hand, with significantly higher wages than the other countries, and Portugal on the other hand, with significantly lower wages. For immigrants (both men and women), cross-country differences in earnings are much smaller, largely because their earnings in Portugal are not as low, relative to other countries, as for natives.

Earnings trend upward over the period considered. On average over time, their annual growth rate is somewhat lower for immigrants than for natives (2–2.5% versus 3%), mainly because of the slower growth of earnings for immigrant men. Overall, however, these differential time trends do not alter much the earnings differentials by immigrant status that are observed at the beginning of the period.

What seems to strongly affect the relative position of non EU-15 immigrants and natives on the earnings scale is instead the length of stay in the host country. For non EU-15 immigrants men, a longer residence in the host country is associated with a narrower earnings gap relative to otherwise similar natives. For male immigrants who have been residing in the host country for 20+ years, there is essentially no earnings gap relative to a native worker with similar characteristics. The length of stay in the host country for EU-15 immigrants is not jointly statistically significant (at the 5% level), as well for non EU-15 immigrant women. Finally, the area of origin does not appear to be statistically significant.

### **5.2.2 Average monthly earnings last year**

Tables 24 and 25 report the estimated coefficients for, respectively average monthly earnings last year of an employed person and average monthly earnings last year of a full-year employee. In terms of sample size, full-year employees represent 79.6% of the total wage sample. Lower panels report the tests of significance of various covariates.

The  $R^2$  are somewhat lower than for the case of current monthly earnings, but are always above 25% and are always above 27% for employees. Goodness of fit is again better for men than for

women, and for natives than for immigrants.

The sign and magnitude of most coefficients are very similar to those obtained for current monthly earnings. In particular, the gender gap is about 35% and 50% for full-year employees, and is remarkably similar for natives and EU-15 immigrants. The gender gaps is instead very small for non EU-15 immigrants, mainly because non EU-15 immigrant men earn much less than EU-15 immigrant men. The college premium is at least twice the high-school premium. Educational premia are somewhat higher for female workers but are about the same for natives and immigrants.

The profile of the earnings-experience relationship is again concave and remarkably similar for men and women, and also for natives and immigrants.

The wage premium for not having a spouse is again negative for men but positive for women. Further, the negative wage premium for men is much larger in size than the positive wage premium for women. For non EU-15 immigrant men there is essentially no difference between having or not having a spouse.

Cross-country differences in mean earnings are sizeable for native men and women, mainly because of the relatively low earnings in Portugal, but are much smaller for immigrant men and women.

The annual growth rate of earnings is somewhat higher for natives than for immigrants, again because of the slower growth of earnings for immigrant men. Overall, however, these differential time trends do not alter much the earnings differentials by immigrant status that are observed at the beginning of the period.

As before, the relative position of non EU-15 immigrants on the earnings scale is largely determined by the length of stay in the host country. For both men and women, a longer residence in the host country is associated with a narrower earnings gap relative to otherwise similar natives. For non EU-15 immigrants who have been residing in the host country for 20+ years, there is no earnings gap relative to a native worker with similar characteristics.

Finally, the area of origin appears to be statistically significant only for female immigrants from Asia and America, who tend to earn more than similar immigrants from European non EU-15 countries. For the restricted sample of full-year female employees, however, the country of origin effects are not jointly statistically significant (at the 5% level).

Table 24: Estimated coefficients of linear model for average monthly earnings last year of an employed person by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	7.162 ***	6.798 ***	7.165 ***	6.799 ***	7.181 ***	6.626 ***	6.730 ***	6.604 ***
Experience	0.011 ***	0.009 ***	0.011 ***	0.009 ***	0.011 ***	0.009 ***	0.014 ***	0.009 ***
Exp. square	-0.000 ***	-0.001 ***	-0.000 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.000 ***	-0.001 ***
Tertiary ed	0.530 ***	0.621 ***	0.528 ***	0.622 ***	0.594 ***	0.632 ***	0.529 ***	0.579 ***
Secondary ed	0.215 ***	0.297 ***	0.213 ***	0.297 ***	0.231 ***	0.282 ***	0.202 ***	0.267 ***
Not spouse	-0.156 ***	0.051 ***	-0.159 ***	0.047 ***	-0.225 ***	0.115 ***	-0.052	0.115 ***
Immigrant	-0.024 *	-0.008						
Austria	0.103 ***	-0.056 ***	0.107 ***	-0.056 ***	0.132	0.054	0.175 ***	0.024
Belgium	0.072 ***	-0.068 ***	0.068 ***	-0.076 ***	0.098	0.081	0.101 *	-0.014
Denmark	-0.028 ***	-0.065 ***	-0.025 ***	-0.065 ***	-0.171 **	0.020	0.004	-0.121 *
France	0.049 ***	-0.100 ***	0.052 ***	-0.098 ***	-0.066	-0.089	0.041	-0.151 **
Ireland	0.029 ***	-0.161 ***	0.029 ***	-0.156 ***	-0.082	-0.148	0.348 ***	-0.508 ***
Spain	-0.106 ***	-0.171 ***	-0.105 ***	-0.169 ***	-0.150	-0.200 *	-0.120 *	-0.327 ***
Portugal	-0.420 ***	-0.357 ***	-0.427 ***	-0.361 ***	-0.364 ***	-0.300 ***	-0.103	-0.287 ***
Year 1994	-0.211 ***	-0.220 ***	-0.212 ***	-0.221 ***	-0.154 ***	-0.173 ***	-0.141 ***	-0.180 ***
Year 1995	-0.184 ***	-0.194 ***	-0.184 ***	-0.196 ***	-0.152 ***	-0.114 ***	-0.123 ***	-0.194 ***
Year 1996	-0.176 ***	-0.189 ***	-0.176 ***	-0.190 ***	-0.159 ***	-0.152 ***	-0.144 ***	-0.193 ***
Year 1997	-0.145 ***	-0.155 ***	-0.146 ***	-0.155 ***	-0.135 ***	-0.135 ***	-0.094 ***	-0.163 ***
Year 1998	-0.113 ***	-0.125 ***	-0.114 ***	-0.126 ***	-0.081 **	-0.114 ***	-0.074 **	-0.105 ***
Year 1999	-0.080 ***	-0.082 ***	-0.080 ***	-0.082 ***	-0.068 *	-0.076 **	-0.069 ***	-0.064 *
year 2000	-0.036 ***	-0.042 ***	-0.036 ***	-0.042 ***	-0.058 *	-0.018	-0.025	-0.055 *
Length 5–9					0.125	0.062	0.122 *	-0.006
Length 10–14					0.021	-0.021	0.158 **	0.075
Length 15–20					-0.025	-0.019	0.240 ***	0.133 *
Length 20+					0.018	0.077	0.312 ***	0.199 ***
Africa							0.001	0.069
America							-0.055	0.091
Asia							0.073	0.163 **
No. Obs.	130526	94225	125565	90134	2075	1881	2886	2210
Adj. $R^2$	0.373	0.301	0.376	0.304	0.378	0.264	0.306	0.263
RMSE	0.434	0.474	0.432	0.472	0.453	0.509	0.467	0.503
Tests of significance of various covariates								
Job Exper.	1295.0 ***	924.1 ***	1251.1 ***	879.6 ***	11.9 ***	12.6 ***	27.7 ***	21.5 ***
Education	2664.5 ***	2911.7 ***	2569.3 ***	2771.4 ***	44.3 ***	68.6 ***	56.9 ***	67.8 ***
Time	401.3 ***	272.8 ***	394.0 ***	265.5 ***	3.1 **	3.3 **	3.7 ***	5.6 ***
Country	519.5 ***	182.9 ***	521.9 ***	176.7 ***	7.8 ***	4.7 ***	5.0 ***	6.6 ***
Length of stay					0.8	0.8	8.3 ***	3.4 **
Origin							0.8	1.7

Table 25: Estimated coefficients of linear model for average monthly earnings last year of a full-year employee by immigrant status and gender (\*\*\*, \*\* and \* respectively denote an observed significance level below 1%, between 1 and 5% and between 5 and 10%).

	Pooled		Natives		EU-15 imm.		Non EU-15 imm.	
	Men	Women	Men	Women	Men	Women	Men	Women
Constant	7.179 ***	6.815 ***	7.182 ***	6.818 ***	7.185 ***	6.711 ***	6.851 ***	6.768 ***
Experience	0.011 ***	0.009 ***	0.011 ***	0.008 ***	0.014 ***	0.010 ***	0.015 ***	0.011 ***
Exp. square	-0.001 ***	-0.001 ***	-0.001 ***	-0.001 ***	-0.000 ***	-0.001 ***	-0.001 ***	-0.001 ***
Tertiary ed	0.538 ***	0.627 ***	0.536 ***	0.625 ***	0.610 ***	0.649 ***	0.536 ***	0.648 ***
Secondary ed	0.214 ***	0.309 ***	0.211 ***	0.308 ***	0.214 ***	0.280 ***	0.213 ***	0.322 ***
Not spouse	-0.140 ***	0.054 ***	-0.143 ***	0.051 ***	-0.173 ***	0.109 **	-0.007	0.119 ***
Immigrant	-0.010	-0.000						
Austria	0.089 ***	-0.076 ***	0.094 ***	-0.075 ***	0.012	-0.018	0.142 **	-0.105
Belgium	0.074 ***	-0.081 ***	0.071 ***	-0.086 ***	0.054	0.050	0.112 *	-0.034
Denmark	-0.039 ***	-0.087 ***	-0.037 ***	-0.086 ***	-0.197 **	-0.048	0.043	-0.131 *
France	0.066 ***	-0.049 ***	0.070 ***	-0.047 ***	-0.098	-0.095	0.066	-0.055
Ireland	0.065 ***	-0.119 ***	0.063 ***	-0.115 ***	0.001	-0.129	0.386 ***	-0.410 **
Spain	-0.065 ***	-0.109 ***	-0.066 ***	-0.105 ***	0.030	-0.297 **	-0.075	-0.219 ***
Portugal	-0.423 ***	-0.346 ***	-0.429 ***	-0.351 ***	-0.401 ***	-0.309 ***	-0.089	-0.208 ***
Year 1994	-0.211 ***	-0.217 ***	-0.212 ***	-0.219 ***	-0.144 ***	-0.136 ***	-0.175 ***	-0.197 ***
Year 1995	-0.181 ***	-0.188 ***	-0.181 ***	-0.189 ***	-0.151 ***	-0.099 **	-0.164 ***	-0.203 ***
Year 1996	-0.172 ***	-0.180 ***	-0.172 ***	-0.181 ***	-0.159 ***	-0.119 ***	-0.164 ***	-0.180 ***
Year 1997	-0.138 ***	-0.141 ***	-0.138 ***	-0.141 ***	-0.112 ***	-0.109 ***	-0.110 ***	-0.160 ***
Year 1998	-0.107 ***	-0.112 ***	-0.107 ***	-0.112 ***	-0.081 ***	-0.100 **	-0.093 ***	-0.096 ***
Year 1999	-0.075 ***	-0.071 ***	-0.075 ***	-0.072 ***	-0.071 ***	-0.037	-0.076 ***	-0.053
year 2000	-0.039 ***	-0.042 ***	-0.038 ***	-0.044 ***	-0.074 ***	-0.030	-0.030	-0.004
Length 5-9					0.162	0.081	0.063	-0.005
Length 10-14					0.078	0.045	0.105	-0.047
Length 15-20					0.006	-0.006	0.151 **	0.019
Length 20+					0.042	0.024	0.196 ***	0.079
Africa							0.018	-0.041
America							-0.010	-0.046
Asia							0.050	0.058
No. Obs.	106581	72439	102664	69337	1659	1450	2258	1652
Adj. $R^2$	0.430	0.347	0.434	0.349	0.443	0.293	0.325	0.359
RMSE	0.384	0.428	0.382	0.427	0.380	0.465	0.424	0.420
Tests of significance of various covariates								
Job Exper.	1123.0 ***	730.5 ***	1076.8 ***	687.1 ***	20.2 ***	14.5 ***	25.7 ***	25.5 ***
Education	2573.7 ***	2569.4 ***	2472.1 ***	2403.4 ***	62.2 ***	63.7 ***	49.1 ***	87.3 ***
Time	414.7 ***	234.7 ***	403.3 ***	229.4 ***	4.3 ***	2.0	6.3 ***	5.6 ***
Country	493.8 ***	143.9 ***	498.7 ***	140.8 ***	8.3 ***	4.4 ***	3.4 **	2.7 *
Length of stay					0.7	0.2	2.9 *	1.5
Origin							0.2	0.7

## 6 Conclusions

The ECHP provides useful information on the differences in labor market outcomes of natives and immigrants. However, detailed information is available only for eight EU-15 countries, namely Austria, Belgium, Denmark, France, Ireland, Italy, Portugal, and Spain. Further, since it has no refreshment sample, the ECHP allows us to follow the process of integration into the European labor markets only of the cohorts of immigrants that reached Western Europe before the mid-1990s. Unfortunately, because of the ECHP design, hardly anything can be said about later cohorts of immigrants.

Labor market outcomes differ significantly between natives and immigrants, although these differences are relatively small compared to those between men and women. In particular, other things being equal, natives tend to have higher activity rates, higher employment rates, lower unemployment rates and higher earnings than newly arrived immigrants. However, the qualitative impact (and, often, also the magnitude of the effect) of most covariates is essentially the same between natives and immigrants. This may be not so surprising if we take into account the fact that, with the exception of Austria and Portugal, immigrants from other EU-15 countries represent at least 30% of our sample of immigrants.

In addition to gender and immigrant status, other important predictors of labor force status are age, educational attainments, and marital status. Interestingly, the effects of educational attainments and marital status are remarkably similar for natives and immigrants. Cross-country differences are sizeable for natives, but much smaller for immigrants. For immigrants from non EU-15 countries, the length of stay in the host country is also very important. Initially, these immigrants (especially immigrant females) tend to have lower activity and employment rates than natives, and higher unemployment rates. The differences progressively diminish as the length of stay in the country increases and, after 15 years of residence in the host country, most differences in labor market outcomes between non EU-15 immigrants and natives are gone. Length of stay in the host country is instead much less important for immigrants from EU-15 countries.

In addition to gender and immigrant status, other important predictors of earnings are labor market experience, educational attainments, and marital status. Surprisingly, the effects of these covariates are remarkably similar for natives and immigrants. Country of residence matters for natives, but much less so for immigrants. The area of origin also matters little for immigrants, except possibly for male immigrants from America. For immigrants from non EU-15 countries, a key variable is again the length of stay in the host country. For both men and women, a longer

residence in the host country is associated with a narrower earnings gap relative to otherwise similar natives. For immigrants (men or women) who have been residing in the host country for 25+ years, there is no earnings gap relative to a native worker with similar characteristics.

These positive conclusions about integration of the cohorts of immigrants that reached Western Europe before the mid-1990s may not generalize to the cohorts of immigrants that reached Western Europe after the mid-1990s. They may also be difficult to generalize to the non-negligible fraction of immigrants who dropped out of the ECHP sample, either because they moved to another country or for other reasons. The labor market outcomes of this group of immigrants may not have been as good as those of the “survivors” into the ECHP. Finally, our positive conclusions may be difficult to generalize to another group of immigrants, about which we know nothing: namely, those who could not be included into the first wave of the ECHP because of problems with the sampling frame, non-contact, language difficulties, or refusal to participate.

## References

- Adsera A., Chiswick B. (2004), “Are There Gender and Country of Origin Differences in Immigrant Labor Market Outcomes across European Destinations?”, Institute for the Study of Labor (IZA) Discussion Paper 1432, Bonn.
- Borjas G.J. (1982), “The Earnings of Male Hispanic Immigrants in the United States”, *Industrial and Labor Relations Review*, 35: 343–353.
- Borjas G.J. (1985), “Assimilation, Changes in Cohort Quality, and Earnings of Immigrants”, *Journal of Labor Economics*, 4: 463–89.
- Borjas G.J. (1994), “The Economics of Immigration”, *Journal of Economic Literature*, 32: 1667–1717.
- Borjas G.J. (1996), *Labor Economics*, McGraw-Hill, Singapore.
- Borjas G.J. (1999), *Heaven’s Door. Immigration Policy and the American Economy*, Princeton University Press, Princeton.
- Borjas G.J. (1999), “The Economic Analysis of Immigration”, in O. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, Vol. 3a, Elsevier, Amsterdam.
- Büchel F., Frick J.R. (2003), “Immigrants’ Economic Performances Across Europe-Does Immigration Policy Matter?”, European Panel Analysis Group (EPAG) Working Paper 42, Colchester.
- Card D. (2004), “Is the New immigration Really So Bad?”, Institute for the Study of Labor (IZA) Discussion Paper 1119, Bonn.
- Chiswick B. (1978), “The Effect of Americanisation on the Earnings of Foreign-born Men”, *Journal of Political Economy*, 86: 897–921.
- Chiswick B. (1991), “Speaking, Reading, and Earnings among Low-skilled Immigrants”, *Journal of Labor Economics*, 9: 149–170.
- Collinson S. (1993), *Europe and International Migration*, Pinter, London.
- Daneshvary N., Herzog H.W., Hoffer R.A., Schlottmann A. M. (1992), “Job Search and Immigrant Assimilation: An Earning Frontier Approach”, *Review of Economics and Statistics*, 74: 482–492.
- De Giorgi G., Pellizzari M. (2005), “Welfare Magnets within Europe and the Cost of Harmonized Social Assistance”, unpublished.
- Demeny P. (2003), “Population Policy Dilemmas in Europe at the Dawn of the Twenty-First Century”, *Population and Development Review*, 29: 1–28.
- Dustmann C., van Soest A. (2001), “Language and Earning of Immigrants”, *Industrial and Labour Relation Review*. 55: 473–492.
- Eurostat (1994), “Definition of the Reference Person in the ECHP”, Office for Official Publications of the European Communities, Luxembourg.
- Eurostat (1996), “Basic Longitudinal Edits”, Office for Official Publications of the European Communities, Luxembourg.
- Eurostat (2000), “Imputation of Income in ECHP”, Office for Official Publications of the European Communities, Luxembourg.
- Eurostat (2001), “Technical Specifications Concerning Fixed Personal Identification Numbers in the ECHP”, Office for Official Publications of the European Communities, Luxembourg.
- Eurostat (2003a), “Anonymisation Criteria Applied to Users’ Database”, Office for Official Publications of the European Communities, Luxembourg.



- Eurostat (2003b), “ECHP UDB Construction of Variables”, Office for Official Publications of the European Communities, Luxembourg.
- Eurostat (2003c), “ECHP UDB Description of Variables”, Office for Official Publications of the European Communities, Luxembourg.
- Husted L., Nielsen H.S., Rosholm M., Smith N. (2001), “Employment and Wage Assimilation of Male First Generation Immigrants in Denmark”, *International Journal of Manpower*, 22: 39–68.
- Hicks J.R. (1932), *The Theory of Wages*, McMillan, London.
- Kee P. (1994), “Native-Immigrant Employment Differentials in the Netherlands: The Role of Assimilation and Discrimination”, *International Review of Applied Economics*, 8: 174–96.
- LaLonde R., Topel R. (1992), “The Assimilation of Immigrants in the U.S. Labor Market” In Borjas G., Freeman R. (eds.), *Immigration and the Workforce*, University of Chicago Press, Chicago: 67–92.
- Locatelli M., Moscato V., Pasqua S. (2001), “The European Community Household Panel (ECHP): Elements for Users with Special Focus on Labor and Household Economics”, Centre for Household, Income, Labour and Demographic Economics (CHILD) Working Paper 24/2001, Turin.
- Nicoletti C., Peracchi F. (2005), “The Effects of Income Imputation on Micro Analyses: Evidence from the ECHP”, *Journal of the Royal Statistical Society, Series A*, 168: 763–781.
- Neilson H. S., Rosholm M., Smith N., Husted L. (2001), “Qualifications, Discrimination, or Assimilation? An Extended Framework for Analysing Immigrant Wage Gaps”, Institute for the Study of Labor (IZA) Discussion Paper 365, Bonn.
- Niesing W., van Praag B., Veenman J. (1994), “The Unemployment of Ethnic Minority Groups in the Netherlands”, *Journal of Econometrics*, 61: 173–196.
- OECD (2005), “Statistical Annex” [available at <http://www.oecd.org/dataoecd/24/29/34643131.DOC>].
- Penninx R., Schoorl J., van Praag C. (1994), “The impact of International Migration on Receiving Countries: The Case of The Netherlands”, Netherlands Interdisciplinary Demographic Institute (NIDI) Report n. 37, The Hague.
- Peracchi F. (2002), “The European Community Household Panel: A Review”, *Empirical Economics*, 27: 63–90.
- Pischke J.S. (1993), “Assimilation and the Earnings of Guest-Workers in Germany”, unpublished.
- Rosholm M., Scott K., Husted L. (2000), “The Times They Are A-Changin’, Organisational Change and Immigrant Employment Opportunities in Scandinavia”, Centre for Labour Market and Social Research (CLS) Working Paper 7, Aarhus.
- Schmidt C. (1993), “The Earnings Dynamic of Immigrant Labor”, Centre for Economic Policy Research (CEPR) Discussion Paper 763, London.
- Schiels M.A., WheatleyPrice S. (2002), “The English Language Fluency and Occupational Success of Ethnic Minority Immigrant Man living in English Metropolitan Areas”, *Journal of Population Economics*, 15: 137–160.
- Sjaastad L. (1962), “The Costs and Returns of Human Migration”, *Journal of Political Economy*, 70: 80–93.
- United Nation Educational, Scientific and Cultural Organization (1997), *International Standard Classification of Education* [available at [http://www.uis.unesco.org/TEMPLATE/pdf/isced/ISCED\\_A.pdf](http://www.uis.unesco.org/TEMPLATE/pdf/isced/ISCED_A.pdf)].
- Venturini A. (2004), *Postwar Migration in Southern Europe, 1950-2000: An Economic Analysis*, Cambridge University Press, Cambridge.



## Summary Findings

This paper analyzes the evidence provided by the European Community Household Panel (ECHP), a longitudinal household survey which covers a wide range of topics, giving comparable information across the member states of the European Union before the 2004 enlargement. The ECHP allows us to follow the process of integration into the European labor markets of the cohorts of immigrants that reached Western Europe before the mid-1990s.

Our goal is to provide a detailed description of labor market outcomes for those countries for which reliable data are available, distinguishing between natives and immigrants, and conditioning on a variety of personal characteristics. In particular, we ask two questions that we consider important. First, whether there are significant differences in labor market outcomes of natives and immigrants, and to what extent these differences may be accounted for by differences in the observed characteristics of the two groups. Second, how much of the residual differences in labor market outcomes of natives and immigrants—namely those differences that are not accounted for by differences in observed characteristics—persist after a sufficiently long residence of immigrants in the host country.

We find that labor market outcomes differ significantly between natives and immigrants, especially those from non EU-15 countries: other things being equal, immigrants tend to have worse labor market outcomes than natives, although the impact of most covariates (age, educational attainments and marital status) is strikingly similar between the two groups. Further, the differences between natives and immigrants diminish as the length of stay in the country increases. After about 20 years of residence, most differences between immigrants and natives are gone.

Our positive conclusions may not generalize to the cohorts of immigrants that reached Western Europe after the mid-1990s. They may also be difficult to generalize to the non-negligible fraction of immigrants who dropped out of the ECHP sample or could not be included into the first wave of the survey because of problems with the sampling frame, non-contact, language difficulties, or refusal to participate.

### HUMAN DEVELOPMENT NETWORK

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