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The Economic Situation of First- and  
Second-Generation Immigrants in France,  
Germany, and the UK

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## **Non-Technical Abstract**

A central concern about immigration is the integration into the labour market, not only of the first generation, but also of subsequent generations. Little comparative work exists for Europe's largest economies. France, Germany and the UK have all become, perhaps unwittingly, countries with large immigrant populations albeit with very different ethnic compositions. Today, the descendants of these immigrants live and work in their parents' destination countries. This paper presents and discusses comparative evidence on the performance of first- and second-generation immigrants in these countries in terms of education, earnings, and employment.

# The Economic Situation of First- and Second-Generation Immigrants in France, Germany, and the UK <sup>+</sup>

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**Abstract:** A central concern about immigration is the integration into the labour market, not only of the first generation, but also of subsequent generations. Little comparative work exists for Europe's largest economies. France, Germany and the UK have all become, perhaps unwittingly, countries with large immigrant populations albeit with very different ethnic compositions. Today, the descendants of these immigrants live and work in their parents' destination countries. This paper presents and discusses comparative evidence on the performance of first- and second-generation immigrants in these countries in terms of education, earnings, and employment.

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## 1 Introduction

It is widely believed that many European countries have a serious problem with the integration of immigrants and their children (see, for instance, LEED 2006). Many Northern European countries have accumulated sizeable populations of immigrants, but the lack of long-term strategies and policies to integrate these into societal structures and the labour market is often cited as one reason for social and economic exclusion of the children of these immigrants. Southern European countries like Spain and Italy have experienced in the past decade similar, if not larger, immigrations than the large Northern European economies France, Germany and the UK in the late 1950s to early 1970s. Again, it seems that there is little thought devoted to long term strategies for immigrants and their descendants.

The experience of those countries that had large-scale immigration in the last half of the twentieth century should be of importance for devising future immigration and integration policies. However, there is rather little hard evidence in the literature about the relative position of immigrants and their descendants in these countries, in a manner that allows comparisons to be made. In this paper, we aim to provide a comparative study of a number of outcomes (education, earnings, and employment) of both first- and second-generation immigrants of different origins in the three largest European economies: France, Germany and the UK.

There are a number of reasons why the integration of immigrants and their children matters. The more successful immigrants are in the labour market, the higher will be their net economic and fiscal contribution to the host economy. This in turn may be important for the attitudes of the native population to immigrants and, therefore, impact on immigration policy. On the other hand, poor economic success may lead to social and economic exclusion of immigrants and their descendants, which in turn may lead to social unrest, with riots and terrorism as extreme manifestations (as experienced by the UK and France at various times).<sup>1</sup>

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<sup>1</sup> For instance, France has been affected by social unrest of young immigrants in the Parisian suburbs in 2005 and 2006. On October 27, 2005, two French youths of Malian and Tunisian descent were electrocuted as they fled the police in the Parisian suburb of Clichy-sous-Bois. Their deaths sparked nearly three weeks of rioting in 274 towns. Most of the rioters were second-generation immigrant youths, but the underlying issues were more about social and economic exclusion of immigrants.

What is the evidence on the social and economic integration of immigrants and their descendants? For Germany and the UK (and other countries) there is a fairly large literature comparing the economic outcomes of immigrants, immigrants' children, and natives.<sup>2</sup> Most papers focus on the estimation of economic assimilation patterns of first-generation immigrants, often concentrating on particular immigrant communities. Others investigate the outcome of second-generation immigrants. However, little work exists to date (Heath and Cheung, 2007, being a notable exception) that presents economic and educational outcomes of immigrants in a way that allows comparisons across countries, as well as across generations. In this paper, we offer such a comparison, considering different outcome measures, such as education, earnings, and employment, which are indicative for economic integration. For France our analysis is almost the first on the topic, for the simple reason that the appropriate data had not been collected until very recently.<sup>3</sup> Although there are problems that make comparison difficult, we believe that our results add significantly to our understanding of the situation of immigrants and their children in Europe's largest economies.

The structure of the paper is as follows. The next section provides a brief overview of immigration and assimilation policies in our three countries. We then discuss our empirical approach and the data used. Section 4 presents estimates of the degree of assimilation in education, earnings, and employment. Section 5 concludes.

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<sup>2</sup> For the UK, see, for example, Chiswick (1980), Stewart (1983), Bell (1997), Modood et al. (1997), Leslie and Lindley (2001), Shields and Wheatley Price (2002), Lindley (2002), Blackaby et al. (2002, 2005), Dustmann and Fabbri (2003), Clark and Drinkwater (2005), Elliott and Lindley (2006), Clark and Lindley (2006), or Dustmann and Theoropoulos (2008). For Germany, see, for instance, Pischke (1992), Dustmann (1993), Winkelmann and Zimmermann (1993), Licht and Steiner (1994), Mühleisen and Zimmermann (1994), Bauer and Zimmermann (1997), Schmidt (1997), Constant and Massey (2003), Riphahn (2003), or Fertig and Schurer (2007).

<sup>3</sup> Public authorities have long been reluctant to provide information on country of birth of parents in the main national surveys such as the Census or the Labor Force Survey. Previous studies were coping with this problem by using datasets with fewer observations and less comparable information relative to Labor Force Surveys from other countries – see Aeberhardt and Pouget (2007) and Silberman and Fournier (2007).

## **2 A Brief Overview of Immigration and Assimilation Policy**

The current situation of immigrants and their descendants can be thought of as being the result of immigration policy (how many immigrants to let into a country and from where) and integration policy (what to do with immigrants and their descendants once they have arrived), though the use of the word ‘policy’ suggests a degree of planning and control that has often been conspicuously absent. Although our three countries have had very different immigration and assimilation policies (described below), there are common themes that emerge.

### **Immigration Policy**

Some periods of high immigration are associated with conflict, generally elsewhere in the world. For instance, the end of the Second World War, which led to an entirely new geography of the European continent, saw 7.8 million refugees finding a new home in West Germany and 3.5 million refugees in East Germany by 1950 (Salt and Clout, 1976). Other examples are Algerian independence in 1962 which triggered an inflow of almost one million refugees into France within a year, the expulsion of Asians from Uganda in 1972 which pushed 30,000 into the UK, or the Balkan wars in the 1990s which led to an inflow of more than one million refugees into Germany. Other periods of high immigration are associated with economic need, with sizeable inflows into France, Germany and the UK in the boom years of the 1950s and 1960s, smaller (though not negligible) inflows after the oil crisis of the 1970s and a rise again more recently with the fall of the Iron Curtain which led to substantial immigration from Eastern Europe.

The particular ethnic mix that resulted from these movements was very different in France, Germany and the UK. Germany recruited immigrants mainly from Southern Europe and Turkey. The UK, with its strong colonial history recruited immigrants mainly from former colonies in the Caribbean and the Indian sub-continent. France represents a mixture of the two, with large inflows both from other European countries, in particular Spain and Portugal, and from its former colonies in North Africa and sub-Saharan Africa.

### **Assimilation Policy**

The policy towards immigrants after arrival has been quite different in France, Germany, and the UK, though one could argue there has been a marked convergence in recent years that we discuss below.

The UK is primarily associated with a multicultural approach<sup>4</sup> in which positive steps were taken to ensure that ethnic minorities experienced true equality. This led to early (by European standards) anti-discrimination legislation and a generally sympathetic attitude to allowing cultural and religious exemptions to laws and practices, e.g. allowing Sikh motorcyclists to wear turbans instead of helmets and Muslim policewomen to wear the hijab on duty. There was a widespread belief that by being hospitable to immigrants, they would, in return, come to feel part of the wider community. The reality was often different – there were riots in many British cities in the early 1980s and various organisations, notably the police, have been widely criticised for institutional racism. More recently there has been a feeling that this strategy has failed to create a common core of values, primarily because it offered minorities more than it asked from them in return and that some communities chose not to integrate into the wider society. For example, the chairman of the Commission for Racial Equality (the government body charged with fighting discrimination) argued in a TV interview that multiculturalism was leading to segregation, saying that “too many public authorities particularly [are] taking diversity to a point where they [are] saying, 'actually we're going to reward you for being different, we're going to give you a community centre only if you are Pakistani or African Caribbean and so on, but we're not going to encourage you to be part of the community of our town'”. The reaction has included substantive changes to policy – immigrants becoming citizens now have to pass a test on language, culture and history designed to mould their values into those deemed appropriate.

France also has a strong tradition of equality but the interpretation has been very different from that in the UK. French law provides for citizenship by right to anyone born on its soil, and

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<sup>4</sup> This is well-summarized by the following quotation from the Home Secretary Roy Jenkins in 1966: “I do not regard [integration] as meaning the loss, by immigrants, of their own national characteristics and culture. I do not think that we need in this country a ‘melting pot’, which will turn everybody out in a common mould, as one of a series of carbon copies of someone’s misplaced vision of the stereotyped Englishman... I define integration, therefore, not a flattening process of assimilation but as equal opportunity, accompanied by cultural diversity, in an atmosphere of mutual tolerance”.

nationality is generally conferred at the age of majority. Because all French citizens are to be treated equally under the Republican model, there has been a great reluctance to acknowledge any ethnic divisions. In addition, the strong secular tradition in the state (*laïcité*) has led to a restrictive attitude on the expression of religious and cultural identity in the public sphere, most famously in the 2004 ruling against the display of conspicuous religious symbols in school that, while worded as applying to all religions, would mostly affect those Muslim schoolgirls who wished to wear the hijab. One consequence of this refusal to acknowledge any minorities has been an inability to even know – due to a lack of reliable data – whether the reality of equality matched the rhetoric, leading to the accusation that serious problems were emerging but being ignored. Riots in various banlieues in 2005 brought these problems to widespread attention. But there have been changes in recent years. Anti-discrimination legislation was passed in 2001, and there have also been stronger requirements for immigrants seeking citizenship to show proficiency in the language and knowledge of the French culture. We have benefited personally as this paper uses data from the French Enquête Emploi that only began asking about own and parental country of birth in 2005 as part of a general process of understanding more about the situation of immigrants in French society.

While both France and the UK enabled and indeed expected immigrants to become citizens and play a full and equal part in society, Germany took a different approach. Until recently, eligibility for German citizenship was defined by descent rather than birth. As a consequence, the Volga Germans whose ancestors had lived in Russia since the 18<sup>th</sup> century were regarded as German citizens, while the children of Turkish immigrants born in Germany were not. The first generation of immigrants were not expected to become citizens, primarily because they were expected to remain in the country only temporarily. But this became a problem when many immigrants did stay for long periods and had children who, though born in Germany, did not receive German citizenship. It became widely recognized that this state of affairs was undesirable and, since 1 January 2000, children born by non-German parents who have legally lived in Germany for at least eight years are automatically granted German citizenship. Furthermore, the minimum period of legal residence in Germany for an adult immigrant that is required to gain the right to naturalisation was shortened from 15 to eight years. On the other hand and similar to France and the UK, since 1 September 2008, all adult



immigrants who want to be naturalised have to pass a multiple choice test covering the legal and societal system and the living conditions in Germany.

The different countries we consider here thus have had very different immigration and integration policies. There has been some convergence in recent years such as an increasing emphasis on requiring immigrants to knowing the language, culture and history of their host countries. But there is a perception that all of these countries have had problems with the integration of immigrants and their children. We now turn to documenting measures of integration.

### **3 Methodology and Data**

#### **Methodology**

There are a number of measures one could use to assess the relative success of our countries of analysis in integrating their immigrant populations. One could simply compare the outcomes of the entire group of immigrants (and their children) to those of natives, pronouncing a country more successful if this gap is smaller. But, as we shall see, there is substantial heterogeneity in these outcome gaps within countries according to immigrants' country of origin. Such heterogeneity cannot be driven by differences in the host country policy and a different mix of immigrants across countries will thus lead to differences in this overall measure of integration. There are studies that attempt to compare the performance of immigrants from the same source country in different destination countries (for instance Adsera and Chiswick, 2007, De Coulon and Wadsworth, 2008) but the degree of overlap among the countries we consider is small.

We focus on the comparison of the gap between natives and first- and second-generation immigrants from different source countries. This is a good indication of how successful countries are at integrating immigrants in the long run – the second generation will have had all of their schooling in the host country and will almost certainly speak the language fluently. Because there are parental influences on children's outcomes, whether immigrant or native, one would

not expect all gaps to be eliminated but one would expect them to be reduced.<sup>5</sup> A similar approach for the US is taken by Card et al. (1998) and, for a number of countries, by Heath and Cheung (2007).

We now turn to the description of our data sources and the way in which we distinguish first- and second-generation immigrants in each of our countries. For more details on the sample construction for each country, see Appendix A.

### *France*

The data we use for France come from the French Labor Force Survey (FLFS) and cover the years 2005-2007. In addition to the traditional information on country of birth of the respondent, the FLFS has, since 2005, provided information on the country of birth of the parents. The native reference group consists of individuals who are in France for at least two generations, i.e. those who are born in the country and whose two parents were also born in France. First-generation immigrants are individuals born abroad and whose both parents were also born abroad and from the same country of origin. Second-generation immigrants are individuals who are born in France but whose parents are both born abroad. We exclude individuals born abroad with at least one parent born in France and individuals born in France with either one parent born in France and the other born abroad or both parents born abroad but in different countries.

The FLFS contains information on country of birth for first-generation immigrants at a very detailed level. The FLFS distinguishes between 29 countries or country groups: France, Algeria, Tunisia, Morocco, Rest of Africa, Asia (including Vietnam, Laos, Cambodia), Italy, Germany, Belgium, Netherlands, Luxembourg, Ireland, Denmark, Great Britain, Greece, Spain, Portugal, Switzerland, Austria, Poland, Yugoslavia, Turkey, Norway, Sweden, Eastern Europe, United States or Canada, Latin America, and other countries.

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<sup>5</sup> Note that we do not look at the outcomes of parents and their actual children which would be possible with panel data or by constructing synthetic cohorts as in Dustmann and Theodoropoulos (2008). Instead we look at the outcomes of first- and second-generation immigrants at a given point in time.

The FLFS also reports the country of parental birth for the second generation but at a more aggregate level. There are 9 categories: France, Northern Europe, Southern Europe, Eastern Europe, the Maghreb (Arab North Africa), Turkey (Middle East), (sub-Saharan) Africa, Asia, and other countries.<sup>6</sup> We exclude the last category as it comprises very heterogeneous populations. This leaves us with seven immigrant groups for our analysis. To facilitate the comparison of the results between first-generation and second-generation immigrants, we aggregate the more detailed countries of birth of first-generation immigrants into the seven broader immigrant categories.

The first two columns in Panel A in Table 1 report the sample proportions for the native French, first-generation immigrants, and second-generation immigrants. Around 90.2 percent of the sample consists of natives, 6.5 percent are first-generation immigrants and around 3.3 percent are second-generation immigrants. First-generation immigrants mostly come from the Maghreb (44.1 percent), Southern Europe (24.8 percent), and Africa (11.3 percent). Among second-generation immigrants, there are more southern Europeans and fewer Africans, a reflection of the more recent immigration from Africa.

### *Germany*

The data we use for Germany come from the German Microcensus for the years 2005 and 2006. These data allow identification of first- and second-generation immigrants based on citizenship and year of arrival in Germany. The reference native group consists of non-naturalised German citizens born in Germany. We define first-generation immigrants as individuals born outside of Germany who have either only foreign citizenship or who obtained German citizenship through naturalisation. We identify second-generation immigrants as individuals born in Germany who hold either only foreign citizenship or German citizenship that they obtained through naturalisation. In case of naturalisation, we use the information on the previous citizenship of the individual to determine the country of origin. Individuals who were not born in Germany and have German citizenship that was either obtained without any

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<sup>6</sup> The category Maghreb is essentially made up of parents from Algeria, Morocco and Tunisia while the category Africa mainly refers to parents from Cameroon, Ivory Coast, Mali, Niger and Senegal.

naturalisation or through naturalisation within 3 years of arrival, provided the previous citizenship was Czech, Hungarian, Kazakh, Polish, Romanian, Russian, Slovakian, or Ukrainian, are coded as “German” first-generation immigrants.<sup>7</sup> In addition, we distinguish 6 foreign groups: the traditional guest worker countries Turkey, Former Yugoslavia, Italy, and Greece, as well as Central and Eastern Europe (CEE) & other non-EU16 European countries (including, in particular, Poland and the Former Soviet Union), and other EU16 countries.

Panel B in Table 1 reports the sample proportions for Germany. Around 11.1 percent are first-generation immigrants, nearly half of which are ethnic German immigrants (42.9 percent). Of those with foreign citizenship, the groups of Central and Eastern Europeans (17.0 percent) and Turks (13.3 percent) are the largest. Second-generation immigrants only represent 2 percent of the sample, of which more than half hold either Turkish (45.7 percent) or Italian (14.3 percent) citizenship.

### *UK*

The data we use for the UK come from the British Labour Force Survey (UKLFS) for the period 1993-2007. The UKLFS contains information on country of birth for first-generation immigrants but no information on country of parental birth for the second generation. The standard practice, which we follow here, is to use ethnicity as a measure of being a second- (or subsequent-) generation immigrant. Therefore, the analysis of the descendants of immigrants is restricted to ethnic minorities, who (in the first generation) constitute roughly 50 percent of the UK’s immigrant population. For the sample period under analysis it is reasonable to assume that almost all of the non-white UK-born have at least one immigrant parent, though this assumption will become less true in future years. The standard classification of ethnicity has 14 categories from which we exclude the four mixed categories (that are mostly UK-born), and the three ‘other’ categories (other Asian, other black and other) as they are very heterogeneous. This

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<sup>7</sup> These restrictions ensure that we primarily identify the group of so-called “ethnic German” immigrants (Aussiedler) who arrived in Germany in large numbers after 1988, in particular from Poland and the Former Soviet Union, and for whom specific citizenship rules applied. For more details on how to identify this group of immigrants in the German Microcensus see Birkner (2007).

leaves us with seven groups for our analysis – White, Indian, Pakistani, Black African, Black Caribbean, Bangladeshi, and Chinese.

Panel C in Table 1 reports the sample proportions for natives, first-generation immigrants, and second-generation immigrants for the UK. First-generation immigrants represent around 8.1 percent of the sample, of which more than half (56.8 percent) are of white ethnicity, 15.4 percent are from India and 8.6 percent from Pakistan. Only 1.6 percent of the population in the sample is made up of non-white second-generation immigrants, mostly of Indian (32.5 percent), Black-Caribbean (31.3 percent), and Pakistani (21.5 percent) ethnicity.

Before we come to the systematic regression analysis of the relative outcomes of first- and second-generation immigrants in France, Germany and the UK, we present unconditional average hourly wages and employment rates of men and women for both natives and the different immigrant groups in Table 1. There is a lot of heterogeneity in outcomes across groups within countries so it is hard to summarize in a few sentences. Nevertheless, some clear patterns emerge. In terms of earnings, first-generation immigrants (both men and women) earn less than natives in France and Germany but not in the UK. The earnings of the second generation are similar to those of the first generation in France but markedly lower in Germany with a more mixed picture for the UK. In terms of employment, first-generation men have employment rates similar to natives in France but lower than natives in Germany and the UK. Employment rates among first-generation women are generally lower than for natives. Employment rates for second-generation men seem generally lower than for the first generation (much lower in the case of the UK) while employment rates seem generally higher for second-generation women.

Two important characteristics not taken into account in these comparisons of the unconditional wages and employment rates are age and education. As documented in the second part of Table 1, the second-generation immigrants are typically much younger than the first-generation and natives – this would tend to lower their unconditional wages. There are also differences in educational attainment. In general, the second-generation immigrants have higher levels of education than the first-generation – which in turn would tend to raise their unconditional wages. For this reason, we now turn to a more systematic regression analysis.

## 4 Results

In this section, we report gaps in outcomes between natives and first- and second-generation immigrants for educational attainment, hourly wages, and employment. We start with educational attainment on the grounds that this is largely determined prior to labour market outcomes.

### Education

As education is so crucial in influencing labour market outcomes in later life, it is of considerable importance how the educational attainment of first- and second-generation immigrants compares with that of natives. Because of the difficulty in comparing educational qualifications across countries, we use the age left full-time education as our measure of educational attainment. This measure seems the most comparable one available.<sup>8</sup> To this end, we regress the age at which an individual left full-time education on a basic set of characteristics. We allow for different intercepts for first- and second-generation immigrants and these differentials are what we report. We run the regressions for first- and second-generation immigrants separately. Because some individuals in the sample (especially second-generation immigrants who tend to be young) have not yet completed full-time education we use a censored regression model with the variable “age left full-time education” censored at the current age for those individuals who are still students.<sup>9</sup> As education is also primarily a lifetime decision the only covariates we include in addition to the controls for immigrant status are a polynomial in the year of birth as well as region dummies. The results are presented in Table 2.

### *France*

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<sup>8</sup> In addition, there is the problem that the UKLFS deliberately classifies foreign qualifications as “other” qualifications rather than seeking to find a British equivalent.

<sup>9</sup> We also experimented with restricting the sample to those of an age by which education has normally been completed with very similar results.

The results for France are reported in Panel A of Table 2. First-generation immigrant men from Africa, Northern Europe and Eastern Europe are 1 or 2 years older when leaving full-time education than their native French counterparts, who themselves leave education when they are on average around 18.3 years old, as shown in Panel A of Table 1.

First-generation immigrant men from Southern Europe and Turkey are on average 3.3 and 3.2 years younger than native men, respectively, when they leave education while immigrants from the Maghreb and Asia are of about the same age. From the first to the second generation, the gap in educational attainment narrows for most immigrant groups, both for those who did initially better and for those who did initially worse. For instance, the negative gaps for Southern European and Turkish men decrease from -3.3 years to -0.7 years and from -3.2 years to -0.4 years, respectively.

Looking at women, we find that only first-generation women from Northern and Eastern Europe are at least as old as native women when they complete their full-time education. All other groups are significantly younger than both native French women and their male immigrant counterparts. But there is an important improvement from the first to the second generation in terms of educational attainment, in particular among the groups which were the most disadvantaged in the first-generation. Second-generation Asian women are performing outstandingly well, with an edge of 2.6 years of education relative to native French women.

### *Germany*

The results for Germany in Panel B of Table 2 show that all groups of first-generation immigrant men have significantly less education than native German men. The difference is particularly pronounced for immigrants from Germany's traditional guest worker countries. While German men are on average 22.1 years-old when leaving full-time education (see Panel B of Table 1), Turks are on average 3.5 years younger, Italians 3.4 years younger, Yugoslavs 2.9 years younger, and Greeks 2.7 years younger. "German" immigrants and first-generation immigrants from Central and Eastern Europe and other EU16 countries are only slightly less educated than native men. The educational attainment of immigrants improves substantially for the second generation. All groups of immigrant men with the exception of those from other

EU16 countries finish their full-time education at an older age than their first-generation counterparts with the biggest improvements relative to native German men for Greek men (reducing the education gap from -2.7 years to -0.7 years) and Turkish men (reducing the education gap from -3.5 years to -1.9 years).

The patterns for women are generally similar to the men's. Women from Turkey, Former Yugoslavia, Italy and Greece are significantly younger than native women when leaving full-time education although the differences are not as large as they are for men (with the exception of Turkey). First-generation immigrant women with German citizenship have slightly more education than native women. For all origin groups with the exception of Central and Eastern Europe and other EU16 countries, educational attainment increases significantly from the first to the second generation although women from Turkey, Former Yugoslavia and Italy remain significantly less educated than native women, leaving full-time education about 1.5 years earlier. Overall the results show a significant improvement in the educational attainment of second-generation immigrants for all groups except the already high-skilled groups from Central and Eastern Europe and other EU16 countries.

### *UK*

The results in Panel C of Table 2 reveal the relatively high skill level of first-generation immigrants into the UK. For men, there are only two groups of first-generation immigrants, Black Caribbean and Bangladeshi, that left full-time education at a younger age than their native counterparts, about half a year earlier. All other groups are significantly older than UK men when leaving full-time education, especially Black Africans, Indians and the Chinese. Educational attainment remains relatively constant across generations with the exception of Pakistani and Bangladeshi men who manage to improve their educational attainment relative to natives by around one year.

First-generation immigrant women in the UK are significantly younger than their male counterparts when leaving education (see Panel C of Table 1). Nonetheless, for most groups the education gap to native women is still positive with the exception of Pakistani and Bangladeshi women who are 2.2 and 2.6 years younger when leaving full-time education than native UK



women. There is a further improvement in the educational attainment in the second generation across all groups but in particular so for the group of Pakistani and Bangladeshi women who manage to close the two-year gap that still exists in the first generation. Overall and in comparison to France and Germany, immigrants in the UK are very well educated (relative to the native population) and, in particular for women, show a significant improvement in educational attainment between the first and the second generation.

The general conclusion that emerges from this is that any education gaps that exist for the first generation are generally being narrowed for the second so that education systems are not reinforcing inequalities that exist between natives and first-generation immigrants. Let us now consider the performance of the immigrants in their host countries' labour markets.

### **Earnings**

We first turn to estimation of the earnings gaps between our immigrant groups and natives. To identify gaps in earnings, we estimate simple earnings functions separately for men and women, using log net hourly wages as the dependent variable, controlling for a basic set of characteristics and allowing different intercepts for first- and second-generation immigrants.<sup>10</sup> We report two specifications – in Table 3 we report estimates that include age left full-time education, a quartic of potential experience, region dummies, and time dummies as regressors. Table 4 reports estimates that exclude education as a regressor. Because more education is strongly associated with higher earnings, one can link the results in Tables 3 and 4 using the education differentials reported in Table 2.

We restrict the way in which the earnings functions of immigrants and natives differ to be in the intercept. It may well be the case that there are differences in other coefficients, for instance different returns to experience and education, both acquired in the country of origin and

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<sup>10</sup> For all countries, the data provides information on net monthly earnings and normal working hours per week. We construct an approximate log hourly wage measure by subtracting the log of normal hours worked from the log of net monthly earnings (weekly in the case of the UK). In principle, one would also have to subtract the log of weeks per month but this is a constant and will be captured in the constant term in the regression. Because earnings are right-censored, we estimate a censored normal regression for Germany.

the destination country.<sup>11</sup> We leave the exploration of this to future research – we simply do not have the space here to investigate this adequately. Finally, there are some characteristics of immigrants that may be very important in determining earnings but which we exclude. For the first generation language ability is almost certainly very important and other research suggests that time in the country seems to have an independent effect on earnings (Chiswick, 1978, being the classic reference, but see also Borjas, 1985, Dustmann, 1993, 2000, and Lubotsky, 2007, for a discussion of the potential biases in these estimates). For the second generation, the factors driving earnings gaps may be different. There may be discrimination on the part of natives, it may be a reluctance to integrate on the part of the immigrant communities or it may be that the disadvantage of the first generation is, in part, carried over to the second generation. Again there is a limited amount we can do to tease out which of these factors is more important. Hence, our analysis should be understood as providing a first comparative overview on the wage situation of working first- and second-generation immigrants relative to natives. The results for each country are reported in the three panels of Table 3.

### *France*

Panel A in Table 3 reports the regressions of log hourly wages on age left full-time education, experience (quartic), regions and time dummies. There are only three groups of first-generation immigrant men that earn significantly less than comparable native men. These are immigrants from the Maghreb who earn 0.161 log points less, immigrants from Africa who earn 0.262 log points less, and immigrants from Turkey who earn 0.099 log points less. The change in the wage gap from the first to the second generation is very different for these groups. While in the second generation the wage gap for immigrant men from the Maghreb decreases by to 0.097 log points, it remains constant for immigrants from Africa and increases substantially by around 0.173 log points for immigrants from Turkey. This does not necessarily imply that second generation Turks earn less than first-generation Turks in absolute terms because, as we have seen in Table 2, second-generation Turks have substantially better education and may thus overall still

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<sup>11</sup> Because the natives are always the vast majority of our samples, one would expect that the estimated slope coefficients largely reflect the returns to characteristics of the natives. If that is the case, the intercepts for the immigrant groups can be interpreted as the difference in earnings between immigrants and natives for the average immigrant evaluated at native returns to characteristics.

earn more than the generation before. However, compared to natives with the same educational attainment, they earn less.

For first-generation women, we see an overall similar pattern except that now Eastern European women do badly while Turkish women do relatively well. First-generation women from the Maghreb and Africa earn significantly less than comparable native women, 0.089 log points and 0.227 log points, respectively. In contrast to Eastern European women they are not able to close the wage gap from one generation to the next. Interestingly, second-generation Asian women do extremely well, earning 0.345 log points more than their native counterparts. But the sample of Asian is low so one should be cautious about drawing strong conclusions from this.

Panel A of Table 4 considers earnings differentials when we do not control for education. Not surprisingly, the earnings gaps between natives and immigrants increase in magnitude for those countries of origin whose immigrants are less educated than the native French population and decrease in magnitude for those countries whose immigrants are better educated than the native French population. Unconditionally, all first-generation immigrant groups earn at least 0.13 log points less than natives, with the exception of Northern Europeans who earn significantly more, and Eastern European men and Asians who earn about the same as natives. For the second-generation, the earnings situation has only improved significantly for men from Southern Europe, and women from Eastern Europe, Turkey, and Asia.

### *Germany*

Panel B in Table 3 reports the estimation results for Germany. All groups of first-generation immigrant men with the exception of migrants from other EU16 countries earn significantly less than their native counterparts with the gap ranging from 0.076 log points (Turkey) to 0.205 log points (Greece). The changes for the second generation vary substantially across groups. For Italians the wage gap to native men decreases slightly but still tends to be around 0.15 log points. For Greeks and Yugoslavs the improvement is quite pronounced, with the latter effectively closing the wage gap to native men. Central and Eastern European as well as Turkish men on the other hand show no wage assimilation but rather a worsening of their

relative wage position from the first to the second generation, increasing the gap from 0.128 log points to 0.203 log points and from 0.076 log points to 0.115 log points, respectively.

The wage gaps of first-generation immigrant women relative to German women are broadly speaking of the same magnitude as those for men, sometimes somewhat smaller (Former Yugoslavia, Italy), sometimes larger (Turkey). The only two groups of second-generation immigrant women that manage to slightly improve their relative earnings position compared to their first-generation counterparts are women from Former Yugoslavia and Greece. For Turkish and Italian women on the other hand the gap widens significantly from 0.169 log points to 0.207 log points and from 0.081 log points to 0.175 log points, respectively. Overall we conclude that although some immigrant groups manage to slightly reduce the wage gap to natives from one generation to the next, the wage assimilation is weak and there remains a substantial wage differential for all immigrant groups (with the exception of immigrant men from other EU16 countries and Former Yugoslavia) even in the second generation.

Panel B of Table 4 displays the wage differentials when we do not control for education. As expected due to the immigrants' worse education levels, the wage gaps widen in magnitude for all groups with the exception of immigrants from other EU16 countries and women from Central and Eastern Europe. Overall, the unconditional wage gap is substantial, ranging roughly between 0.150 log points and 0.250 log points, and is particularly persistent across generations for both men and women from Central and Eastern Europe, Turkey, Italy, and Greece.

### *UK*

The results for the first-generation immigrants in the UK reported in Panel C of Table 3 show the largest wage gaps of all three countries of our analysis. With the exception of ethnically white immigrants, all groups earn substantially less than their native counterparts with the gap ranging from 0.207 log points for Black Caribbeans to 0.530 log points (which translates into a 41 percent lower hourly wage) for Bangladeshis. From the first to the second generation, this wage gap narrows substantially across all groups and in particular for Indians (by 0.213 log points) and Bangladeshis (by 0.398 log points).

For first-generation women, wage gaps are not as large as they are for their male counterparts. On average the gap is around 0.2 log points with White and Black Caribbean women doing best with a gap of 0.063 log points and 0.087 log points, respectively, and Black African women doing worst with a gap of 0.317 log points. Again, assimilation in terms of hourly wages is strong from one generation to the next with only Black African second-generation women facing a large wage disadvantage of 0.167 log points while the gap for all other groups is smaller than 0.05 log points.

Panel C of Table 4 considers earnings differentials when we do not control for education. Although there are a few exceptions (Black Caribbeans and first-generation Bangladeshis), Table 2 showed that all groups have more education than white natives. As a result, the earnings differentials tend to be smaller when we do not control for education. For women, there are more immigrant groups with less education than white natives, so there is a more mixed pattern.

### **Comparison of Countries**

It is interesting to compare the earnings gaps of first- and second- generation immigrants in our three countries. Figure 1 presents one way of doing this – each point represents an earnings gap for the first and second-generation for one of our immigrant groups – observations relating to each country are labelled. The coefficients are those of the earnings gaps in Table 3 when education is controlled for. We also include a 45-degree line so one can compare outcomes for the first and second generation. Panel A is for men and Panel B for women. Several patterns emerge from this. First, for men, the UK tends to have much larger earnings differences for first-generation immigrants. But most of the observations for the UK lie above the 45-degree line indicating a reduction in the penalty experienced by the second generation. In contrast, for France and Germany most of the observations are closer to the 45-degree line indicating little change from one generation to the next. So, the UK labour market seems to be the least hospitable for the first-generation but offers the most opportunities for improvement to the second – though the bottom line is that earnings differences for the second generation are relatively similar for all our countries. For women (Panel B) a similar conclusion emerges

though some second-generation women in France and Germany do show significant improvements or deteriorations over the first generation.

It is tempting to conclude that the earnings gaps represent the treatment of immigrants in the labour market but it is important to recognise that earnings gaps may also be affected by factors quite unrelated to the immigrants themselves. For example, Blau and Kahn (2003) point out that the gender pay gap tends to be larger in countries with more inequality because women are concentrated in the lower part of the earnings distribution. So, it may be that the relatively small earnings gaps in France are the result of low overall wage inequality especially in the bottom tail where the minimum wage is very high. To investigate this we did estimate models for being in the bottom quartile of the earnings distribution. The patterns of pay differences we found were very similar to those for net earnings so these results are not reported here. This suggests that general wage inequality is not the primary reason for our findings.

Another possibility is that gaps in earnings are affected by differential selection into employment. Olivetti and Petrongolo (2008) show that the gender pay gap tends to be lower in countries with low female employment rates because low-skilled women are much less likely to work. It is possible that something similar is at work for immigrants. This is particularly pertinent because it is often argued that wage compression policies in France and Germany have had the consequence of reducing employment especially for the disadvantaged (though conditioning on education may take care of much of that). So, it may be that the low earnings differences in these countries (compared to the UK) come at the price of high employment differences. For this reason we turn to employment as an outcome.

## **Employment**

The estimates in Table 5 report the marginal effects for being in employment from a probit model in which the included covariates are age left full-time education, a quartic in potential experience, region and time dummies. In the interest of brevity, we only report estimates for employment and do not distinguish between unemployment and inactivity though that distinction would be very important if one wanted to disentangle the roles of supply and demand in causing the employment differences we document. We also keep a very simple specification with the

same regressors as we have used in the other Tables. We know that, especially for women, family structure (e.g. marriage and the number and age of children) is very important in explaining employment, with different effects for different groups. But we are primarily interested here in the overall differentials and do not dig so deeply into the reasons for the differentials we observe.

### *France*

Panel A of Table 5 reports the results for France. All groups of first-generation immigrant men, with the exception of those from Southern Europe, are less likely to be employed than native men. African and Eastern European immigrants show a particularly low employment rate with a 18.1 percentage point and 15.7 percentage point difference relative to native French men. In the second-generation, immigrant men from the Maghreb, Africa and Turkey experience even larger employment gaps than their first-generation counterparts with gaps of 26.7 percentage points, 47.9 percentage points and 41.6 percentage points, respectively.

Compared to men, first-generation immigrant women display larger employment gaps, particularly so women from Turkey who are 45.7 percent less likely to be employed than native women. Substantial employment gaps persist in the second-generation for women from the Maghreb (19.4 percentage points), Africa (31.4 percentage points) and Turkey (45.5 percentage points). Overall, employment gaps in France are very large and persistent for both male and female immigrants from the Maghreb, Africa and Turkey while most other groups successfully manage to close the employment gap to comparable natives from one generation to the next.

### *Germany*

The results for Germany in Panel B of Table 5 show that all groups of first-generation immigrant men with the exception other EU16 Europeans, Italians and Greeks have a lower probability of being employed than native Germans. The worst performing groups are immigrants from Central and Eastern Europe and Turkey who have a 19.4 percentage point and 15.2 percentage point lower employment probability than native German men, respectively. Immigrant men with German citizenship do somewhat better with an employment rate gap of only 6.8 percentage points while Italian and Greek men perform as well as native men. The

picture for second-generation immigrant men is surprising. Most of the groups fail to significantly reduce the employment gap to natives with men from Turkey and Italy doing particularly badly, widening the gap by 3.4 percentage points to 18.6 percentage points and by 5.2 percentage points to 5.7 percentage points respectively.

All groups of first-generation immigrant women do worse relative to natives than their male compatriots, with Central and Eastern Europe and Turkey again standing out with employment gaps of 26.4 and 31.4 percentage points, respectively. Without exception, however, all second-generation immigrant women do better than their corresponding first-generation counterparts. Overall we conclude that employment gaps in Germany are relatively large, in particular for Turks and Central and Eastern Europeans, and, at least for men, do not appear to decrease from one generation to the next. Taken together with the earlier results on earnings, we find evidence that for those groups for which the employment gap is small such as Italy and Greece, the earnings gap tends to be large, pointing towards positive selection into employment.

#### *UK*

Panel C of Table 5 reports the results for immigrants in the UK. All groups of first-generation men have a lower employment probability than their native counterparts. Pakistani, Black African and Bangladeshi men experience the largest gaps with estimates of 18.1 percentage points, 24.9 percentage points and 20.4 percentage points. With the exception of Black Caribbean men, all groups improve their employment situation from the first to the second generation; however, a significant gap of between 3.5 percentage points (Chinese) and 16.6 percentage points (Pakistani) persists for all of them.

For women, the employment gaps relative to native women tend to be larger than for their male counterparts. In particular women from Pakistan and Bangladesh show low employment probabilities with estimated gaps of 53.8 percentage points and 55.9 percentage points respectively. In the second generation, all groups of women substantially improve their employment situation, particularly so the initially most disadvantaged groups of Pakistani and Bangladeshi women who reduce the employment gap to native women by around half. The only group worsening their employment situation from the first to the second generation are, as for



men, Black Caribbean immigrants. Overall, all groups of immigrants in the UK have lower employment probabilities than their native counterparts, both in the first and in the second generation. While immigrant men show relatively little improvement from one generation to the next, immigrant women show signs of a better integration in the labour market and close the employment gap substantially.

The patterns of these employment differences are summarized in Figure 2 using the same approach used in Figure 1 to summarize the earnings differences. Panel A shows that for German and UK men, employment differences are scattered around the 45-degree line suggesting no strong pattern of difference between the first and second generation. In contrast, several of the French groups (those from the Maghreb, Africa and Turkey) have employment differences for the second-generation much worse than for the first-generation. For women (Panel B) most observations are above the 45-degree line suggesting lower employment differences in the second generation. This may well reflect changing labour supply behaviour as much as demand effects.

## **5. Conclusion**

In this paper, we have presented evidence on the experience of first- and second-generation immigrants in France, Germany and the UK. For France our estimates of earnings differentials are the first to be derived from the Labour Force Survey. We compare outcomes in terms of education, earnings and employment. For almost all countries and immigrant groups, second-generation immigrants have lower gaps in education than the first-generation. This perhaps suggests that the education systems are working to integrate the children of immigrants though it is much harder to say whether progress is as fast as it could be.

If it comes to labour market performance, we do not find similarly marked evidence of progress for all countries and for all immigrant groups. For net earnings, and conditional on education, potential experience and regional allocation, the UK stands out as having particularly large differences for the first generation but also much improved outcomes for the second generation. Evidence of progress in France and Germany is not so clear-cut. Employment gaps

for men in Germany and the UK seem quite similar for first- and second-generation immigrants but France has a number of groups in which the second-generation immigrants seem to be doing worse than the first. For women, patterns are similar but there is clearer general evidence of a reduction in employment gaps for the second-generation.

Our research is a first attempt to provide a comparable picture on educational attainment and labour market performance of immigrant populations and their descendants in the three largest Northern European economies, based on the latest available data sources. The most important message of this work is perhaps that there is a clear indication that – in each country – labour market performance of most immigrant groups as well as their descendants is – on average - worse than that of the native population, after controlling for education, potential experience, and regional allocation. There does not seem to be a very clear link between the outcomes for immigrants and the very different approaches to assimilation taken in France, Germany and the UK. The paper calls for more detailed research to investigate the exact mechanisms that lead to the observed disadvantages and the way in which policy affects outcomes, which space and the requirements of comparability prevent us from doing here.

Table 1: Sample Proportions and Summary Statistics

|                         | Sample Proportions in % |                 | Hourly Wages    |                 |                 |                 | Employment Rates |                 |                 |                 |
|-------------------------|-------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|-----------------|-----------------|-----------------|
|                         |                         |                 | Men             |                 | Women           |                 | Men              |                 | Women           |                 |
|                         | 1 <sup>st</sup>         | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup>  | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> |
| <b>Panel A: France</b>  |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| Natives                 | 90.2                    |                 | 10.89           |                 | 9.91            |                 | 66.3             |                 | 58.9            |                 |
| Immigrants              | 6.5                     | 3.3             | 10.22           | 10.25           | 8.75            | 8.74            | 64.1             | 62.1            | 43.4            | 50.9            |
| Of which                |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| Maghreb                 | 44.1                    | 40.7            | 9.84            | 9.88            | 8.90            | 8.72            | 59.3             | 56.8            | 37.2            | 47.0            |
| Southern Europe         | 24.8                    | 37.4            | 10.29           | 10.67           | 8.27            | 8.57            | 71.5             | 77.1            | 54.9            | 66.7            |
| Africa                  | 11.3                    | 5.0             | 9.55            | 9.16            | 7.72            | 8.24            | 62.2             | 32.9            | 44.8            | 21.2            |
| Northern Europe         | 6.6                     | 3.7             | 14.29           | 11.41           | 12.42           | 8.16            | 69.4             | 66.7            | 51.1            | 48.6            |
| Eastern Europe          | 5.9                     | 7.5             | 12.55           | 11.47           | 8.91            | 10.07           | 58.6             | 58.0            | 48.9            | 51.5            |
| Turkey                  | 4.1                     | 3.6             | 8.27            | 8.60            | 8.53            | 7.42            | 70.6             | 41.2            | 17.4            | 23.1            |
| Asia                    | 3.2                     | 2.2             | 11.60           | 9.12            | 8.59            | 12.7            | 79.0             | 47.4            | 43.9            | 37.5            |
|                         |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| <b>Panel B: Germany</b> |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| Natives                 | 87.0                    |                 | 11.71           |                 | 9.85            |                 | 75.3             |                 | 65.8            |                 |
| Immigrants              | 11.1                    | 2.0             | 10.97           | 9.39            | 9.46            | 7.79            | 68.5             | 64.0            | 53.9            | 55.4            |
| Of which                |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| “German” Immigrants     | 42.9                    | -               | 10.60           | -               | 9.22            | -               | 66.8             | -               | 55.9            | -               |
| CEE & other non-EU16    | 17.0                    | 6.8             | 10.11           | 9.17            | 9.59            | 8.62            | 61.7             | 59.8            | 49.4            | 53.9            |
| Turkey                  | 13.3                    | 45.7            | 11.47           | 8.45            | 8.44            | 7.21            | 68.5             | 53.9            | 42.5            | 43.8            |
| Other EU16              | 10.6                    | 14.4            | 13.80           | 11.59           | 11.62           | 8.71            | 79.3             | 74.0            | 62.7            | 69.3            |
| Former Yugoslavia       | 9.3                     | 11.3            | 9.80            | 9.42            | 8.92            | 7.74            | 67.1             | 70.1            | 54.7            | 65.4            |
| Italy                   | 4.6                     | 14.3            | 10.60           | 8.90            | 9.52            | 7.66            | 77.6             | 75.6            | 58.9            | 66.2            |
| Greece                  | 2.3                     | 7.6             | 9.86            | 10.28           | 8.13            | 8.04            | 73.5             | 77.0            | 60.5            | 65.5            |
|                         |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| <b>Panel C: UK</b>      |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| Natives                 | 90.3                    |                 | 11.12           |                 | 8.48            |                 | 79.0             |                 | 66.5            |                 |
| Immigrants              | 8.1                     | 1.6             | 11.48           | 10.15           | 9.44            | 9.53            | 73.1             | 59.9            | 55.2            | 53.4            |
| Of which                |                         |                 |                 |                 |                 |                 |                  |                 |                 |                 |
| White                   | 56.8                    | -               | 12.58           | -               | 9.79            |                 | 77.2             | -               | 63.7            | -               |
| Indian                  | 15.4                    | 32.5            | 11.13           | 10.83           | 8.60            | 9.45            | 78.1             | 63.2            | 55.2            | 57.7            |
| Pakistani               | 8.6                     | 21.5            | 8.20            | 8.72            | 7.82            | 8.14            | 63.5             | 49.8            | 16.6            | 35.4            |
| Black African           | 6.9                     | 7.4             | 9.88            | 10.24           | 8.62            | 10.29           | 60.9             | 60.6            | 47.9            | 56.2            |
| Black Caribbean         | 5.3                     | 31.3            | 9.90            | 10.31           | 9.21            | 9.96            | 64.7             | 65.9            | 61.1            | 62.2            |
| Bangladeshi             | 3.6                     | 3.7             | 6.26            | 8.62            | 7.93            | 8.50            | 55.7             | 43.8            | 12.8            | 36.7            |
| Chinese                 | 3.5                     | 3.7             | 11.02           | 10.31           | 9.54            | 10.10           | 63.5             | 58.4            | 51.7            | 60.0            |

Table 1: Sample Proportions and Summary Statistics (cont.)

|                         | Average Age     |                 | Age Left Full-time Education |                 |                 |                 |
|-------------------------|-----------------|-----------------|------------------------------|-----------------|-----------------|-----------------|
|                         |                 |                 | Men                          |                 | Women           |                 |
|                         | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup>              | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> |
| <b>Panel A: France</b>  |                 |                 |                              |                 |                 |                 |
|                         |                 |                 |                              |                 |                 |                 |
| Natives                 | 46.1            |                 | 18.3                         |                 | 18.1            |                 |
| Immigrants              | 50.1            | 39.47           | 17.7                         | 18.5            | 17.1            | 18.2            |
| Of which                |                 |                 |                              |                 |                 |                 |
| Maghreb                 | 50.0            | 29.7            | 18.3                         | 19.5            | 17.5            | 19.8            |
| Southern Europe         | 56.7            | 47.3            | 14.8                         | 18.0            | 14.8            | 17.6            |
| Africa                  | 38.1            | 21.2            | 21.4                         | 20.3            | 19.8            | 21.7            |
| Northern Europe         | 53.6            | 61.1            | 19.9                         | 17.0            | 19.1            | 16.3            |
| Eastern Europe          | 51.3            | 61.9            | 19.3                         | 16.8            | 18.3            | 15.8            |
| Turkey                  | 38.8            | 33.5            | 16.1                         | 18.5            | 16.0            | 17.4            |
| Asia                    | 46.6            | 23.5            | 19.4                         | 20.6            | 18.1            | 23.2            |
|                         |                 |                 |                              |                 |                 |                 |
| <b>Panel B: Germany</b> |                 |                 |                              |                 |                 |                 |
|                         |                 |                 |                              |                 |                 |                 |
| Natives                 | 40.2            |                 | 22.1                         |                 | 20.4            |                 |
| Immigrants              | 40.7            | 27.9            | 20.6                         | 20.6            | 19.9            | 20.1            |
| Of which                |                 |                 |                              |                 |                 |                 |
| “German” Immigrants     | 42.1            | -               | 21.4                         | -               | 20.4            | -               |
| CEE & other non-EU16    | 37.1            | 33.5            | 21.4                         | 21.5            | 21.0            | 20.2            |
| Turkey                  | 37.6            | 24.2            | 18.8                         | 19.9            | 17.4            | 19.4            |
| Other EU16              | 43.0            | 35.9            | 19.4                         | 20.4            | 18.1            | 19.9            |
| Former Yugoslavia       | 40.6            | 27.4            | 21.8                         | 21.5            | 20.8            | 21.0            |
| Italy                   | 43.3            | 28.5            | 18.8                         | 20.2            | 17.9            | 20.0            |
| Greece                  | 42.1            | 29.2            | 19.3                         | 21.3            | 18.1            | 21.1            |
|                         |                 |                 |                              |                 |                 |                 |
| <b>Panel C: UK</b>      |                 |                 |                              |                 |                 |                 |
|                         |                 |                 |                              |                 |                 |                 |
| Natives                 | 39.9            |                 | 16.9                         |                 | 16.9            |                 |
| Immigrants              | 39.6            | 26.6            | 18.6                         | 18.6            | 17.9            | 18.2            |
| Of which                |                 |                 |                              |                 |                 |                 |
| White                   | 39.6            |                 | 18.6                         |                 | 18.6            |                 |
| Indian                  | 41.9            | 25.0            | 19.1                         | 19.5            | 17.7            | 18.8            |
| Pakistani               | 38.3            | 23.9            | 17.4                         | 18.9            | 14.6            | 17.7            |
| Black African           | 35.2            | 28.4            | 20.8                         | 20.2            | 18.8            | 19.7            |
| Black Caribbean         | 46.9            | 30.3            | 16.4                         | 17.4            | 16.8            | 17.6            |
| Bangladeshi             | 35.3            | 21.7            | 16.8                         | 18.4            | 14.4            | 17.5            |
| Chinese                 | 37.0            | 26.3            | 19.4                         | 19.6            | 18.7            | 19.7            |

Notes: For definitions of 1<sup>st</sup> and 2<sup>nd</sup> generation immigrants and construction of hourly wages see text.

Sample aged 16-64. Sample for age left full-time education restricted to non-students aged 26-64.

Sources: France – Labor Force Survey 2005-2007; Germany – German Microcensus 2005-2006; UK – Labour Force Survey 1993-2007. For more details see Appendix.

Table 2: Age Left Full-time Education

|                         | Men             |                 | Women           |                 |
|-------------------------|-----------------|-----------------|-----------------|-----------------|
|                         | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> |
| <b>Panel A: France</b>  |                 |                 |                 |                 |
| Maghreb                 | -0.491***       | -0.476***       | -1.241***       | -0.390***       |
|                         | [0.103]         | [0.161]         | [0.106]         | [0.145]         |
| Southern Europe         | -3.285***       | -0.733***       | -3.084***       | -0.731***       |
|                         | [0.128]         | [0.134]         | [0.119]         | [0.128]         |
| Africa                  | 2.441***        | 3.252***        | -0.443**        | 0.812           |
|                         | [0.207]         | [0.891]         | [0.195]         | [0.744]         |
| Northern Europe         | 2.083***        | -0.166          | 1.439***        | -0.254***       |
|                         | [0.248]         | [0.454]         | [0.210]         | [0.380]         |
| Eastern Europe          | 1.378***        | -0.673**        | 0.066           | -0.582**        |
|                         | [0.299]         | [0.303]         | [0.224]         | [0.255]         |
| Turkey                  | -3.172***       | -0.396          | -3.579***       | -0.680          |
|                         | [0.311]         | [0.586]         | [0.325]         | [0.567]         |
| Asia                    | 0.296           | 0.750           | -0.905**        | 2.581*          |
|                         | [0.365]         | [1.016]         | [0.359]         | [1.052]         |
| Observations            | 51,219          | 56,311          | 50,446          | 54,603          |
| <b>Panel B: Germany</b> |                 |                 |                 |                 |
| “German” Immigrants     | -0.814***       | -               | 0.139**         | -               |
|                         | [.062]          |                 | [.059]          |                 |
| CEE & other non-EU16    | -0.493***       | 0.225           | 0.386***        | 0.096           |
|                         | [.134]          | [.412]          | [.100]          | [.357]          |
| Turkey                  | -3.529***       | -1.903***       | -3.570***       | -1.512***       |
|                         | [.097]          | [.131]          | [.093]          | [.128]          |
| Other EU16              | -0.320**        | -0.706***       | 0.363***        | 0.275           |
|                         | [.144]          | [.248]          | [.132]          | [.233]          |
| Former Yugoslavia       | -2.912***       | -1.782***       | -2.354***       | -1.523***       |
|                         | [.116]          | [.267]          | [.116]          | [.212]          |
| Italy                   | -3.391***       | -2.333***       | -2.403***       | -1.483***       |
|                         | [.182]          | [.207]          | [.189]          | [.216]          |
| Greece                  | -2.746***       | -0.715**        | -2.397***       | 0.114           |
|                         | [.272]          | [.328]          | [.280]          | [.338]          |
| Observations            | 270,470         | 248,412         | 271,638         | 248,102         |
| <b>Panel C: UK</b>      |                 |                 |                 |                 |
| White                   | 1.335***        | -               | 1.396***        | -               |
|                         | [.012]          |                 | [.010]          |                 |
| Indian                  | 2.017***        | 1.958***        | 0.692***        | 1.494***        |
|                         | [.024]          | [.032]          | [.023]          | [.029]          |
| Pakistani               | 0.535***        | 1.370***        | -2.203***       | 0.403***        |
|                         | [.034]          | [.040]          | [.040]          | [.036]          |
| Black African           | 2.586***        | 1.865***        | 0.929***        | 1.469***        |
|                         | [.041]          | [.073]          | [.037]          | [.065]          |
| Black Caribbean         | -0.547***       | -0.395***       | -0.218***       | -0.128***       |
|                         | [.028]          | [.026]          | [.023]          | [.023]          |
| Bangladeshi             | -0.540***       | 0.493***        | -2.645***       | -0.330***       |
|                         | [.054]          | [.094]          | [.053]          | [.095]          |
| Chinese                 | 2.607***        | 2.483***        | 1.875***        | 2.447***        |
|                         | [.060]          | [.099]          | [.049]          | [.096]          |
| Observations            | 2,226,343       | 2,089,974       | 2,239,887       | 2,085,364       |

Notes: These are the coefficients on dummy variables in a censored linear regression. The outcome variable is age left full-time education. The other covariates included are a polynomial in year of birth (for Germany only a quadratic), region dummies, and time dummies. Sample aged 16 to 64 including students for which the dependent variable is top-coded at the current age. Reported standard errors are robust. A (\*) denotes statistical significance at the 10% level, a (\*\*) at the 5% level, and a (\*\*\*) at the 1% level.

Table 3: Log Net Hourly Wages (controlling for education)

|                         | Men             |                 | Women           |                 |
|-------------------------|-----------------|-----------------|-----------------|-----------------|
|                         | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> |
| <b>Panel A: France</b>  |                 |                 |                 |                 |
| Maghreb                 | -0.161***       | -0.064***       | -0.089**        | -0.071***       |
|                         | [.015]          | [.021]          | [.018]          | [.023]          |
| Southern Europe         | -0.016          | 0.021           | -0.002          | -0.093***       |
|                         | [.020]          | [.021]          | [.023]          | [.024]          |
| Africa                  | -0.262***       | -0.242***       | -0.227***       | -0.248***       |
|                         | [.025]          | [.078]          | [.031]          | [.093]          |
| Northern Europe         | 0.059           | 0.099           | 0.058           | -0.048          |
|                         | [.037]          | [.123]          | [.037]          | [.122]          |
| Eastern Europe          | -0.052          | -0.023          | -0.164***       | -0.058          |
|                         | [.046]          | [.066]          | [.042]          | [.073]          |
| Turkey                  | -0.099**        | -0.272***       | -0.072          | -0.035          |
|                         | [.041]          | [.101]          | [.086]          | [.128]          |
| Asia                    | -0.063          | -0.003          | -0.052          | 0.345**         |
|                         | [.046]          | [.110]          | [.060]          | [.172]          |
| Observations            | 24,579          | 23,358          | 22,881          | 22,184          |
| <b>Panel B: Germany</b> |                 |                 |                 |                 |
| “German” Immigrants     | -0.119***       | -               | -0.138***       | -               |
|                         | [.006]          |                 | [.008]          |                 |
| CEE & other non-EU16    | -0.128***       | -0.203***       | -0.112***       | -0.141**        |
|                         | [.015]          | [.059]          | [.015]          | [.062]          |
| Turkey                  | -0.076***       | -0.115***       | -0.169***       | -0.207***       |
|                         | [.011]          | [.019]          | [.018]          | [.026]          |
| Other EU16              | 0.094***        | -0.003          | 0.048***        | -0.114***       |
|                         | [.015]          | [.026]          | [.018]          | [.036]          |
| Former Yugoslavia       | -0.173***       | -0.015          | -0.094***       | -0.085**        |
|                         | [.015]          | [.032]          | [.018]          | [.033]          |
| Italy                   | -0.156***       | -0.149***       | -0.081***       | -0.175***       |
|                         | [.018]          | [.028]          | [.029]          | [.033]          |
| Greece                  | -0.205***       | -0.089**        | -0.205***       | -0.175***       |
|                         | [.028]          | [.043]          | [.037]          | [.053]          |
| Observations            | 190,589         | 175,738         | 165,996         | 153,671         |
| <b>Panel C: UK</b>      |                 |                 |                 |                 |
| White                   | -0.034***       | -               | -0.055***       | -               |
|                         | [.004]          |                 | [.004]          |                 |
| Indian                  | -0.269***       | -0.047***       | -0.236***       | -0.051***       |
|                         | [.008]          | [.012]          | [.008]          | [.010]          |
| Pakistani               | -0.342***       | -0.110**        | -0.213***       | -0.039**        |
|                         | [.012]          | [.016]          | [.020]          | [.016]          |
| Black African           | -0.435***       | -0.301***       | -0.318***       | -0.176***       |
|                         | [.014]          | [.026]          | [.011]          | [.026]          |
| Black Caribbean         | -0.216***       | -0.128***       | -0.087***       | -0.029***       |
|                         | [.014]          | [.011]          | [.010]          | [.009]          |
| Bangladeshi             | -0.553***       | -0.129***       | -0.214***       | -0.038          |
|                         | [.020]          | [.040]          | [.034]          | [.036]          |
| Chinese                 | -0.274***       | -0.094***       | -0.173***       | -0.023          |
|                         | [.023]          | [.038]          | [.019]          | [.034]          |
| Observations            | 331,043         | 317,275         | 347,006         | 332,569         |

Notes: These are the coefficients on dummy variables in a linear earnings equation. Other covariates included are age left full-time education, a quartic in potential experience, region dummies, and time dummies. For France and the UK, estimation by simple OLS, for Germany by censored normal regression due to the right-censoring of the monthly income information. Sample aged 16 to 64. Reported standard errors are robust. A (\*) denotes statistical significance at the 10% level, a (\*\*) at the 5% level, and a (\*\*\*) at the 1% level.

Table 4: Log Net Hourly Wages (not controlling for education)

|                         | Men             |                 | Women           |                 |
|-------------------------|-----------------|-----------------|-----------------|-----------------|
|                         | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> |
| <b>Panel A: France</b>  |                 |                 |                 |                 |
| Maghreb                 | -0.130***       | -0.102***       | -0.097***       | -0.116***       |
|                         | [.016]          | [.022]          | [.020]          | [.025]          |
| Southern Europe         | -0.133***       | 0.000           | -0.160***       | -0.121***       |
|                         | [.021]          | [.022]          | [.025]          | [.026]          |
| Africa                  | -0.156***       | -0.219***       | -0.235***       | -0.288***       |
|                         | [.027]          | [.084]          | [.024]          | [.102]          |
| Northern Europe         | 0.176***        | 0.039           | 0.136***        | -0.110          |
|                         | [.040]          | [.134]          | [.041]          | [.133]          |
| Eastern Europe          | 0.024           | -0.018          | -0.178***       | -0.074          |
|                         | [.050]          | [.071]          | [.046]          | [.079]          |
| Turkey                  | -0.254***       | -0.356***       | -0.252***       | -0.141          |
|                         | [.044]          | [.109]          | [.094]          | [.140]          |
| Asia                    | -0.064          | -0.008          | -0.055          | 0.327*          |
|                         | [.050]          | [.120]          | [.066]          | [.188]          |
| Observations            | 24,579          | 23,358          | 22,881          | 22,184          |
| <b>Panel B: Germany</b> |                 |                 |                 |                 |
| “German” Immigrants     | -0.137***       | -               | -0.136***       | -               |
|                         | [.007]          |                 | [.008]          |                 |
| CEE & other non-EU16    | -0.146***       | -0.213***       | -0.101***       | -0.140**        |
|                         | [.015]          | [.059]          | [.015]          | [.062]          |
| Turkey                  | -0.152***       | -0.165***       | -0.226***       | -0.239***       |
|                         | [.011]          | [.019]          | [.018]          | [.026]          |
| Other EU16              | 0.089***        | -0.023          | 0.056***        | -0.111***       |
|                         | [.015]          | [.027]          | [.018]          | [.036]          |
| Former Yugoslavia       | -0.231***       | -0.052          | -0.130***       | -0.115***       |
|                         | [.015]          | [.033]          | [.018]          | [.033]          |
| Italy                   | -0.220***       | -0.200***       | -0.119***       | -0.203***       |
|                         | [.018]          | [.029]          | [.029]          | [.033]          |
| Greece                  | -0.262***       | -0.117***       | -0.248***       | -0.187***       |
|                         | [.029]          | [.044]          | [.038]          | [.055]          |
| Observations            | 190,589         | 175,738         | 165,996         | 153,671         |
| <b>Panel C: UK</b>      |                 |                 |                 |                 |
| White                   | 0.074***        | -               | 0.052***        | -               |
|                         | [.005]          |                 | [.004]          |                 |
| Indian                  | -0.104***       | 0.054***        | -0.137***       | 0.026**         |
|                         | [.009]          | [.013]          | [.008]          | [.011]          |
| Pakistani               | -0.269***       | -0.028          | -0.147***       | -0.009          |
|                         | [.013]          | [.019]          | [.020]          | [.018]          |
| Black African           | -0.243***       | -0.173***       | -0.208***       | -0.085***       |
|                         | [.014]          | [.028]          | [.011]          | [.025]          |
| Black Caribbean         | -0.232***       | -0.191***       | -0.099***       | -0.050***       |
|                         | [.014]          | [.012]          | [.011]          | [.009]          |
| Bangladeshi             | -0.574***       | -0.146***       | -0.185***       | -0.046          |
|                         | [.022]          | [.051]          | [.039]          | [.044]          |
| Chinese                 | -0.058**        | 0.032           | -0.003          | 0.105**         |
|                         | [.026]          | [.040]          | [.020]          | [.040]          |
| Observations            | 331,043         | 317,275         | 347,006         | 332,569         |

Notes: These are the coefficients on dummy variables in a linear earnings equation. Other covariates included are age left full-time education, a quartic in potential experience, region dummies, and time dummies. For France and the UK, estimation by simple OLS, for Germany by censored normal regression due to the right-censoring of the monthly income information. Sample aged 16 to 64. Reported standard errors are robust. A (\*) denotes statistical significance at the 10% level, a (\*\*) at the 5% level, and a (\*\*\*) at the 1% level.

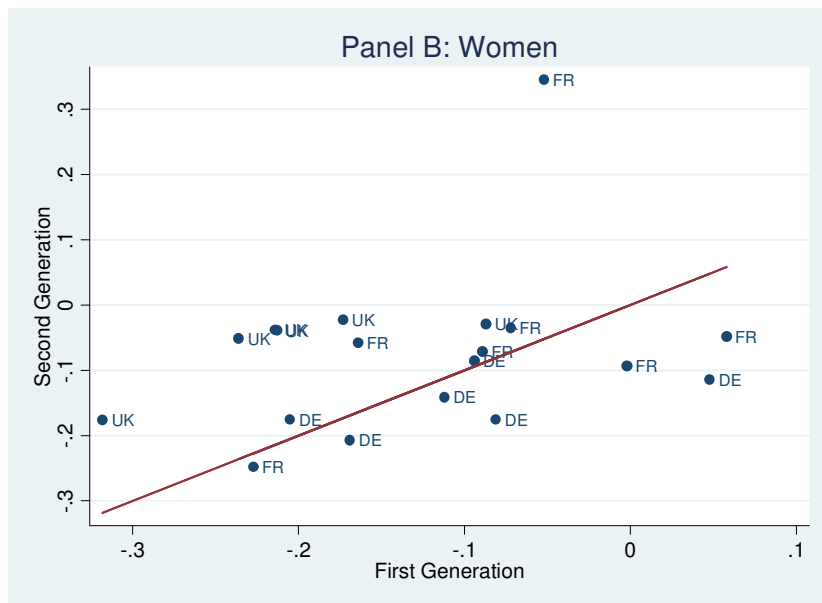
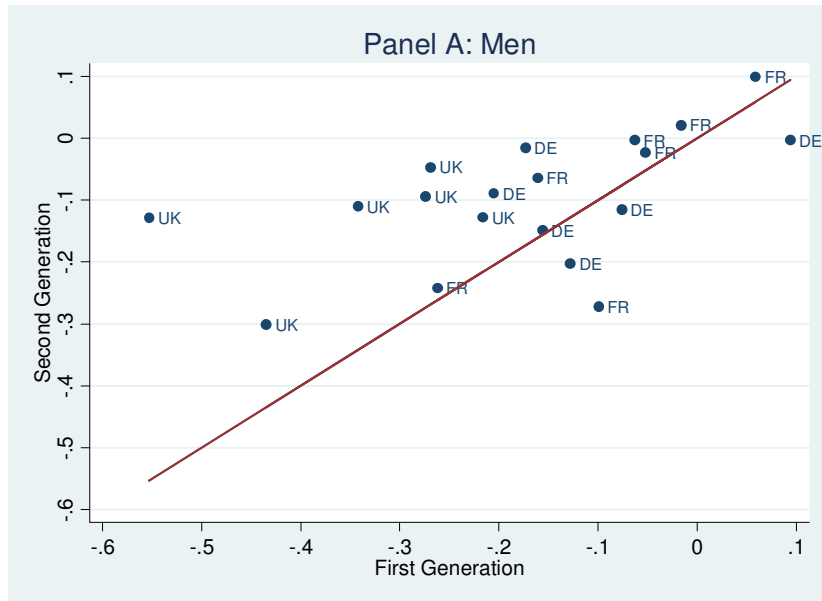
Table 5: Employment

|                         | Men             |                 | Women           |                 |
|-------------------------|-----------------|-----------------|-----------------|-----------------|
|                         | 1 <sup>st</sup> | 2 <sup>nd</sup> | 1 <sup>st</sup> | 2 <sup>nd</sup> |
| <b>Panel A: France</b>  |                 |                 |                 |                 |
| Maghreb                 | -0.089***       | -0.267***       | -0.199***       | -0.194***       |
|                         | [.014]          | [.023]          | [.015]          | [.021]          |
| Southern Europe         | 0.093***        | -0.003          | 0.050***        | 0.036           |
|                         | [.013]          | [.021]          | [.018]          | [.022]          |
| Africa                  | -0.181***       | -0.479***       | -0.199***       | -0.314***       |
|                         | [.028]          | [.069]          | [.015]          | [.079]          |
| Northern Europe         | -0.044          | 0.089           | -0.114***       | 0.009           |
|                         | [.032]          | [.070]          | [.031]          | [.079]          |
| Eastern Europe          | -0.157***       | -0.008          | -0.207***       | -0.025          |
|                         | [.047]          | [.051]          | [.036]          | [.058]          |
| Turkey                  | -0.099**        | -0.416***       | -0.457***       | -0.455***       |
|                         | [.042]          | [.084]          | [.037]          | [.066]          |
| Asia                    | -0.017          | -0.174          | -0.144***       | -0.205          |
|                         | [.042]          | [.138]          | [.049]          | [.134]          |
| Observations            | 45,647          | 43,570          | 46,323          | 44,152          |
| <b>Panel B: Germany</b> |                 |                 |                 |                 |
| “German” Immigrants     | -0.068***       | -               | -0.072***       | -               |
|                         | [.005]          |                 | [.005]          |                 |
| CEE & other non-EU16    | -0.194***       | -0.134***       | -0.264***       | -0.124***       |
|                         | [.011]          | [.038]          | [.008]          | [.039]          |
| Turkey                  | -0.152***       | -0.186***       | -0.314***       | -0.257***       |
|                         | [.009]          | [.015]          | [.010]          | [.016]          |
| Other EU16              | 0.015*          | -0.041*         | -0.074***       | 0.027           |
|                         | [.009]          | [.022]          | [.012]          | [.023]          |
| Former Yugoslavia       | -0.123***       | -0.108***       | -0.147***       | -0.079***       |
|                         | [.012]          | [.030]          | [.013]          | [.030]          |
| Italy                   | -0.005          | -0.057**        | -0.104***       | -0.052**        |
|                         | [.013]          | [.025]          | [.020]          | [.026]          |
| Greece                  | -0.032          | -0.027          | -0.071***       | -0.013          |
|                         | [.022]          | [.030]          | [.026]          | [.038]          |
| Observations            | 232,318         | 211,725         | 235,684         | 213,963         |
| <b>Panel C: UK</b>      |                 |                 |                 |                 |
| White                   | -0.039***       | -               | -0.083***       | -               |
|                         | [0.002]         |                 | [0.002]         |                 |
| Indian                  | -0.076***       | -0.055***       | -0.177***       | -0.056***       |
|                         | [0.003]         | [0.005]         | [0.003]         | [0.005]         |
| Pakistani               | -0.181***       | -0.166***       | -0.538***       | -0.299***       |
|                         | [0.004]         | [0.007]         | [0.003]         | [0.007]         |
| Black African           | -0.249***       | -0.159***       | -0.244***       | -0.130***       |
|                         | [0.005]         | [0.011]         | [0.005]         | [0.011]         |
| Black Caribbean         | -0.085***       | -0.158***       | -0.034***       | -0.071***       |
|                         | [0.005]         | [0.005]         | [0.005]         | [0.005]         |
| Bangladeshi             | -0.204***       | -0.130***       | -0.559***       | -0.236***       |
|                         | [0.007]         | [0.016]         | [0.005]         | [0.016]         |
| Chinese                 | -0.090***       | -0.035**        | -0.214***       | -0.031*         |
|                         | [0.007]         | [0.014]         | [0.007]         | [0.017]         |
| Observations            | 2,107,340       | 1,971,412       | 2,113,340       | 1,959,190       |

Notes: These are the marginal effects from a probit model. The outcome variable is an indicator that takes the value 1 if an individual is employed and zero otherwise. Other covariates included are age left full-time education, a quartic in potential experience, region dummies, and time dummies. Sample aged 16 to 64, excluding current students. Reported standard errors are robust. A (\*) denotes statistical significance at the 10% level, a (\*\*) at the 5% level, and a (\*\*\*) at the 1% level.

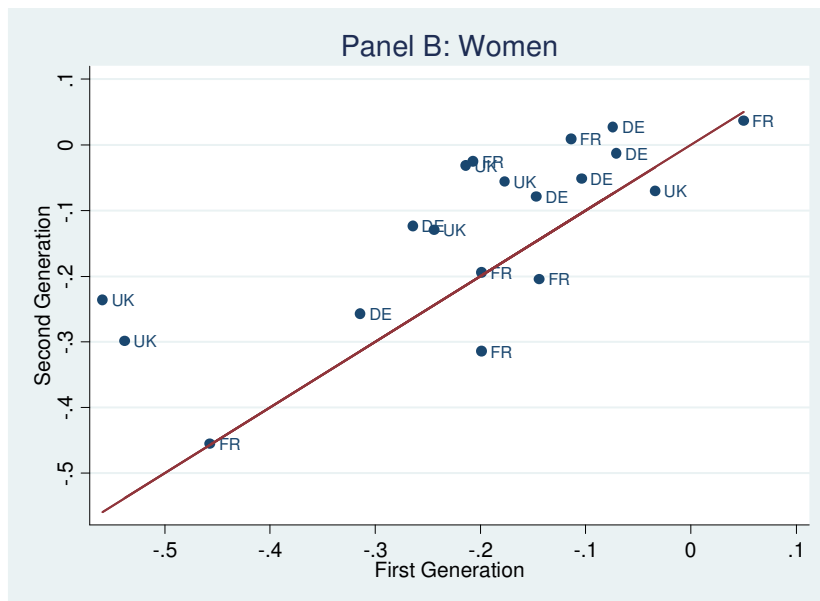
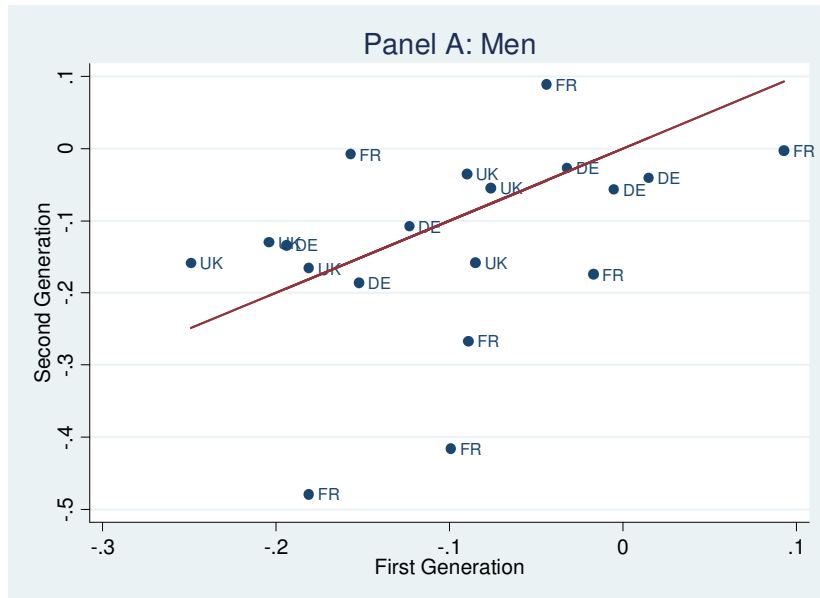


**Figure 1: A Comparison of Earnings Differences  
for the First and Second Generations**



Notes: Each point represents an earnings penalty for an immigrant group as reported in Table 3.

**Figure 2: A Comparison of Employment Differences  
for the First and Second Generations**



Notes: Each point represents an employment difference for an immigrant group as reported in Table 5.

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## Appendix: Sample Construction

### *France*

The French data come from l'Enquête Emploi, which is the French Labor Force Survey carried out since 1950 by l'Institut National de la Statistique et des Études Économiques (INSEE). We focus on the waves 2005-2007 which provide not only the country of birth of the respondent, as it was already the case in the earlier waves, but also the country of origin of the respondent's parents. The information on the country of parental birth is originally coded in 9 categories: France, Northern Europe, Southern Europe, Eastern Europe, Maghreb, Turkey (Middle-East), Africa, Asia, and Other countries. We exclude the category "Other countries". The country of parental birth is given for both the mother and the father. The country of birth of the respondent is given at the more detailed levels of 29 countries or country groups: France, Algeria, Tunisia, Morocco, Rest of Africa, Asia (including Vietnam, Laos, Cambodia), Italy, Germany, Belgium, Netherlands, Luxembourg, Ireland, Denmark, Great Britain, Greece, Spain, Portugal, Switzerland, Austria, Poland, Yugoslavia, Turkey, Norway, Sweden, Eastern Europe, United States or Canada, Latin America, and Other countries. To make the country of birth of the respondent comparable with that of her parents, we aggregate the more detailed countries of birth of the respondent to the 8 broader categories given for the country of parental birth. We use the following mapping: i) France: France, ii) Northern Europe: Germany, Belgium, Netherlands, Luxembourg, Ireland, Denmark, Great Britain, Switzerland, Austria, Norway, Sweden, iii) Southern Europe: Italy, Spain, Portugal, Greece, iv) Eastern Europe: Eastern Europe, Poland and Yugoslavia, v) Maghreb: Algeria, Morocco, Tunisia, vi) Turkey, vii) Africa: Rest of Africa, viii) Asia. The group of natives is defined as individuals who are born in the country and whose two parents were also born in France. First-generation immigrants are individuals born abroad and whose parents were both also born abroad and are from the same country of origin. Second-generation immigrants are individuals who are born in France but whose parents are both born in the same country abroad. Age left full-time education is calculated as the difference between the variable "Year left education" and the variable "Year of birth". Hourly wage is calculated by combining information from the two variables "Monthly net wage in the main (regular) job" and "Average weekly hours worked in the main (regular) job". Employment is calculated from the variable: "Activity: i) Employed, ii) Unemployed, iii) Non-active". We create a dummy variable equal 1 if the respondent is employed and 0 if she is unemployed or inactive. The sample is restricted to working age individuals aged 16 to 64.

## *Germany*

The original data source for the analysis of Germany is the German Microcensus which comprises 1 percent of all households in Germany. For our analysis, we use the Scientific Use Files for the years 2005 and 2006, applying the individual sampling weights provided for all tabulations and regressions. We distinguish seven groups with foreign citizenship: Turkey, Former Yugoslavia (without Slovenia), Italy, Greece, Central and Eastern Europe plus other European but non-EU16 countries, other EU16 countries (other than Italy and Greece), and all other countries. We drop the latter category from the analysis since it comprises very heterogeneous countries of origin. Non-naturalised individuals born in Germany with only German citizenship are coded as native German. Individuals who were not born in Germany and have either only foreign citizenship or German citizenship obtained through naturalisation are coded as first-generation immigrants. Individuals born in Germany with either only foreign citizenship or German citizenship obtained through naturalisation are coded as second-generation immigrants. In case of naturalisation, we use the information on the previous citizenship of the individual to determine the country of origin. Individuals who were not born in Germany and have German citizenship that was either obtained without naturalisation or through naturalisation within 3 years of arrival (legally impossible for other foreign immigrant groups), provided the previous citizenship was Czech, Hungarian, Kazakh, Polish, Romanian, Russian, Slovakian, or Ukrainian, are coded as “German” first-generation immigrants. Age left full-time education is calculated as the maximum of “Year of highest vocational or college degree minus year of birth” and “Year of highest general educational degree minus year of birth” and right censored for those individuals currently going to (vocational) school or college. Observations with missing information on age left full-time education are dropped. Potential experience is calculated as current age minus typical age when left educational/vocational training. The typical ages we assume are: for those without vocational training and without Abitur 16 years, those with vocational training and without Abitur 19 years, those without vocational training and with Abitur 19 years, those with vocational training and with Abitur 22 years, and those with college education 25 years. Net monthly income is imputed as the midpoint of each income category and expressed in Euros at constant 2005 prices using the Consumer Price Index for Germany published by the Statistical Office. Income is right censored at 18,000 Euros and marked accordingly. Employment is defined following the ILO definition based on which every



individual is considered employed that is in an employment relationship, self-employed or a family worker, irrespective of the actual hours worked. The sample is restricted to working age individuals aged 16 to 64.

### *UK*

The UK Data comes from the Labour Force Survey, used courtesy of the UK Data Archive. The sample period is 1993-2007 inclusive. The sample is restricted to those aged 16-64 inclusive.

The immigrant groups are constructed using the data on ethnicity and country of birth. The foreign born are those who are born outside the UK. The ethnic classifications in the UK contain a number of mixed and 'other' categories – these were excluded from the analysis.

Age left full-time education is from a direct question on that. Those who report having never had full-time education are re-coded to have left full-time education at age 5 as are those who report leaving education before the age of 5. This question is also used to code those who have not yet left full-time education.

Employment is based on the ILO definition and includes self-employment. Regressions with employment as the dependent variable drop those in full-time education.

Earnings are computed by dividing weekly net earnings by weekly hours. The earnings questions in the LFS are only asked of those in waves 1 and 5 so sample sizes are smaller. Earnings information is not collected for the self-employed as they are excluded.