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"ESSAYS ON INTERNATIONAL MIGRATION"

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Preface

This dissertation studies the economic implications of international migration for receiving countries. It investigates, on the one hand, the close interplay between citizens' attitudes towards international migration, the media coverage of politicians and politicians' accountability in the formation of migration policies, and, on the other hand, the international transferability of human capital and immigrant performance in the host country labor market.

After a review of the main literature on how immigration impacts the receiving country by affecting the broad demographic trends, public finances and the demand and supply of health care (Chapter 1), the investigation focuses on international migration and the destination country sentiment towards immigrants, which may affect the behavior of politicians in the design of migration policies (Chapter 2). Finally, chapter 3 focuses on immigration in Italy and the transferability of immigrants' human capital in the Italian labor market, investigating the profile of immigrants' returns to education and of immigrant-native wage differentials over time.

The aim of the survey in chapter 1, a joint work with Christian Dustmann and Giovanni Facchini[1], is to provide a sound understanding of the state of the art in the research on international migration, population ageing and health and - at the same time - to identify key areas of research where more effort is needed both to foster our knowledge, as well as to provide guidance for effective policy interventions. Several important elements emerge, among which is the need to develop general comprehensive frameworks able to capture at least some of the interactions between demographic changes, migration and healthcare provision and to take into account the intrinsically dynamic nature of these interactions. The review also identifies key critical areas on the empirical and measurement side, where the limited ability to systematically track individuals over time in existing datasets makes it difficult to provide fully satisfactory answers to key policy questions.

Given the strong potential impact of immigration on the economy of destination countries and the increasing trends in migration flows towards both traditional destinations such as the US, and relatively more recent destinations like the European Union, international migration has received considerable attention over the past few decades. Although the recent financial and economic crisis has temporarily reduced the inflows in most destinations it has also contributed to making this debate even more heated.

Chapter 2 of this dissertation, written together with Giovanni Facchini and Tommaso Frattini, focuses on individuals' attitudes towards international migration and trade and investigates how media exposure of politicians affects elected representatives' response to their constituencies' preferences on immigration and trade policies. Using a novel dataset matching US individual opinion surveys with congressmen roll call votes

[1]The survey, *Population, Migration, Ageing and Health: A Survey*, is forthcoming with Cambridge University Press.

during the period 1986-2004, the analysis uncovers that greater exposure to media coverage tends to increase a politician's accountability when it comes to migration policy making, while no effect is found for trade policy. These findings suggest that more information on the behavior of elected officials affects decisions only when the policy issue is perceived to be salient by the electorate, as is the case for international migration.

Finally, chapter 3 deals with the performance of immigrants in the host country labor market and the international transferability of human capital. The analysis focuses on Italy, a country that has become only recently a major destination of immigrant flows. Using information on earnings and educational attainments from the 2009-2014 rounds of the Italian Labour Force Survey, I investigate immigrant-native differences in earnings and heterogeneity in returns to human capital. The analysis uncovers significant penalties in returns to education and work experience for foreign born immigrants, which are largely related to where human capital has been acquired. Immigrants' marginal returns to schooling show a very slow path of assimilation over time which begins only after 9 years of work experience in Italy. Interestingly, both the immigrant-native gap in returns to schooling and in earnings persist even after 30 years. The differential in returns to schooling disappears for those who have received all of their education in Italy or were born in Western countries.

Chapter 1

Population, Migration, Ageing and Health: A Survey[†]

Christian Dustmann[‡] Giovanni Facchini[§] Cora Signorotto [⋆]

1.1 Introduction

As European countries experience rapidly ageing populations, two major challenges have emerged for policy makers. First, the decline in the size of the domestic labor force implies severe shortages in the availability of key skills needed in several sectors of the economy.[2] Possible consequences are reduced productivity growth and decline in global competitiveness. Second, the increase in life expectancy will typically imply longer periods spent in retirement, generating pressures on the sustainability of existing pension systems, as well as new needs to provide care for a growing elderly population.

Immigration might be a viable response to address both of these challenges. Young foreign workers can fill some of the short term skill shortages that have emerged and contribute in the medium and long run to reverse the trend towards population stagnation. At the same time, cultural differences and the common perception that foreigners might be a threat for the domestic population, in conjunction with the large migrations required to counter demographic developments in many European countries, suggest that migration can only be part of a broader mix of interventions.

The goal of this survey is to provide a systematic overview of the literature that has analyzed the interplay between population dynamics, ageing, health and migration, aimed at offering policy makers a sound understanding of the state of the art in this important research area. At the same time, we will identify key issues where more research is needed both to foster our knowledge, as well as to provide guidance for effective

[†]This survey is produced as part of the COEURE Coordination Action project Surveys on Economic Policy Issues, funded by the European Commission's FP7 SSH Programme, and is forthcoming with Cambridge University Press.
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[2]Germany is a leading example of this phenomenon, as pointed out by The Economist on June 15, 2013. For more details see http://www.economist.com/news/special-report/21579148-overcome-its-skills-shortage-germany-needs-remodel-its-society-erasmus-generation

policy interventions. The review is carried out from the perspective of the economics literature, but given the complexity of the question we also refer to relevant studies carried out by demographers and sociologists.

Following an initial description of the main stylized facts on migration, population ageing and health in Section 1.2, the survey focuses on current demographic developments and fertility trends among the migrant and native populations in destination countries (Section 1.3) and on the length of the migration spell (Section 1.4). We then review the main findings in the literature on the fiscal effects of migration in European countries and the US (Section 1.5) and describe the role that migration can play to address skill and labor shortages (Section 1.6). Section 1.7 analyzes the health care sector, focusing on shortages of health care workers in European countries and the international migration of health professionals. We then review the literature on migrants' health care needs and the disparities in the access to health care services between immigrants and natives. Finally, we present the main findings from the very recent literature on amenity-driven migration of retirees from Northern European countries towards Mediterranean coastal regions and on migrants' portability of pension and health benefits across countries (Section 1.8). Section 1.9 summarizes the main findings and policy implications.

1.2 Main stylized facts

Several concepts specific to the migration and demographic literature will be referred to in our discussion. Below we report a glossary of the most commonly used ones (see Figure 1.1).

- **Brain drain** is defined as the reduction in the per capita human capital in the emigration country (see Dustmann et al. 2011).
- **Circular migration (or repeat migration)** refers to the systematic and regular movement of migrants back and forth from their country of origin towards foreign countries.
- **Destination/Host country** refers to the place where the migrant has settled.
- **Immigrants** in the economic literature are mainly identified as individuals born in a different country from the one they are settled in. Due to data availability or the type of analysis conducted, however, different criteria can be adopted by researchers, relying for example on citizenship or nationality.
- **Net migration** refers to the total inflow of immigrants net of the outflow of emigrants during a given period.
- **Origin/Source country** refers to migrant's country of birth or the country associated to migrant's citizenship or nationality, according to which definition of migrant is adopted in the study (see above).
- **Outmigration** refers to migrants moving out of the host country to either return to their country of origin (return migration) or to move onwards towards a third destination.
- **Return migration** refers to re-migration from the host country back to the country of origin by the migrant's own choice (see Dustmann 2000).
- **Replacement (fertility) rate** is the total fertility rate per woman which generates stability of a population under the hypothesis of no migration flows and unchanged mortality rates. This is estimated by the literature at about 2.1 children per woman for most countries, although it may slightly vary with mortality rates.
- **Total Fertility Rate** is an indicator of the level of fertility calculated by summing age-specific birth rates over all reproductive ages. In a specific year, it refers to the number of children that would be born to a woman if she were to live to the end of her fertile years and if she were subject throughout her life to the age-specific fertility rates observed in a given year.

Figure 1.1: Glossary of terms

The population of Europe is ageing rapidly and this is resulting in a downward trend in the share of the working age (15-64) population.

As shown in Figure 1.2 the phenomenon started in the mid-2000s, and the most recent forecasts suggest that is likely to persist over the next 45 years (see European Commission 2014a). In particular, the share of the working age population will decline considerably so that by 2060, less than 57 percent of the population is expected to belong to the economically active group (see Figure 1.3).

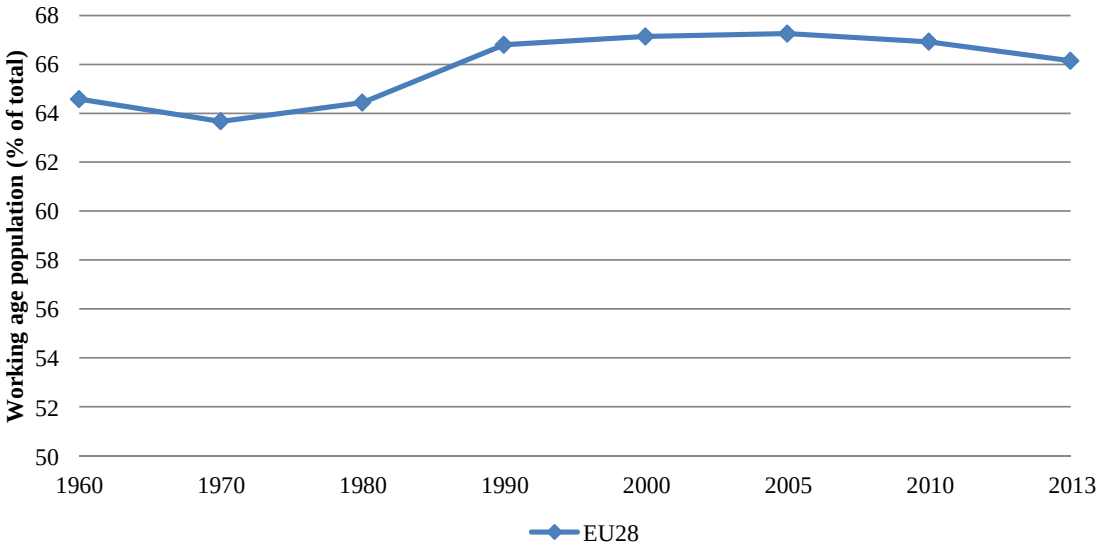

Figure 1.2: Share of working age population as % of total population in the EU28 – Past trends
Source: Adapted from World Development Indicators Online Database: Population ages 15–64

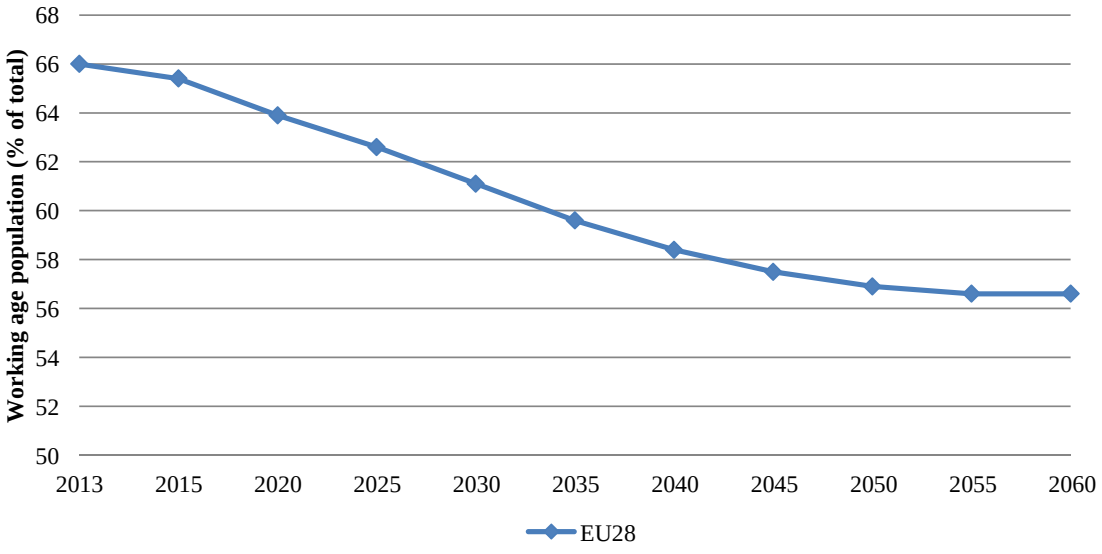

Figure 1.3: Share of working age population as % of total population in the EU28 - Projections
Source: Adapted from European Commission (2014a), p. 409.

Two are the main reasons behind ageing: a decline in overall fertility rates and an increase in life ex-

pectancy. Total fertility rates in EU countries have been on a steady downward path between 1960 and 2005. While in 1960 the average European woman was expected to give birth to 2.67 children, her counterpart in 2005 was expected to deliver only 1.49 children, corresponding to a 44 percentage points decline. A slight improvement in total fertility has been observed though in the last decade and by 2012 the average total fertility rate in the EU was 1.56 children per woman (see European Commission 2014a). This basic trend conceals important differences across countries. For instance, while fertility rates in Ireland have been consistently higher than in the rest of the EU, countries like Portugal or Spain had substantially higher fertility rates than the EU average in the sixties, seventies and even eighties, but then saw them drop below the EU average starting in 1990. Other countries like France have instead been able, through a series of targeted policies, to maintain fertility rates approximately constant and close to the replacement rate of 2.1 children per woman (see Figure 1.4). The most recent forecasts, elaborated by the European Commission, indicate that we should expect a slight improvement in total fertility rates over the next 45 years, and by 2060 the total fertility of the average woman in the EU should reach 1.76 children, a figure that is still substantially short of the natural replacement rate (see European Commission 2014a).

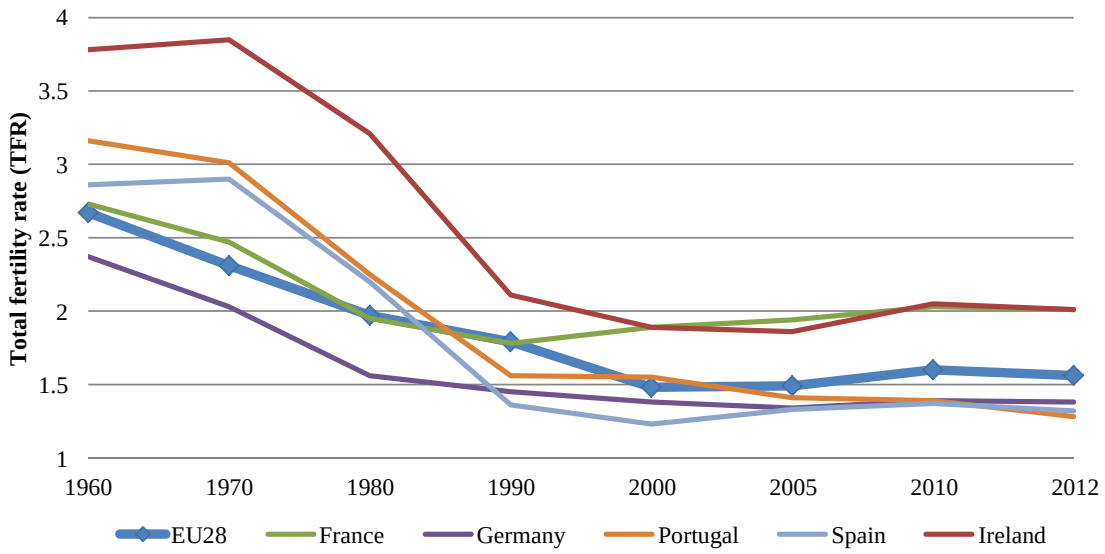

Figure 1.4: Past trends in total fertility rates (TFR), 1960-2012 - Selected EU countries
Source: Adapted from European Commission (2014a), p. 9.
Notes: 1960 no data for Croatia, Latvia and Romania; 1970 no data for Croatia and Romania; 1980 no data for Croatia and Cyprus; no data for Croatia until 2005.

Over the same period, life expectancy has increased dramatically. The European Commission Ageing Report (2014a) shows that the average man born in a EU country in 1960 expected to live 66.9 years, whereas the average woman 72.3. By 2012 these figures had increased dramatically to 76.1 years for men and 82.2 years for women, i.e. by a staggering 14 percent (see Figure 1.5).

Considerable variation exists across EU member countries, but differently from total fertility rates, a path towards convergence is emerging. Eastern European countries, such as Bulgaria, Estonia, Hungary, Latvia, Lithuania, Romania and Slovakia report the lowest life expectancy in 2013, but they are on a path of rapid catch up with the rest of the EU. In particular, Bulgaria and Romania are expected to experience a ten years

increase in male life expectancy between 2013 and 2060 (see European Commission 2014a).

Southern European countries, such as Italy and Spain, as well as Central European and Nordic countries, such as Germany and Sweden, report instead the highest levels of life expectancy across EU countries in 2013. Swedish men (women) are expected to live 80.1 (83.6) years in 2013 and Italian men (women) 79.8 (84.7). Figure 1.6 reports recent European Commission's forecasts indicating that life expectancy at birth will continue to increase, and by 2060 it will reach 84.7 years for males and 89.1 years for females in the EU (see European Commission 2014a).

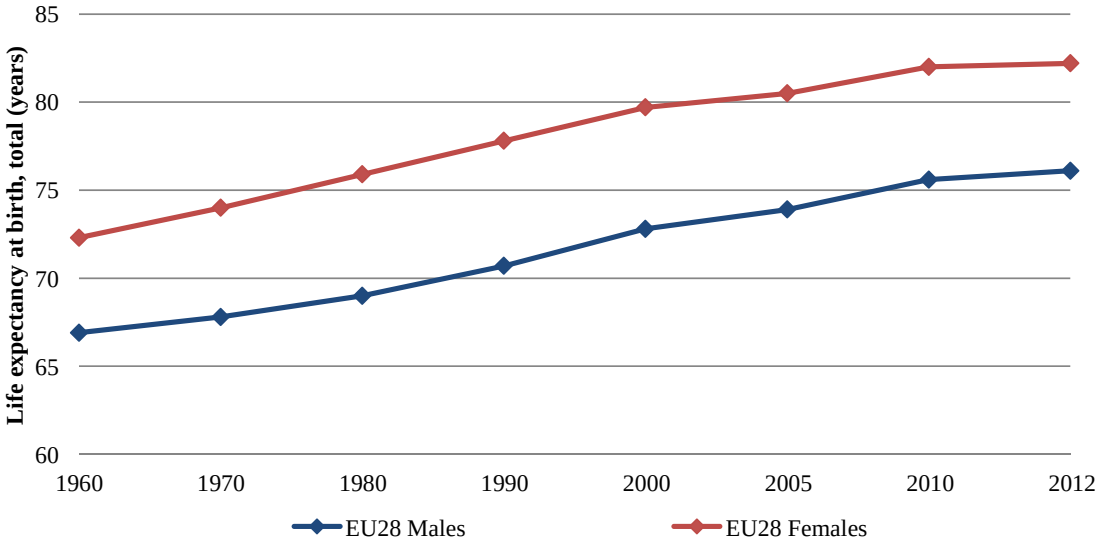

Figure 1.5: Life expectancy at birth in the EU28 – Past trends
Source: Adapted from European Commission (2014a), p. 12.
Notes: 1960 no data for Cyprus and Romania; 1970 no data for Cyprus.

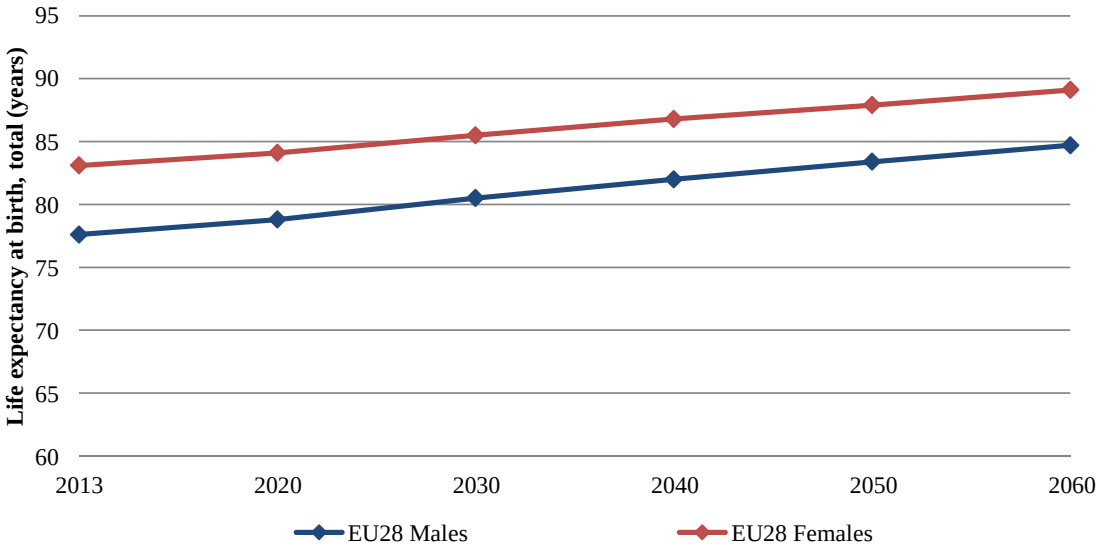

Figure 1.6: Life expectancy at birth in the EU28 – Projections
Source: Adapted from European Commission (2014a), p. 13.

Population ageing will generate growing pressures on welfare states, adding strains to existing pension systems, which might no longer be able to maintain living standards in old age, as well as on health systems, which are expected to both require more resources and to adapt to an increased demand for long term care (LTC) for a growing elderly population. Figure 1.7 illustrates a recent forecast of the expected gross replacement rate of public pensions[3] in the EU, revealing a declining trend. This pattern is the result of a series of reforms that have been recently introduced to alleviate the pressures of population ageing on EU welfare states. Over the last decade, many European countries have moved from defined benefit to defined contribution schemes - implying a stricter link between contributions paid and benefits received - and removed redistributive programs from contributory schemes. As for the dynamics in individual countries Figure 1.8 shows that some Eastern European nations (e.g. Latvia and Poland) are expected to witness the largest drops, followed by Nordic countries (Finland and Sweden), and Southern European countries (Greece, Italy and Spain).

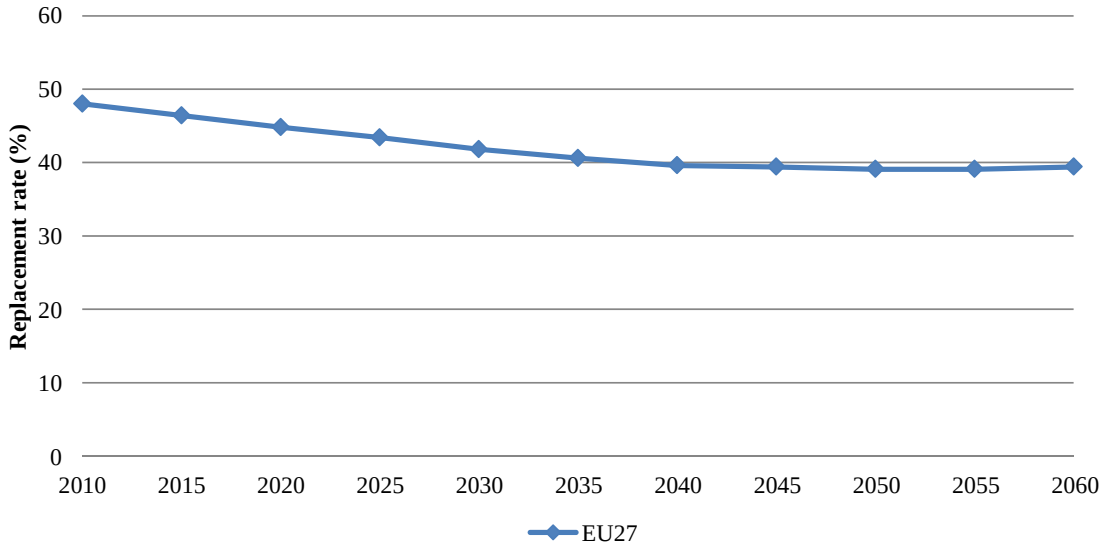

Figure 1.7: Average gross replacement rate at retirement - Public pensions – EU27 Projections
Source: Adapted from European Commission (2012), p. 336.

[3]The gross average replacement rate at retirement is calculated as the ratio of the first pension of those who retire in a given year over the average wage at retirement.

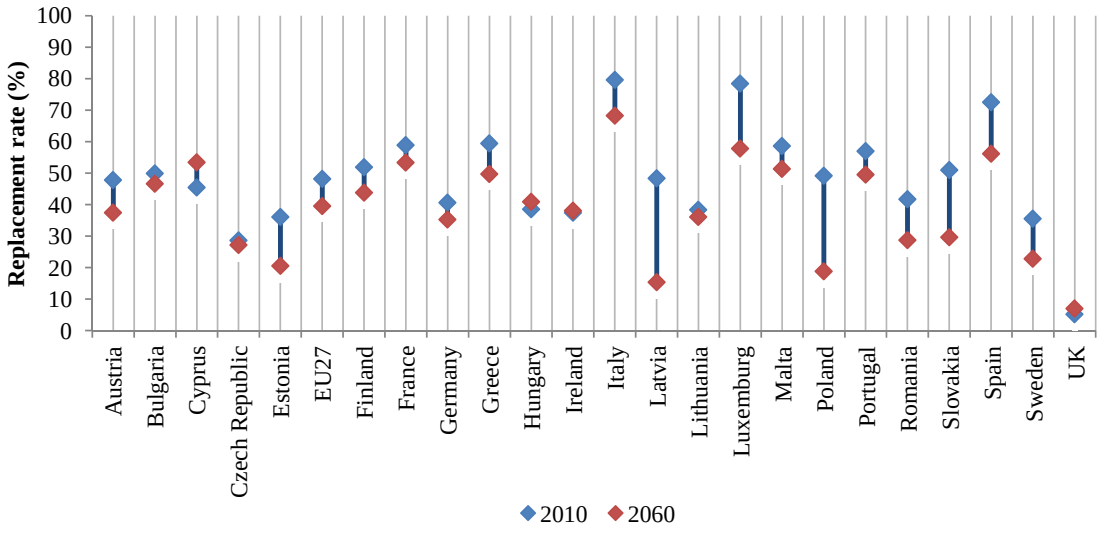

Figure 1.8: Change in average gross replacement rate at retirement - Public pensions – EU27 2060-2010
Source: Adapted from European Commission (2012), p. 336.

Figure 1.9[4] looks at the evolution of overall public health care spending in the last two decades in the EU. Health care expenditures witnessed a sharp increase until 2009, when they slightly declined and then settled at just below 8% of GDP.[5] Given the forecasted rapid population ageing, the burden of health and long term care (LTC) on the Member States' public finances is expected to increase. Figure 1.10 reports forecasts for the EU Health and LTC expenditures as a percentage of GDP for the next 45 years. Health expenditures will reach 8.3% of GDP by 2050 and level off in the following decade, while spending on LTC services are predicted to almost double by 2060 (European Commission 2012).

[4]The figures for 2010 in Figures 1.9 and 1.10 are different due to the different sources of data used: Figure 1.9 reports data from the World Bank development indicators, while Figure 1.10 reports projections based on Eurostat data, EUROPOP2010 projections.

[5]According to OECD (2013), one of the reasons behind the leveling out of health expenditures after 2009 is the economic crisis. Many OECD countries have implemented severe health spending cuts between 2009 and 2011, with the most affected countries being those more severely hit by the economic crisis.

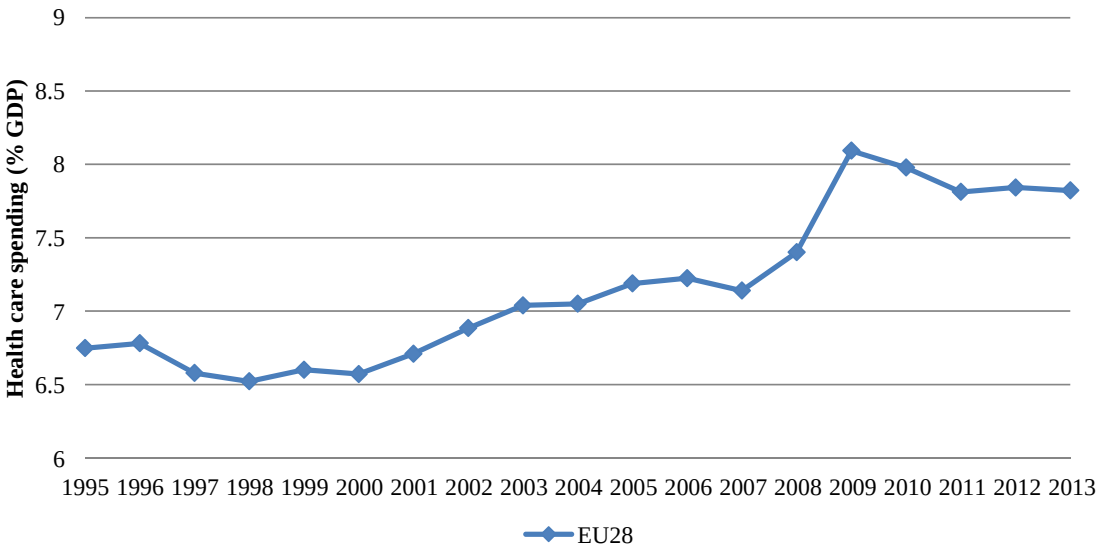

Figure 1.9: Health expenditure, public (% of GDP) – EU28
Source: Adapted from World Development Indicators Online Database: Health expenditure

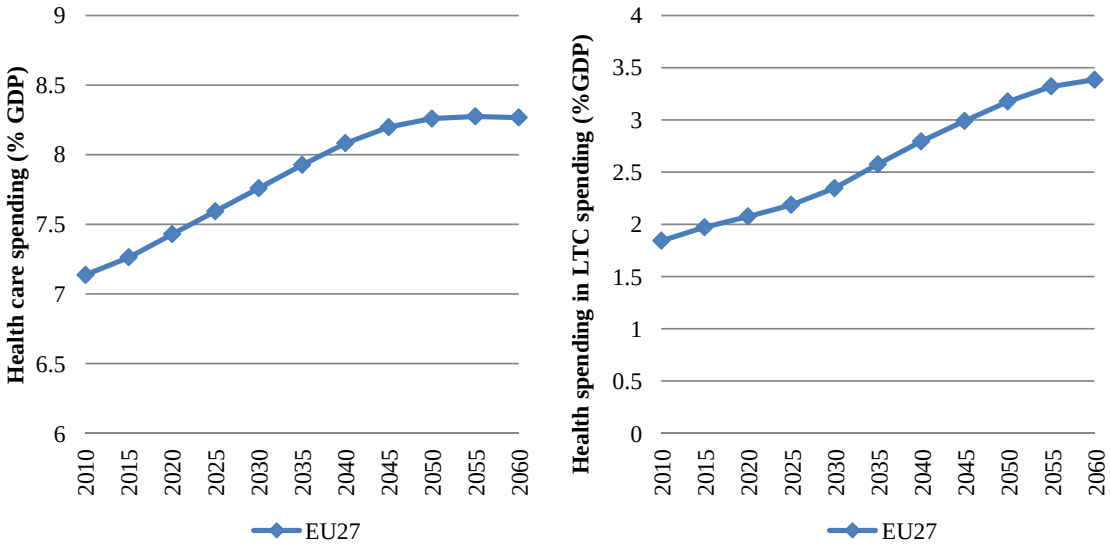

Figure 1.10: Health care and Long-term care spending as % of GDP– EU27 Projections
Source: Adapted from European Commission (2012), p. 354.

Immigration can in principle help offsetting these trends by increasing both the size of the working age population and the total fertility rate. Considering the EU, a positive net inflow[6] has been consistently observed starting from the second half of the 1980s (see European Commission 2014a).

In particular, new arrivals peaked in 2003 averaging well over a million per year. Following a sharp drop

[6]The aggregate net inflow for the Euro Area (EA) and the EU are the result of the sum of net migration flows in Euro Area countries and European Union Member States respectively.

during the global economic crisis, net migration flows picked up once again after 2011 and reached pre-crisis levels by 2013 – the last year for which data are available (see Figure 1.11[7]).

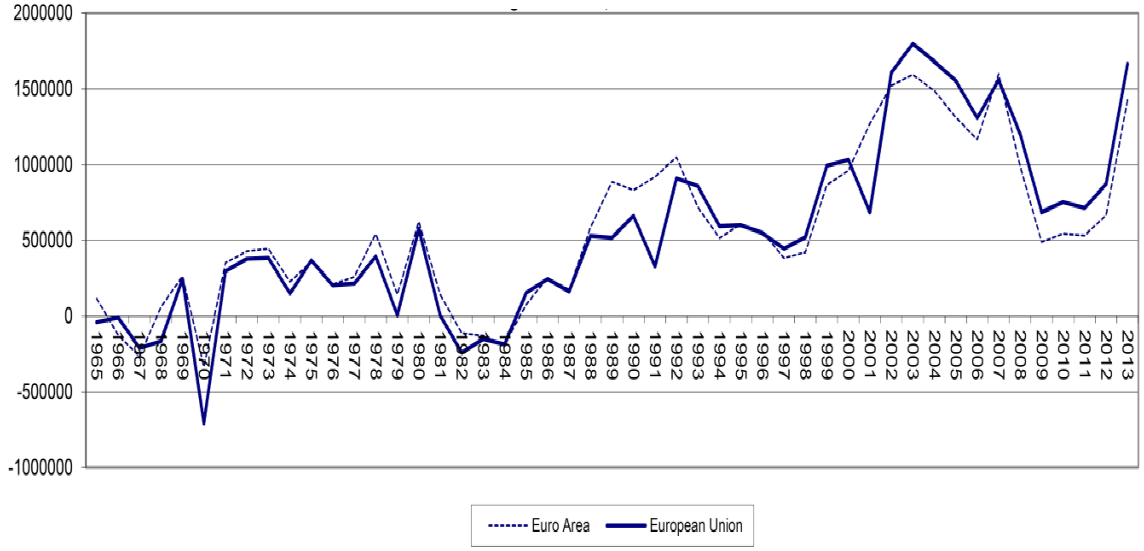

Figure 1.11: Net migration flows, 1965-2013
Source: European Commission (2014a), p. 14.

According to the most recent projections contained in the European Commission 2015 Ageing Report,[8] between 2013 and 2060 cumulated net inflows to the EU are expected to reach 55 million. The main destination countries will be Italy, the United Kingdom, Germany, and Spain, with a forecasted cumulated net inflow of respectively 15.5 million, 9.2 million, 7 million and 6.5 million migrants (see Table 1.1).

[7]Net migration is measured as the difference between the total population on 31 December and 1 January for a given calendar year, minus the difference between births and deaths (or natural increase).
[8]Projections estimates are carried out starting from EUROPOP2013 demographic projections by Eurostat.

Table 1.1: Projection of net migration flows – EU28
Source: European Commission (2014a), p. 16.

	Net migration ('000)						As % of total population		Cumulated (1000's)	Cumulated net migration as share of population in 2060
	2013	2020	2030	2040	2050	2060	2013	2060	2013-2060	
Belgium	61,2	80,2	80,9	69,8	46,8	42,1	0,5%	0,3%	3192	20,7%
Bulgaria	-2,9	-5,8	-5,8	5,3	3,7	0,6	0,0%	0,0%	-21	-0,4%
Czech Republic	-1,3	28,0	35,8	40,7	25,5	21,2	0,0%	0,2%	1441	13,0%
Denmark	21,2	18,9	19,9	16,3	10,5	10,0	0,4%	0,2%	755	11,5%
Germany	-1127	228,7	220,2	142,6	119,3	97,9	-1,4%	0,1%	7041	9,9%
Estonia	-2,7	-3,7	-2,2	0,6	0,6	0,0	-0,2%	0,0%	-49	-4,5%
Ireland	-32,4	-30,3	-12,1	4,8	16,7	15,1	-0,7%	0,3%	-208	-4,0%
Greece	-15,9	-22,3	-10,0	1,3	7,3	4,7	-0,1%	0,1%	-257	-3,0%
Spain	-310,9	-79,0	87,5	225,2	305,6	275,0	-0,7%	0,6%	6511	14,1%
France	52,8	90,2	91,2	84,0	74,2	66,8	0,1%	0,1%	3960	5,2%
Croatia	2,3	2,4	3,5	4,6	5,7	4,8	0,1%	0,1%	193	5,2%
Italy	1135,5	348,1	382,4	335,9	214,8	196,4	1,9%	0,3%	15511	23,4%
Cyprus	-0,6	-0,6	2,8	6,0	8,8	7,9	-0,1%	0,7%	214	19,0%
Latvia	-10,1	-14,3	-9,9	0,9	0,7	0,0	-0,5%	0,0%	-237	-16,9%
Lithuania	-16,8	-37,4	-21,1	1,0	0,4	0,0	-0,6%	0,0%	-605	-33,0%
Luxembourg	10,5	11,7	11,2	9,1	5,4	4,9	1,9%	0,4%	429	37,5%
Hungary	8,1	24,3	20,9	24,2	15,3	14,0	0,1%	0,2%	943	10,3%
Malta	1,6	1,6	1,5	1,4	1,3	1,1	0,4%	0,2%	69	14,4%
Netherlands	22,1	24,2	23,5	13,0	8,9	9,3	0,1%	0,1%	810	4,7%
Austria	55,5	51,3	51,9	41,9	27,2	24,8	0,7%	0,3%	1994	20,6%
Poland	-15,6	2,9	-0,9	25,4	29,5	11,6	0,0%	0,0%	606	1,8%
Portugal	-40,3	0,3	9,2	11,9	8,3	7,9	-0,4%	0,1%	219	2,7%
Romania	-9,2	0,4	-24,7	11,6	7,1	2,4	0,0%	0,0%	-35	-0,2%
Slovenia	0,8	4,1	4,6	5,5	5,4	4,5	0,0%	0,2%	224	11,0%
Slovakia	2,0	3,0	2,5	4,7	4,7	2,4	0,0%	0,1%	162	3,5%
Finland	17,2	22,0	21,7	17,7	9,6	8,9	0,3%	0,1%	812	13,0%
Sweden	65,8	55,3	56,0	49,1	34,7	31,2	0,7%	0,2%	2273	17,4%
United Kingdom	165,0	172,1	203,3	209,3	190,2	171,2	0,3%	0,2%	9162	11,4%
Norway	39,2	53,4	51,8	42,3	24,9	22,4	0,8%	0,3%	1967	24,1%
EU	35,9	976,3	1244,1	1363,8	1188,3	1036,7	0,0%	0,2%	55107	10,5%
EA	-180,6	715,1	957,0	976,3	865,8	769,6	-0,1%	0,2%	40395	11,8%

Whether migrants help to rejuvenate Western countries ageing population and to mitigate the shrinking of working age population ultimately depends on their age structure and fertility behavior. In the next section, we will review the main differences in fertility patterns among the migrant and the native population in destination countries, and discuss to what extent immigration represents a viable solution to the host countries ageing workforce.

1.3 Migration and demographic developments

Migrants are typically younger than the host country population when they arrive and in the short run they contribute to rejuvenate the host country's labor supply. In the medium to long run migrants will age as

well, and new immigration will be required to counteract population ageing. One key factor that determines to what extent the host country's age structure is affected by immigration in the medium or long term is the relative fertility rate of the immigrant population and of their descendants compared to the native population.

Fertility is deeply linked to factors such as education, labor market participation, ethnicity and more generally to migrants' integration in the host country. In this section we compare the fertility profiles of the immigrant and native population over time and examine the three main mechanisms uncovered to explain the fertility behavior of migrants before and after they leave their country of origin.

The overall evidence suggests that migrants assimilate to the destination country after some time spent in the host country, and that the reproductive behavior of second-generations is more similar to that of natives compared to the behavior of first-generations.

To understand the importance of immigration in shaping future population dynamics, Table 1.2 reports the share of foreign born and foreign nationals in the total population for selected countries in Europe and highlights the sharp increase in immigration experienced by Western European countries over the last two decades. Table 1.3 (taken from Sobotka 2008) displays instead the share of births to immigrant or foreign-nationality women in eleven European countries with a recent history of significant immigration arrivals. Almost all countries in the Table have experienced a steady increase in the share of births to immigrant or foreign-national women since the mid-1990s. Southern European countries in particular report a sharp increase in fertility which is at least partly due to the high immigration inflows they experienced in the 1990s and early 2000s.

Table 1.2: Foreign-born and Foreign national population over total population for selected countries in Europe
Source: Adapted from OECD (2014), p. 25.

	Share of Foreign-born				Share of Foreign nationals			
	1995	2000	2005	2011	1995	2000	2005	2011
Austria	..	10.4	14.5	16	8.5	8.8	9.7	11.5
Belgium	9.7	10.3	12.1	14.9	9	8.4	8.6	10.6
Czech Republic	..	4.2	5.1	6.4	1.5	2	2.7	4.1
Denmark	4.8	5.8	6.5	7.9	4.3	4.8	5	6.4
Estonia	..	18.4	17	15.7	..	20.8	18.9	16.4
Finland	2.1	2.6	3.4	4.9	1.3	1.8	2.2	3.4
France	..	10.1	11.3	11.6	..	..	..	6
Germany	11.5	12.5	12.6	13.1	8.8	8.9	8.2	8.5
Greece	..	..	..	6.6	..	2.8	5	6.8
Hungary	2.7	2.9	3.3	4.7	1.4	1.1	1.5	2.1
Iceland	..	6	8.3	10.9	..	3.1	4.7	6.6
Ireland	..	8.7	12.6	16.8	..	..	..	11.7
Italy	..	..	..	9	1.3	2.4	4.6	8
Luxembourg	30.9	33.2	36.5	42.1	33.8	37.7	41.1	44.3
Norway	5.5	6.8	8.2	12.4	3.7	4.1	4.8	8.2
Netherlands	9.1	10.1	10.6	11.4	4.7	4.2	4.2	4.7
Poland	..	..	..	1.8	..	..	..	0.1
Portugal	5.2	5.1	7	8.3	1.7	2	4.1	4.2
Slovak Republic	..	..	4.6	..	0.4	0.5	0.5	1.3
Slovenia	..	..	..	11.2	..	..	..	4.9
Spain	..	4.9	11.1	14.6	..	3.4	9.5	12.4
Sweden	10.6	11.3	12.5	15.1	6	5.3	5.1	6.9
Switzerland	21.4	21.9	23.8	27.3	18.9	19.3	20.3	22.4
United Kingdom	6.9	7.9	9.4	12	3.4	4	5.1	7.6

Table 1.3: Proportion of births to immigrant women and to parents of foreign nationality, selected years (different definitions)
Source: Sobotka (2008), p. 230.

Country	Period	Births to immigrant women (%)	Births to immigrant women, 1st + 2nd gen. (%)	Births to mothers with foreign nationality (%)	At least one parent foreign national (%)	Source
Austria	2000			13.5		Kytir 2006
	2005			11.7		Kytir 2006
Belgium (Flanders)	2003–04	16.8		12.4		VAZG 2007
Denmark	1999–03	13.5		11.1		Statistics Denmark 2004
England and Wales	1980	13.3				Schoorl 1995
	1995	12.6				ONS 2006
	2005	20.8				ONS 2006
	2006	21.9				ONS 2007
France	1991–98	12.4				Toulemon 2004
	1998		21		14.5	Prioux 2005 Tribalat 2005
	2004	15		12.4	18.2	Prioux 2005, Héran and Pison 2007
Germany	1980			15		Schoorl 1995
	1985			11.2		Schoorl 1995
	1995			16.2		Statistisches Bundesam 2006
	2004			17.6		Statistisches Bundesam 2006
Italy	1999			5.4		ISTAT 2007
	2004			11.3		ISTAT 2007
	2005			12.2		ISTAT 2007
The Netherlands	1996	15.5	21			CBS Statline 2006
	2005	17.8	25.5			CBS Statline 2006
Spain	1996			3.3	4.5	
	2000			6.2	7.9	INE 2006 and 2007, Roig
	2004			13.7	16.9	Vila and Castro Martín 2007
	2006			16.5		
Sweden	2005	19.5		11.8		Statistics Sweden 2006
Switzerland	1980			15.3		Coleman 2003
	2000			22.3		Coleman 2003
	2005			26.3		SFSO 2006

The migration and fertility literature has studied the main factors that influence migrants' fertility behavior: age at migration, education level, fluency in the host country's language, as well as the motives behind the migration decision, the time spent in the host country and cultural heritage have all been shown to play an important role.

Three main mechanisms have been studied in detail: selection, disruption and adaptation (for a comprehensive overview see Adserà and Ferrer 2015). The literature focusing on selection (Subsection 1.3.1) emphasizes that individuals who migrate differ significantly from the non-migrant population in terms of socio-demographic and economic characteristics. Such differences contribute to shape immigrants' fertility patterns once in the host country. Studies focusing on adaptation (Subsection 1.3.2) point out that migrants'

fertility behavior progressively assimilates to that of natives as time spent in the host country increases. Finally, the literature on disruption (Subsection 1.3.3) emphasizes instead the presence of a drop in fertility right before or after migration occurs: migrants may decide to postpone childbearing until they settle in the new country, given that migration may temporarily separate partners. Migrants may also delay childbearing given the uncertainty about the economic conditions they will face in the host country.

These mechanisms are interrelated and they may all be at work at some point over the immigrant's fertility cycle, and the literature has not yet reached a general consensus on the extent to which immigrants' fertility assimilation mechanisms are in place and on the relative importance of these mechanisms.

1.3.1 The selection hypothesis

The first hypothesis we consider suggests that immigrant women are a self-selected sample of the country of origin population in terms of their level of education, potential income, age, etc. This may make them different from women left behind when it comes to fertility and childbearing behavior. The empirical evidence surveyed in this section indicates that immigrants' level of education and the timing of their migration decision deeply affect their fertility outcomes in destination countries.

Kahn (1988) is one of the first systematic analyses of fertility differentials, and in particular of the role played by the selection into emigration. Using individual level data from the 1980 US Census and aggregate data from origin countries, she performs a simple covariance analysis and her findings highlight the role played by sending-country fertility levels in determining migrants' fertility behavior. Migrants from high-fertility countries report, on average, higher fertility once in the host country compared to migrants from lower fertility countries. This positive relationship, however, becomes weaker when positive self-selection is in place: when immigrants are positively selected in terms of education, the influence of the high-fertility norms is weaker and their fertility tends to be lower. Kahn also examines the fertility behavior of child and adult immigrants separately and finds that adult immigrants have higher mean levels of fertility which are partly explained by the fact that the latter tend to be older and somewhat less educated than child immigrants.

Using data from the 1970 and 1980 US Censuses and focusing on high fertility sending countries located in the Middle East, Asia, Latin America and the Caribbean, Blau (1992) finds instead evidence of a broadly similar fertility behavior between immigrant and native women. If anything, her results indicate that, immigrant women observed in 1970 have a slightly lower number of children than their native counterparts. This result is in turn explained on the one hand by the positive selection of immigrants on education with respect to the population in the country of origin, and by the fact that highly educated immigrant women tend to have less children than native women with comparable characteristics. At the same time, she finds indirect evidence for a higher demand for child quality among immigrant women than among native ones. A more recent paper by Avitabile et al. (2014) also uncovers migrants' preferences for child quality rather than quantity and a consequent reduction of immigrants' fertility. The paper studies the effect of immigrants' citizenship status on their fertility behavior, combining data from the German Microcensus, the German Health Interview and Examination Survey for Children and Adolescents and the German Socioeconomic Panel. Their analysis exploits the change brought about by 2000 nationality law, which introduced a ius soli system, and made it much easier for immigrants and their children to acquire German citizenship. The authors find that birthright citizenship reduces significantly immigrants' fertility, while at the same time improving children

healthcare outcomes, in particular by reducing the gap in body mass index between children of foreign and German citizens.

Evidence of migrants' positive selection on education is also uncovered by Choi (2014). The novelty of her study lies in combining nationally representative datasets from Mexico and the United States: the 2002 Mexican Family Life Survey and the 2002 and the 2006-2010 US National Survey of Family Growth. Taking pre-migration fertility rates into account, she estimates the fertility rate of Mexican Americans and finds some evidence of positive migrants' selection in terms of overall fertility rates, despite the fact that migrants appear to be positively selected on education.

1.3.2 The adaptation hypothesis

Even if migrants are a selected group compared to both the source and destination country populations, their behavior is likely to change once they have settled in the new country. Immigrants may adapt and adjust their initially higher fertility rate to that of the native population over time. Research on fertility assimilation processes has addressed the issue following three different approaches: by distinguishing between first and second generations of immigrants (Stephen and Bean 1992, Parrado and Morgan 2008, Dubuc 2012), by focusing on foreign born migrants who migrated as children (see e.g. Kahn 1988, Bleakley and Chin 2010, Adserà et al. 2012), or by studying the impact and strength of cultural and ethnic 'ties' over time (Fernández and Fogli 2009, Blau et al. 2013). The findings in the literature indicate that second generations and child immigrants have a fertility behavior closer to that of the native population compared to first generations. Country of origin characteristics, like language and cultural heritage, may also contribute to the gap between immigrants and natives, and to the assimilation speed.

For the US, Parrado and Morgan (2008) test the fertility assimilation hypothesis for Hispanic and Mexican immigrants and estimate fertility by computing the average number of children ever born for three immigrant generations of Hispanic and Mexican women born between 1885 and 1964. They combine data from the 1940 to the 1970 Census with data from the 1986, 1988, 1994, 1995, 1998, 2000, 2002, and 2004 June Current Population Survey and draw information on fertility levels in Mexico from the 1990 and 2000 Mexican Census. The authors compare the fertility of Hispanic (and in particular Mexican) women by five-year birth cohorts and belonging to three different groups (i.e. foreign-born women, native-born women with at least one parent foreign-born and native-born women with both parents native born) with fertility of native white women. Their cohort and generational analysis reveals a declining trend in immigrants' fertility, which is consistent with the assimilation hypothesis. Mexican immigrant women are found to have significantly lower fertility level than non-migrant Mexican women. Evidence of convergence to white women fertility across immigrants' generations is also found. Using data from the 1970 and 1980 US Census, Stephen and Bean (1992) also focus on Mexican women's fertility trends in the US considering both first and second generation migrants. The authors find evidence consistent with assimilation across generations to non-Spanish-origin white women fertility patterns, that is with US born Mexican immigrants having lower fertility than the first generation born in Mexico.

Evidence of fertility assimilation of successive generations of immigrants to the fertility profile of natives also emerges from European studies. Dubuc (2012) studies fertility rates of second generation immigrants in the UK and compares them to those of their parents and to those of recent immigrants from the ethnic group.

Using Labour Force Survey data for the period 2001- 2006 and building a measure of births to mothers of childbearing age up to 14 years before the survey, she finds evidence of fertility differentials by ethnic groups. At the same time though, she uncovers a convergence towards lower UK average fertility levels. In particular, second generation Pakistani and Bangladeshi immigrant women display lower total fertility rates than foreign-born immigrants from the same high-fertility countries of origin across all age cohorts, with marked differences for women below their 30 years of age (see Figure 1.12). The decrease in the fertility gap over time is found to be the result of both a decline in fertility of immigrants originating from high-fertility countries and even lower fertility rates of second generation immigrants. The latter group displays fertility patterns which are closer to the UK average than to those of recent immigrants and this suggests intergenerational assimilation and a possibly significant role for the country in which childbearing takes place in determining the fertility behavior of both generations.

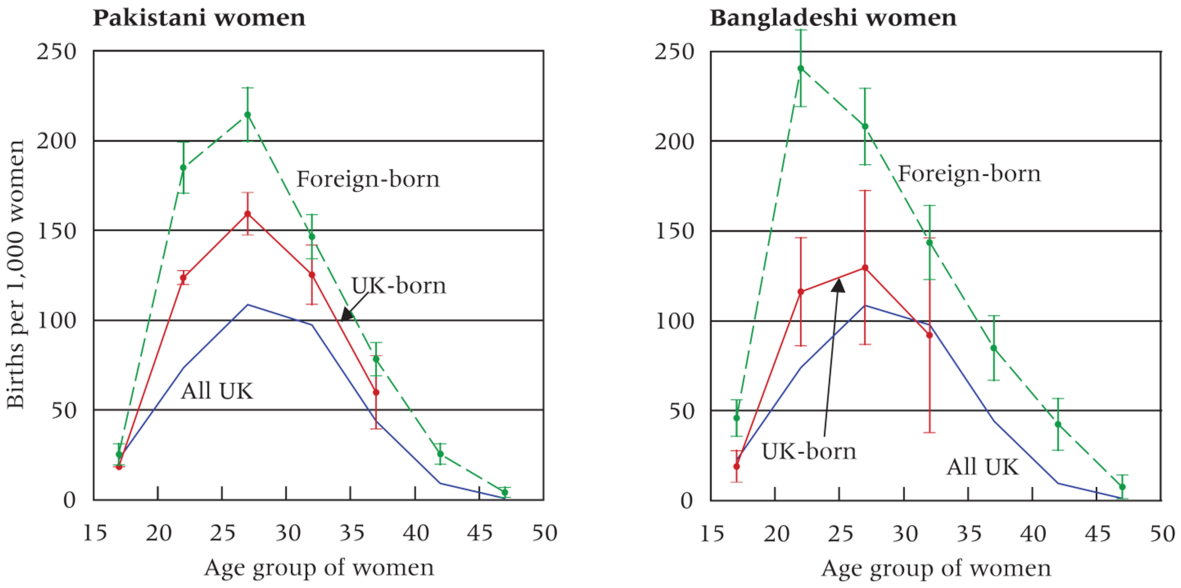

Figure 1.12: Age-specific fertility rates of all women in the UK and of UK-born and immigrant Pakistani and Bangladeshi women, average 1987–2006
Source: Dubuc (2012), p. 361.

In an interesting paper, Adserà et al. (2012) focus instead on the fertility behavior of women who migrated as children to Canada, the UK and France. Focusing on adaptation mechanisms, they perform a Poisson regression analysis to estimate the main determinants of the number of live births per woman. Their results are consistent with the assimilation hypothesis and point out the limited role played by the immigrants' country of origin in explaining fertility. Moreover, they find that time spent in the destination country has a heterogeneous effect across origins.

The heterogeneity in fertility behavior driven by differences in migrants' countries of origin has been explained in the literature by the cultural and linguistic characteristics of the sending countries. Bleakley and Chin (2010) investigate the interrelation between English proficiency and social integration of immigrants in the US using micro-data from the 2000 Census. Interestingly, they find that immigrants who are more fluent in English have fewer children than less fluent immigrants.

Besides language, immigrants' cultural heritage may alter or delay the process of fertility assimilation through the intergenerational transmission of fertility behavior. Fernández and Fogli (2006) try to disentangle the effects of personal-family related experiences (e.g. the number of siblings of a woman) from those driven by source country heritage. They employ US data from the 1977, 1978, 1980, 1982–1987 General Social Survey and use lagged values of total fertility rate by country of ancestry as a proxy for cultural heritage. The authors find a positive and significant impact of both family fertility experience and cultural heritage on fertility behavior of US born immigrant women. In a related paper Fernández and Fogli (2009) use data from the 1970 US Census and find a similar effect of the migrant's culture of origin on the fertility behavior of second generations.

Blau et al. (2013) go a bit further and allow the cultural proxy to vary across birth cohorts of second generation immigrants in the US. To this end they use the 1995-2006 March Current Population Survey and exploit information from the 1970–2000 Census to build a set of parental characteristics, so that individuals from the same ancestry have different cultural proxies depending on their age. They examine the effect of the characteristics of each parent on their US-born descendants' in terms of labor market, educational and fertility outcomes. Their result indicate that second generation women's education, fertility, and labor supply are significantly positively affected by the corresponding immigrant generation's characteristics, even within an overall pattern of assimilation. Moreover, fertility and labor supply behaviour appear to be more strongly influenced by the mother's country fertility and labor supply characteristics, whereas educational attainment is more strongly influenced by the norm prevailing in the father's country of birth.

1.3.3 The disruption hypothesis

The decision to migrate might affect reproductive behavior, for instance because a migrant decides to postpone childbearing after arrival into the new country due to a temporary negative income shock. Migrants may also be forced to postpone childbearing due to separation from the spouses around the time of migration (see Blau 1992).

Disruption mechanisms can be observed when a decline in fertility occurs right before or right after migration and it may or may not be followed by a catch up. Assessing the disruption hypothesis empirically presents significant challenges as it requires information on pre-migration fertility patterns and because the migrant population is likely to be a non-randomly selected subgroup (Adserà and Ferrer 2015). US studies report evidence of migrants interrupting fertility around the time of migration, while results for European countries vary substantially by destination.

In an early study, Kahn (1994) exploits information from the 1980 US Census and the 1986 and 1988 June Current Population Surveys on the actual number of children ever born and the number of children that women expect to have in the future. She runs a synthetic cohort analysis to trace the fertility pattern of a fixed cohort of immigrants in the 1980s and then compares the results with migrants' fertility expectations. She explains the raise in the immigrant-native fertility gap in the 1980s as a consequence of a sharp decrease in natives' fertility compared to immigrants' rather than a rise in migrants' fertility. The fertility gap is mainly explained by socio-economic and demographic differences between the migrant and native populations in terms of skills, income and ethnicity. However, synthetic cohort analysis reveals that part of the fertility differential is driven by a disruption followed by catch up effects in fertility behavior and the analysis of fertility expectations

confirms this result: recent immigrants are found to have had lower than average fertility compared to older immigrants' cohorts and natives, however they are found to compensate for this gap by expecting to have more children in the future. Blau (1992) also finds evidence of disruption in the fertility profiles of US immigrants, and attributes it to demographic factors such as delayed marriages or temporary separation of the spouses due to migration, rather than to economic factors such as temporary income loss of the spouses. Choi (2014) analyses pre-migration fertility of Mexican immigrants to the US and compares them with the non-migrant population in the same birth cohort. She predicts migrants' behavior and finds evidence of disruption in fertility right before migration. Migrants seem to partially catch up for the initial loss in fertility once they are in the destination country, but she finds evidence of a long term effect of the initial shock.

In Europe, Andersson (2004) uses Swedish longitudinal register data on a sample of 446,000 foreign-born women who ever lived in Sweden before 1999 and finds evidence of a before-migration disruption in fertility, which is followed by a right-after-migration catch up. Toulemon (2004) and Toulemon et al. (2008) also find evidence of disruption patterns in fertility for immigrants to France. Toulemon et al. (2008) use data from The Study of Family History survey which was conducted within the 1999 General Population Census and estimate total fertility by taking into account fertility both before and after migration to identify potential discontinuities around the time of migration. The level of fertility measured in immigrants' countries of origin is found to be higher than that of immigrants' in France and the fertility differential between migrants and non-migrants in the country of origin is found to be even larger than the immigrant-native gap observed in France. Different results emerge instead in a study carried out by Garssen and Nicolaas (2008) on migrants to the Netherlands. Using information from the Dutch municipal population register data for 2005, they find that Turkish and Moroccan women display higher fertility rates than those reported in their country of origin; migration for family formation reasons might explain this trend. Female migration from Turkey and Morocco, in fact, is mainly motivated by family reunification purposes, given the traditional role of women in these source countries.

Similar results are obtained also by Mayer and Riphahn (2000) who investigate the presence of assimilation and/or disruption patterns in the fertility of immigrants to Germany.[9] To this end, they use the 1996 wave of the German Socio Economic Panel (GSOEP) and apply count data models to estimate migrants' fertility behavior. They find no evidence in favor of the disruption hypothesis, and they uncover instead relatively high fertility rates for migrants after arrival compared to natives. At the same time, they find that migrants' total fertility decreases with the share of fertile time they spend in Germany.

Open issues

Paucity of data is one of the main constraints to an exhaustive analysis of immigrants' fertility. In particular, detailed information on immigrants' lifetime events such as age at migration, complete birth histories (i.e. before and after migration), return migration and the socio-demographic characteristics of their families of origin would allow for a more comprehensive analysis of migrants' demographic trends.

[9]The study identifies as immigrants the foreign born with non German citizenship and as natives the German born with German nationality.

Overall, and despite current limitations in fertility estimates and projections, the evidence we have reviewed so far suggests that migrants tend to assimilate to the destination country fertility patterns after some time spent in the host country. Immigrants' younger age and relatively high fertility rates may help rejuvenating the host countries populations in the short run. However, the assimilation of migrants to the host country fertility patterns means that the size of the immigrant inflow required to fully compensate for the host countries ageing workforce is likely to be politically too large and immigration alone cannot be the only answer to population ageing in Western countries.

1.4 Permanent versus temporary migration

To fully understand the demographic and fiscal impact of immigration on the host countries, we must consider whether migration is permanent or temporary. If immigration is mainly permanent, older migrants will contribute to the ageing of the host country population in the long run, and to an increase in the demand for health and long term care services. If, instead, temporary migration occurs, it is important to understand whether those who leave the host country are systematically different from those who remain in terms of, for example, their age, skill level and labor market outcomes. Temporary migrants may either return permanently to their country of origin, they may engage into subsequent moves back and forth from their origin country, or they can further migrate to other destinations after some time in the host country (see e.g. Nekby 2006).

Non-permanent migration plays an important role in many destination countries. Figure 1.13 - taken from Dustmann and Görlach (2015a) - plots the estimated share of immigrants who leave the host country against the number of years since migration and illustrates some interesting patterns for two main groups of destination countries: i) Anglo America, Australia and New Zealand and ii) Europe. The picture highlights how European countries display significantly higher outmigration rates compared to the more traditional destination countries. In particular, almost 50% of immigrants to Europe have already left their first destination country ten years after arrival, while this is true for only about 20% of immigrants to Anglo America, Australia and New Zealand.

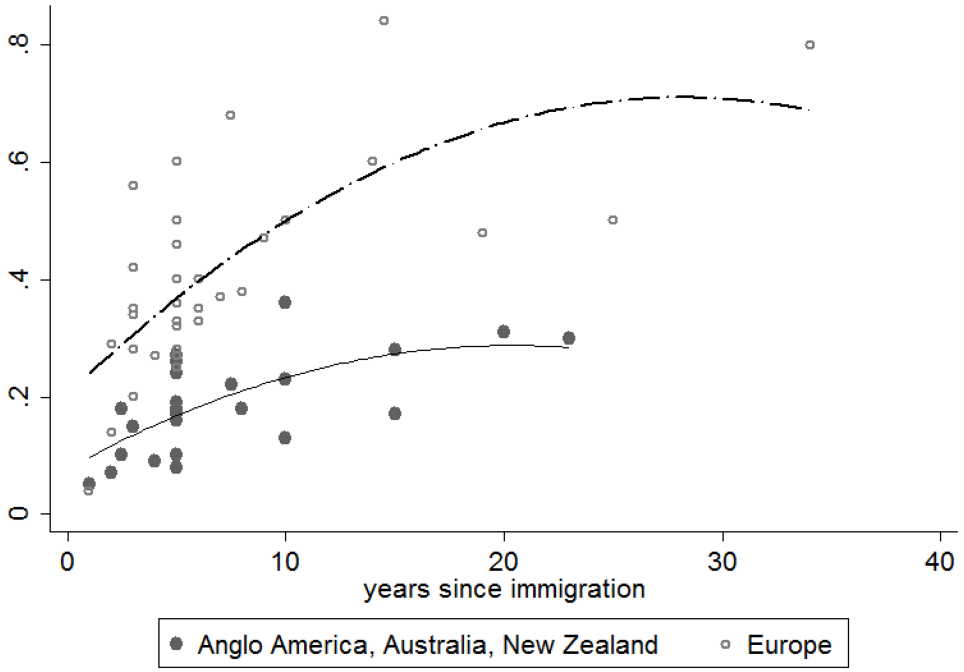

Figure 1.13: Estimated outmigration rates by host region
Source: Dustmann and Görlach (2015a)

Ignoring the possibility of temporary migration may thus bias our estimates of immigrants' economic performance in the host country labor market and lead to unreliable forecasts of their net fiscal contribution to the host country economy. Until recently, the literature has mainly considered migration as a permanent phenomenon (see e.g. Chiswick 1978 and Borjas 1985). Starting in the late eighties, however, scholars have begun to investigate why migrants out-migrate from destination countries (for a comprehensive review, see Dustmann and Görlach 2015a) and who are the return migrants, addressing the selectivity in the return migration decision and its effects on the host economy (see e.g. Borjas and Bratsberg 1996, Dustmann et al. 2011).

1.4.1 Why do migrants return?

In simple neo-classical models the migration decision only depends on differences in relative wage levels net of relocation costs and on expectations of higher earnings in the country of destination. Within this framework, the individual migrates assuming to remain permanently in the destination country and if return migration occurs, it can only be the result of a failed migration experience, meaning that the migrant wrongly assessed the costs and the benefits of migration. More recent contributions, however, have introduced models of endogenous return migration decisions, where the latter is the result of a utility maximization strategy planned in advance, covering the whole life cycle of the migrant. In this respect, Dustmann and Görlach (2015a) provide a careful discussion of the motives behind return migration and develop a general theoretical model of temporary migration decisions which encompasses and synthetizes most of the theoretical work developed to date (see e.g. Colussi 2003, Bellemare 2007, Thom 2010, Kirdar 2012, Lessem 2013, Nakajima 2014).

The authors identify four main factors that are likely to affect a migrant's return decision: i) a higher preference for consumption in the country of origin than in the host country, ii) a lower price level in the migrant's origin country compared to the host country, iii) migrant's accumulation of human capital in the host country given initial higher wages in the host country, but a higher rate of return for skills in the country of origin, iv) the possibility for the migrant to accumulate human capital more quickly in the host rather than in the origin country.

The framework proposed by Dustmann and Görlach (2015a) can also be extended to describe more complex forms of temporary migration, such as repeat migration. Repeat migration can be introduced for instance by letting migrant's relative preferences for the host compared to the origin country change with time spent away from the country of origin (Nakajima 2014).[10] Dustmann and Görlach (2015a) also point out that unforeseen shocks may reverse the migrant's economic prospects. Similar structural dynamic models of migrant's decision problem have been developed, for instance, by Colussi (2003), Thom (2010), and Lessem (2013), in which time varying locational preferences determine location choices.

1.4.2 Who are the return migrants?

The second important question that needs to be addressed is whether there are systematic differences between permanent and temporary migrants. This potential heterogeneity is particularly relevant as it might have important consequences for the host country demographic and fiscal trends. In particular, several papers have emphasized that if outmigration is selective it may affect the analysis of immigrants' earnings assimilation in the host country (see e.g. Borjas 1989, Borjas and Bratsberg 1996, Lubotsky 2007, Dustmann and Görlach 2015b), which in turn matters for their fiscal contribution.

In their pioneering contribution, Borjas and Bratsberg (1996) apply Roy's selection model to explain selective outmigration. Return migration might occur both as the result of the migrants' having planned their return in advance after having reached a savings target in the host country, or as a result of an unforeseen shock which translates in earnings in the host country that are lower than expected. The main prediction of the model is that selection at the outmigration stage is likely to strengthen the original selection of immigrants to the destination country. In particular, the direction of the skill-selection of returning migrants depends on whether migrants are positively or negatively selected when they first arrive in host country: if the original sample of immigrants is positively selected, then those who stay are the best out of the best, while if the original sample is negatively selected, then those who remain end up being the worst out of the worst.

While Borjas and Bratsberg (1996) implicitly assume fixed migration duration for all temporary migrants, Dustmann and Görlach (2015b) extend the model by letting a migrant's gain in human capital vary with the time spent in the host country. Dustmann et al. (2011), starting from a dynamic Roy model, have also extended Borjas and Bratsberg (1996) by allowing for multiple skills.

Systematic empirical evidence on the selectivity of temporary – and especially repeat - migration is scarce and the main reason is the lack of longitudinal data providing information on the exact timing of the migration moves, since - for instance - in surveys time since immigration is often not clearly linked to the first or more

[10] See also e.g. Kennan and Walker (2011) for a sophisticated dynamic model of internal migration allowing for subsequent migrations.

recent arrival, and most of the existing data contain information on only one migration step. Nevertheless, recent improvements have allowed researchers and policy makers to deepen their understanding of temporary migration and of its effects into the host country. In particular, some survey data now report retrospective histories of immigrants (e.g. the Mexican Migration Project dataset) and administrative data, especially in Nordic European countries, are becoming more and more accurate and often include information on year of emigration, the countries of destination, and the migration trajectories back and forth from these countries over time (Dustmann and Görlach 2015b).

Evidence on outmigration patterns and selectivity has shown that differences in the probability to return depend on migrants' country of origin, in particular on the geographic and cultural distances between the source and host country and on the different motive to migrate, i.e. whether the focus is on labor migrants, asylum seekers or family migrants (see e.g. Jasso and Rosenzweig 1982, Edin et al. 2000, Klinthäll 2008, Bijwaard 2010). In this respect, using combined Dutch register data at the National and Municipal level, Bijwaard (2010) finds that non-Dutch labor migrants are the most flexible in terms of mobility and display relatively higher probability of leaving the host country compared to family migrants. Once they out-migrate, however, both labor and family migrants display relatively high chances of migrating back to the host country.

The literature also reports evidence on the relation between educational attainment and the propensity to out-migrate. Using German data from the German Socio-economic Panel (GSOEP) and IAB data on Turkish migrants in Germany, Dustmann (1996) finds that years of schooling increase the probability that immigration is intended to be permanent. However, higher education decreases the residual time spent in the country for those who intend to return.

In a more recent study, also drawing on the GSOEP, Constant and Zimmermann (2011) find that more than 60% of the migrants belonging to the countries with which Germany had guest-worker agreements in place[11] engage in repeat and circular migration and that being highly-educated reduces the number of exits, while being a male and owning a German passport positively affects the number of exits from Germany. Constant and Zimmermann (2012) show also that remittances and family considerations are among the main reasons inducing a return migrant to go back to the host country and that having received vocational training in Germany encourages circular migration. The latter effect may be explained by the relatively high transferability and higher returns to vocational education both in the destination and in the source country (Constant and Zimmermann 2012). A positive effect of education on the probability of return is found by Reagan and Olsen (2000), who use longitudinal data from the 1979 cohort of the US National Longitudinal Survey and find evidence of the responsiveness of return migration to migrants' education level, earnings, and to cultural and linguistic ties to the US and the country of origin. In particular, migrants with higher earnings potential are less likely to out migrate, though obtaining a college degree increases the possibility of return. Moreover, the authors find that time since migration has a negative effect on the probability of return, while the opposite is true for age at migration.

The non-random return of migrants to the country of origin has important consequences for the assessment of their performance in the host country's labor market and of their likely impact on the host country's welfare state. Borjas (1989) uses information from the 1972–1978 Survey of Natural and Social Scientists

[11] In both Constant and Zimmermann (2011) and (2012) the focus of the analysis is on the sample of guestworkers from Greece, Italy, Spain, Turkey and the former Yugoslavia.

and Engineers to estimate outmigration rates from the US and finds evidence of lower average earnings of return migrants with respect to permanent migrants to the US. Lubotsky (2007) takes a more systematic perspective linking information from administrative sources, i.e. the US Social Security records, to data from the US Survey of Income and Program Participation and to the Current Population Survey to construct migrants' employment and earnings histories. He finds evidence of both selective return migration and of circular migration to and from the US. His results indicate that returnees are characterized by lower than average earnings, and not accounting for this important stylized fact leads to a significant upward bias in the estimates of immigrant earning assimilation in the US. Importantly though, he finds also evidence of selective repeat migration of low-wage immigrants. Not accounting for this factor has led to a persistent over-estimation of the decline in earnings among subsequent cohorts of immigrants arriving between 1960 and 1980.

Open issues

The issue of the temporariness of migration and the potential selectivity in outmigration open up future research avenues on important aspects that still need to be addressed. One recently emerging stream of literature which paves the way for further studies and requires demanding analytical methods, investigates immigrants' assimilation paths in destination countries modelling migrants' migration plans in conjunction with their economic decisions, including labor supply and human capital investments (Adda et al. 2015, Dustmann and Görlach 2015a).

1.5 The fiscal effect of immigration

Both demographic developments in the immigrant and native populations (see Section 1.3), as well as the mobility of the immigrant populations, through various forms of return and circular migration (see Section 1.4) must be taken into account when studying the fiscal impact of immigration on the host country. This topic has received considerable interest over the past few decades, and the recent financial crisis has contributed to making this debate even more heated.

The characteristics and preferences of a country's citizens determine its public budget constraint via tax rates corresponding to different levels of government spending. Where a country stands on the government budget constraint ultimately depends on the economic policy decisions which are affected by institutional factors (Preston 2014).

Immigration may impact the public finances of the host country by injecting new potential workforce into the labor market and changing the age composition of the host country population. The host country fiscal system may thus benefit from immigrants' tax payments, but also face a rise in the demand for public services. Immigration may ultimately affect the fiscal capacity of the already present population and the cost of provision of already existing services.

The literature on the potential fiscal effects of migrants on the ageing Western world has followed a variety of different approaches. Two broad groups of studies can be identified. A rich stream of research has addressed the issue from a static perspective: some studies have restricted their attention to immigrants' reliance on the host country welfare state (see e.g. Hansen and Lofstrom 2003, Riphahn 2004, Bratsberg et al. 2010,

2014) while others have tried to assess the net fiscal impact of immigration by simultaneously considering the taxes paid and the benefits received by immigrants (see e.g. Dustmann, Frattini, and Halls 2010, Dustmann and Frattini 2014). Several other papers instead have modelled the impact of immigration using dynamic frameworks (see e.g. Auerbach and Oreopoulos 1999, 2000, Lee and Miller 2000, Storesletten 2000, 2003, Collado et al. 2004).

Static models provide an accurate description of the impact of immigration at a given moment in time, but in general they will not be able to offer much guidance outside the specific case being considered. Dynamic models, especially those built around the generational accounting technique, allow for more general analyses, but rely on a set of highly specific assumptions the realism of which is hard to assess.

Overall, immigrants' effect on the host country fiscal system is found to depend on the characteristics of the immigrant population in terms of education, age structure and income. While the literature so far has found heterogeneous results when it comes to the effect of low-skilled immigration on government budget balances, inflows of highly skilled, young migrants have been found to represent a net gain for the host country, although the size of the effect varies depending on the host country characteristics. The positive impact of immigrants is larger in those countries characterized by flexible labor markets and by a relatively small size of the welfare state.

In this section we present the main findings in the literature based on static frameworks (Subsection 1.5.1) and then discuss the results obtained in dynamic analyses (Subsection 1.5.2).

1.5.1 Static frameworks

Static analyses typically focus on how current immigrants affect the host country public finances. A first group of studies compares the utilization of public services of immigrants and natives, and how they evolve over time. A second group of studies is based on calculating the tax revenues collected from immigrants and the cost of the welfare benefits and public services they receive from the government in a given period. This information is then used to assess the net position of the migrant population with respect to the government budget. This is an accounting exercise which requires important assumptions to be made, but it does not rely on predictions about future contributions of current and future cohorts of immigrants (see e.g. Dustmann and Frattini 2014).

Labor market institutions and the generosity of the welfare state affect the fiscal impact of immigration. Less flexible labor markets and more generous welfare states might well lead to a negative selection of immigrants in terms of skills, and this might result in an overall negative fiscal impact of immigration. In what follows we report the main findings from different studies focusing on a group of European countries characterized by very different welfare systems such as Norway, Sweden and Germany, which restrict their attention to immigrants' reliance on welfare and highlight significant differences in immigrants' welfare state participation rates, dependency and assimilation over time. We also review the main evidence from relatively more comprehensive analysis of the overall fiscal effects of immigration to the US, the UK and Sweden.

The Norwegian experience is analyzed in a recent study by Bratsberg et al. (2010), using longitudinal administrative register data on male immigrants arrived in Norway from developing countries between 1971-1975, which allows to follow their employment history over time. Their findings offer a gloomy picture both in terms of migrants' labor market performance and reliance on the Norwegian welfare system. In particular, they

find evidence of a significant drop in labor market participation rates ten years after arrival, much larger than the decline estimated for the native reference group.[12] The authors also find evidence of high social security dependency rates for those migrants who exit the labor market. Migrants' poor labor market performance can be explained by both a relatively large share of migrants employed in industries with shorter career paths compared to the native population, and by a generous welfare system for households with a non-working spouse and many children, which are the dominant household type in the sample of labor migrants analyzed. Conditioning on family size and spousal employment status significantly reduces the predicted employment differential between immigrants and natives.

Bratsberg et al. (2014) extend the analysis of patterns of labor market outcomes and social insurance claims to a larger set of migrant entry cohorts in Norway. Their results confirm previous findings of long-term weak performance and short labor market careers of immigrants from developing countries, with declining employment rates over time and rising dependence on the social security system. The same basic pattern holds for migrants who came to Norway as family migrants or refugees. Immigrants from Western countries, instead, perform better and their lifecycle patterns in terms of employment, earnings and welfare dependence resemble those of natives. Finally, the gap in labor market outcomes between the second generation immigrants and natives is lower than that found for first generation immigrants, although they find evidence of over reliance on disability programs by second generation immigrants compared to natives.

Research on welfare assimilation of migrants in Sweden reveals that, contrary to Norway, immigrants assimilate out of welfare dependency. Hansen and Lofstrom (2003) study differences in welfare utilization between immigrants and natives in Sweden over the period 1990-1996 and provide evidence suggesting that migrants' welfare benefits utilization patterns become more similar to those of natives as immigrants spend time in the host country. In particular, refugee immigrants display significantly higher dependency rates on public assistance than other migrants, although their pace of assimilation is steeper. Despite evidence of assimilation, Hansen and Lofstrom (2003) report persistently higher dependency rates for immigrants and a gap that does not disappear even after 20 years spent in the host country.

Evidence from Germany, instead, reveals that foreign households display a lower probability of welfare utilization compared to natives, after controlling for observable socio-economic and demographic characteristics such as household's head labor force status, family composition and home ownership (Riphahn 2004). Using several waves of the German Socioeconomic Panel (1984-1996) Riphahn finds that higher take up rates for foreign born families are driven by differences in socio-economic characteristics between native and foreign households. She also uncovers a positive trend in welfare take up by the immigrant population, indicating that welfare utilization increases with time spent in the new country. The latter suggests an undergoing process of assimilation into welfare dependency.

Another stream of research uses cross-sectional data to estimate the net contribution of immigrants to the fiscal system by simultaneously considering the expenditures and revenues side of the fiscal budget (see e.g. Borjas 1994, Dustmann, Frattini, and Halls 2010, Dustmann and Frattini 2014, Ruist 2014).

Drawing information from the 1990 US Census, Borjas 1994 calculates the annual net fiscal contribution of immigrants in the US and finds that they are net contributors to US public government finances.

[12] To make results comparable between immigrants and natives, the native-born sample is stratified in order to match the distributions of birth year and education in the migrant sample.

Borjas' results, however, are rather sensitive to variations in the baseline assumptions and the positive fiscal contribution of immigrants turns into a net burden if the marginal cost of provision of public goods to the immigrant population is set to be strictly positive rather than zero. For the UK, Dustmann, Frattini, and Halls (2010) assess the net fiscal contribution of immigration from Central and Eastern European countries (the A8 countries) which joined the EU in 2004 and show that they are not only less likely than natives to receive welfare benefits and to live in social housing, but they are also more likely to be net contributors to the UK public finances by having relatively higher participation rates in the labor market and contributing relatively more in indirect taxes than natives. Dustmann and Frattini (2014) go a step further and estimate the net fiscal contribution of all immigrants residing in the UK over the period 1995–2011 and the fiscal contribution for 2001–11 of those cohorts arrived since 2000. Overall, immigrants are found to be less likely than natives to receive welfare state benefits or tax credits, and do not significantly differ in the probability of living in social housing. Important differences, however, emerge among immigrant groups depending on their country of origin and their time of arrival: immigrants from the European Economic Area (EEA) positively contribute to the UK public coffers during the period considered, meaning that they pay in taxes, on average, more than what they receive in benefits and transfers. The opposite is true instead for non-European immigrants, who are found to be a net burden, on average, for the UK government finances. Importantly though, more recent arrivals (i.e. immigrants entering after 2000) are found to be net contributors to UK government finances, independently of their country of origin. They are also less likely than natives to receive tax credits and government benefits. This is true also for migrants coming from the A10 countries which joined the EU after 2004. Ruist (2014) performs a similar static accounting exercise for European A10 accession migrants to Sweden and finds results close to those in Dustmann, Frattini, and Halls (2010).

1.5.2 Dynamic models

Dynamic analyses are typically built upon a forward looking approach and involve a more comprehensive study of the contribution of the migrant population to the host country public finances, often taking into account the possibility of migrants returning home. This method allows for the estimation of the fiscal impact of future migration flows on the destination country. The main drawback, however, is the wide set of – sometimes strong - assumptions which must be made regarding future fertility, employment, government tax rates and expenditures patterns (Rowthorn 2008). Roughly speaking, dynamic models compute the net present value of the stream of future taxes and expenditures over the entire life cycle corresponding to a given cohort or flow of immigrants. Typical examples of this approach are two papers by Storesletten (2000, 2003), which consider the fiscal impact of immigration in the US and Sweden, two countries that differ in terms of the size of the public sector and generosity of the welfare system.

The first paper (Storesletten 2000) develops a calibrated general equilibrium overlapping generations model and computes the net present value (NPV) to the government of admitting one additional immigrant to the US, taking migrants' skills and age at migration into account. The model allows for return migration, which is assumed to depend on the time spent into the host country, but is not endogenously determined, and for the portability of social insurance benefits from the host to the source country in case of return. The model predicts that comparing an initial situation which allows for migrants' return to the extreme case of no outmigration would increase the government's NPV profiles when admitting highly skilled migrants who are

less than 49 years old, while reducing the NPV in the case of other migrant groups (old, unskilled etc.). All other groups are on the receiving end of the welfare state, and restricting their mobility would have an adverse impact on the NPV profile. This result is illustrated in Figure 1.14, which compares the effect of migration on the NPV pattern of high-skilled immigrants in the baseline return migration case (the solid line) with the opposite scenario of no return migration (the dotted line) and that of family migration (dashed line).

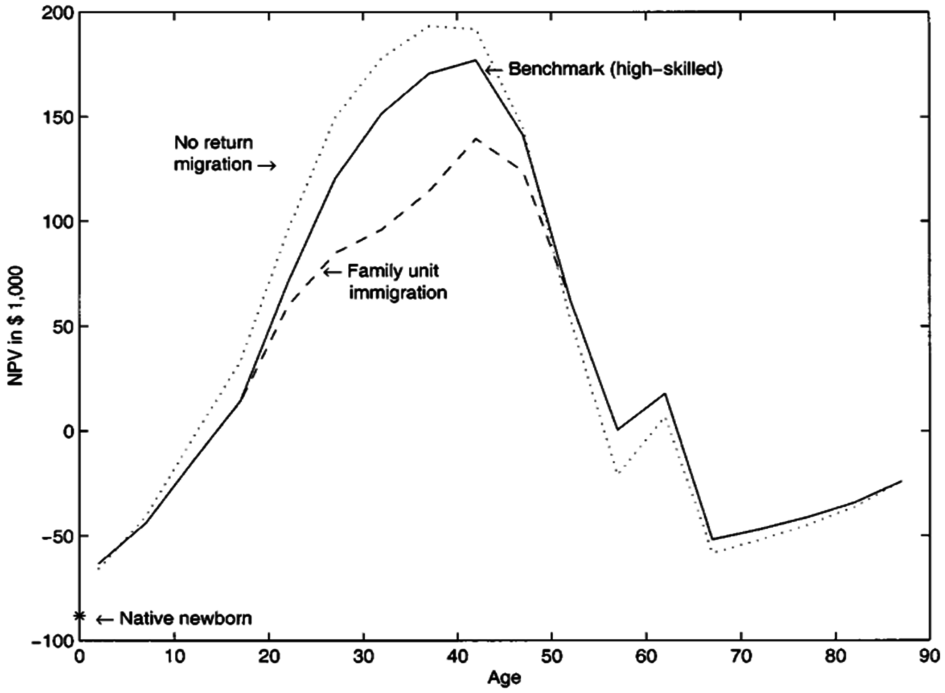

Figure 1.14: Discounted net public gain of admitting additional immigrants: return migration and family units Storesletten (2000), p. 318.

The intuition for this result is that young, highly skilled workers are net contributors to the welfare state, and restricting their mobility will increase their overall fiscal contribution to the destination country. Storesletten's dynamic analysis of the fiscal impact of immigration concludes that skill selective immigration policies aimed at attracting highly qualified migrants may help the US dealing with an ageing population and result in a net positive contribution to the government resources. In particular, he argues that policy able to balance the US government budget would involve the admission of 1.6 million 40–44 years-old high-skilled immigrants annually, given that the discounted gains from immigration reach their maximum with high-skilled immigrants within this age range. Storesletten's results, however, rely on the assumption of random outmigration of immigrants and do not account for selectivity in outmigration flows while assuming the same earnings profiles for temporary and permanent migrants. In a more recent work, Kirdar (2012) models outmigration as endogenous and investigates the impact of immigration on the host country social insurance systems. His results for Germany show that not accounting for the selectivity of outmigration across age-at-entry groups leads to a significant bias in estimates of NPV profiles of immigrants' contributions.

Storesletten (2003) focuses instead on the Swedish experience, and develops an overlapping generations framework with a dynamic and detailed analysis of fiscal policy, but with fixed individual behavior over time, where immigrants can affect natives' welfare only via government fiscal policies (i.e. labor force status,

wages, propensities to consume and fertility behavior are treated as exogenous). Moreover, the baseline model assumes no return of migrants into their origin country and even when outmigration is taken into account in the robustness analysis, benefits portability is not allowed. Even in the Swedish case potential gains from immigration are found. This is particularly true for immigrants who are 20 to 30 years old at time of arrival. Immigrants above 50 years of age and below 10, instead, are predicted to constitute a net burden on Swedish finances. While the qualitative effects of immigrant's fiscal impact on the host country finances are similar for the US and Sweden, the size of the potential benefits from high skilled migration to Sweden are much smaller than in the US and this reflects the important differences in terms of labor market outcomes, fiscal burden and size of the welfare state between the two countries.

A second dynamic approach that has been applied to study the long run effect of immigration is based on the generational accounting technique. This methodology assesses the redistribution of tax burden across generations by taking into account the lifecycle contributions made by current and future generations; it allows for an in depth analysis of the costs and benefits of immigration in terms of revenues and expenditures and for a comparison of the potential fiscal effects of alternative migration policies. The information needed, however, is substantial and involves reliable demographic forecasts, as well as data on the tax and transfers structure for each demographic group, detailed data and projections on government expenditures, information on the initial stock of public debt etc.

The findings from the numerous papers that have applied this methodology (see e.g. Auerbach and Oreopoulos 1999, 2000, Collado et al. 2004, Mayr 2005, Chojnicki 2013) indicate a net fiscal gain from immigration if immigrants are highly skilled and relatively young, but the magnitude of the effects depends on institutional features of the destination countries. Auerbach and Oreopoulos (1999, 2000) study the fiscal effects of immigration in the United States. They find little evidence of either a positive or negative effect of changes in the overall level of immigration on public finances. Only when looking at the impact of skilled immigration they obtain clear-cut results: an increase in the share of skilled immigrants unambiguously improves the US fiscal position. Chojnicki (2013) carries out a similar exercise focusing on France. His findings indicate a slight positive effect in the long run, mainly driven by the continuous inflows of working age migrants and by the net positive contribution of the descendants of first-generation immigrants. The net gain from immigration is larger if the immigrants entering the country are highly qualified. The magnitude of the effects is however not enough to significantly reduce government fiscal imbalances.

A more sizable positive fiscal effect from immigration is found by Collado et al. (2004) who uncover substantial positive fiscal gains from immigration to Spain, irrespective of immigrants' skill composition. Mayr (2005) also applies a generational accounting technique and finds evidence of a net positive fiscal gain from immigration to Austria under the assumption that the age structure and fiscal characteristics of future inflows of migrants will remain similar to those of current migrants. The net positive effect is mainly driven by migrants' relatively younger age structure and lower transfers during retirement age. The size of the gain, however, is found to be not sufficient to achieve inter-temporal fiscal balance,[13] both in case of migration policies targeting the level of immigration or targeting its composition.

[13]The inter-temporal budget constraint of the government requires that the present value of future net tax payments to the public sector, whose burden is on present or future generations, must be sufficient to finance the present value of aggregate net debt.

The immigrants' impact on the government budget in the host country might have important policy consequences, which have also received some attention in the literature.

Razin and Sadka (1999, 2000) propose an overlapping-generation model where each generation lives for two periods, two types of skills co-exist, and a pay as you go pension system is in place, which requires the employed young generation to finance retirement benefits for the elderly through income taxes. Under the assumption of free capital mobility[14] the model predicts a net positive gain from migration for both low and high income groups (i.e. low and high skilled groups) and young and old age groups of individuals living at the time of the immigrant flow. In their dynamic model, the native population is better off even if the migration flow consists of low skilled migrants who are net beneficiaries of the social security system in the two periods they live in (Razin and Sadka 1999). This is possible since, in an ever-lasting economy, the potential net burden imposed by immigrants on the native population may be indefinitely shifted onwards to the next generation. In other words, while a static perspective can only account for the burden imposed by current low skilled migrants on the welfare system in a given time, a dynamic framework is able to account for additional implications of immigration on the welfare state of the host country (Razin and Sadka 1999). From a political economy perspective these conclusions imply that, in a dynamic framework with capital mobility, the native population of a small open economy would favor any type of migration and ask for as many migrants as possible in the equilibrium. This holds under the main assumption that factor prices are fixed, meaning that migrants' inflows cannot affect natives' wages or employment levels. In Razin and Sadka (2000) this assumption is relaxed and migration is allowed to affect factor prices and decrease the wages of low skilled native workers. Under this more general scenario, an anti-immigration sentiment may arise and weaken or even overturn the positive effects of migration: the migrants' net contribution may turn into a loss for some native income groups of both current and future generations.

Open issues

The above section uncovers questions that are still under research in the literature. The analysis of the fiscal impact of immigration in destination countries still does not systematically include non-random return or circular migration when modelling migrants' net contributions to the host country public finances. Moreover, much effort is required to improve the reliability of dynamic models of the fiscal impact of immigration – especially generational accounting models – which are very sensitive to small changes in the underlying assumptions.

1.6 Migration and skill shortages

Rapid population ageing contributes to the shrinking of the labor force in Western countries. Immigration could - at least partially - offset this trend by injecting a new young workforce into the host countries labor markets. In this section we review research that is concerned with how the inflow of foreign workers can help to fill labor shortages and bring about skills that are in short supply in rich Western European countries, thus relaxing important bottlenecks that lead to inefficiencies in the production of goods and services.

[14] This assumption insures that factor returns are not affected by migration.

In particular, we highlight the difficulties in providing a unique definition of shortages and discuss whether immigration may help to fill gaps in the workforce and review the main policies adopted by destination countries to address these shortages. We focus on Europe and emphasize the need for a more coordinated action to improve the continent's ability to attract the best and the brightest talents from around the world. We turn then to the analysis of the role that migration can play in addressing sub national shortages.

Even if the notions of labor and skill shortages are extensively used by economists and policy makers, there is no consensus over a universal definition of "shortage" (see UK Migration Advisory Committee – MAC – 2008, 2010 and Dustmann, Frattini, and Preston 2010). From a theoretical perspective, labor shortages arise when labor supply and demand for a given type of workers are not in equilibrium and the demand is greater than the supply. In this context, a shortage of workers is resolved if wages increase to equilibrate demand and supply. Labor market failures however may generate shortages due to factors unrelated to the economic cycle and, although increase in wages may affect native population skill-specific human capital investments in the long run, it may take several years before the economy reaches the equilibrium. Moreover, labor market imperfections such as wage rigidities in specific sectors (e.g. the public sector), may impede equilibrium adjustments and lead to persistent shortages of workers in specific occupations (see MAC 2010).

Two major approaches have been adopted to identify and measure shortages: a microeconomic perspective focuses on the employers' viewpoint, whereas a macroeconomic approach relies on aggregate indicators such as wages (see MAC 2008). Current methodologies to identify and forecast labor and skill shortages often use a combination of the two, and rely mainly on macro-level model-based projections, on sectorial and occupational studies and on stakeholder surveys.

Descriptive findings from Europe reveal the presence of shortages in various occupations, across a broad spectrum of skill levels. Table 1.4 ranks occupations according to the "bottleneck" vacancies[15] reported by employers in European Union countries,[16] and summarized in a recent study carried out by the European Commission (European Commission 2014b). Among the most affected groups, we have both occupations which require a highly qualified workforce, such as science, engineering and health professionals,[17] as well as low skilled manual occupations, such as cleaners and personal care workers. Occupations experiencing shortages are not only those characterized by growing employment, but also those in sectors which have been severely hit by the recent economic crisis, such as the manufacturing and construction sectors (European Commission 2014b).

[15] Bottleneck occupations are defined as "occupations where there is evidence of recruitment difficulties, i.e. employers have problems finding and hiring staff to meet their needs" (European Commission 2014b Report on "Mapping and Analysing Bottleneck Vacancies in EU Labour Markets", page 7).

[16] The sample includes EU Member States, Iceland, Liechtenstein and Norway.

[17] See Section 1.7 for a detailed analysis of the health sector.

Table 1.4: Top 20 bottleneck vacancies at ISCO 2-digit level European level
Source: Adapted from European Commission (2014b), p. 10.

Rank	Specific Occupation
1	Cooks
2	Metal working machine tool setters and operators
3	Shop sales assistants
4	Nursing professionals
5	Heavy truck and lorry drivers
6	Welders and flamecutters
7	Mechanical engineers
8	Software developers
9	Specialist medical practitioners
10	Carpenters and joiners
11	Commercial sales representatives
12	Electrical engineers
13	Waiters
14	Civil engineers
15	Systems analysts
16	Primary school teachers
17	Plumbers and pipe fitters
18	Accountants
19	Building and related electricians
20	Health care assistants

As argued by many observers (see e.g. Martin and Ruhs 2011, International Organization for Migration 2012) migration must be thought of only as one of the possible answers to labor and skill shortages, and it is likely to be effective mainly in the short run, whereas long term imbalances in the labor market should be addressed with structural policies.

In order for a migration policy to be effective in filling a shortage, policymakers should be able to design and develop a selection process able to attract the required type of migrants in a sufficiently short time, and to direct foreign workers towards those areas of the country where they are mostly needed (International Organization for Migration 2012). Countries that have in place specific systems to attract skilled workers employ a wide array of policy instruments, which can be broadly classified as "immigrant driven" or "employer driven" (Chaloff and Lemaitre 2009). Under the former, an immigrant is admitted in the country without necessarily having a job offer and is selected on the basis of a set of desirable attributes. Under the latter, an employer has to make a job offer in order to grant admission to a highly skilled foreign worker.

"Immigrant driven" systems typically use a "point assessment" to determine the desirability of a foreign national. This type of framework has first been introduced in Canada in 1967, followed by Australia in 1989 and New Zealand in 1991. More recently, the UK has experimented a similar framework, and point based systems have been introduced also in Denmark in 2008, and to a lesser extent in the Netherlands in 2009.

Point systems are used to select individuals on the basis of characteristics that make them "desirable".

The selection involves the identification of a "pass rate" and, typically, point systems attribute a substantial weight to five criteria: occupation; work experience; education; destination country language proficiency and age. A second set of criteria, which can be included in point systems, is also relevant. This includes: employer nomination/job offer; prior work in the destination country; education obtained in the destination country; settlement stipulations; presence of close relatives and prior earnings. [18]

Broadly speaking, we can distinguish two different economic models that underpin the attribution of "points" in the first set of criteria. On the one hand, we have a short term stance, in which emphasis is posed on the need to fill gaps in the destination country's labour market. In such a model, the applicant's recent occupation and work experience are particularly highly rewarded. On the other hand, we can identify a long term perspective, which is inspired by an earnings or human capital economic model. In this context, education, age and official language proficiency are instead the main focus.

In "employer driven" skilled immigration systems – like the US H1-B visa system or the current UK Tier 2 system – employers are the key players. They offer the foreign national a job, sponsor his/her application and typically carry out a "labour market" test. The purpose of the test is to establish that the vacancy for which an immigrant is requested cannot be filled by a local worker, and the stringency of the labour market test varies substantially across countries.

Even if selection on the basis of skill requirements involves only a small portion of the total number of migrants admitted by Western destination countries, there is some evidence suggesting that migrant-driven schemes have been successful in increasing the skill level of the average migrant (Aydemir and Borjas 2007, Aydemir 2011).

The evidence on employer-driven schemes is less clear cut. On the one hand, several countries have been successful in using these frameworks to retain the best and brightest foreign graduates of their universities. The U.S. H1-B scheme is a leading example, and recent research has highlighted the important role played by foreign immigrants admitted through this program in fostering innovation activity in the U.S. (Kerr and Lincoln 2010). As for other destinations that have been traditionally less successful in attracting foreign students, such as some of the continental European countries, the employer-driven model has shown important limits. In particular, the lack of understanding of the cultural and socio-economic conditions of many European destination countries explains the limited willingness of highly skilled foreigners to relocate there – and a typical example of this type of difficulty is represented by the only partial success of the German Green Card program of the early 2000s.

Over the past several years, the EU has become increasingly aware of the role that high skilled migration can play in addressing labor market shortages. To systematically regulate and promote high skilled migration by allowing access to the EU wide labor market, the European Council has introduced a Directive on "the conditions of entry and residence of third-country nationals for the purpose of highly qualified employment", which has been adopted on May 25, 2009 (Directive 2009/50/EC) and bounds all EU member states, except Denmark, the United Kingdom and Ireland. The initiative is a typical employer driven scheme, that is limited to a common definition of the criteria to qualify for admission under the highly skilled migration program (the existence of a work contract, professional qualifications, and a salary above a minimum set at the national

[18] An interesting proposal for the construction of an "optimal" point-based system has been recently put forward by McHale and Rogers (2009).

level), without prejudice to more advantageous conditions provided by national laws. The validity of the initial permit varies substantially across issuing countries (from a minimum of one year and up to four). "Blue card holders" face restrictions on their ability to change employment in the first two years of their permanence in the granting country, and they can find employment only in the receiving country's labour market for the first 18 months after arrival. Importantly, more freedom of movement is contemplated after this period, including the possibility for the migrant to gain access to a second member country's labour market. Still, the procedure is rather cumbersome, as to be allowed to work in the second country the applicant needs to obtain a new blue card issued by the local government, and might be prevented from working while waiting for a decision (Art. 18), and it is not yet clear how effective the initiative has been (Facchini and Lodigiani 2014).

Labor and skill shortages are often geographically localized, as destination countries often face a concentration of population in urban centers and de-population in rural areas. Immigration may thus help to balance geographical mismatches within national labor markets (see e.g. Dustmann, Frattini, and Preston 2010, International Organization for Migration 2012). Many countries have tried to combine regional and urban development policies with interventions aimed at filling regional and sub-regional shortages through migration. However, policies to attract migrants and fill regional labor and skill shortages have been proved hard to implement. In particular, the experience of Canada and Australia shows that it is very difficult to prevent migrants from moving to more attractive urban areas within the host country (International Organization for Migration 2012).

At the same time, some evidence indicates that by being more geographically mobile within the destination country, migrants might help addressing local labor shortages. For instance, Borjas (2001) emphasizes the 'greasing' effects that immigration can have in the wheels of the labor market by bringing a workforce that is very responsive to wage differences and different economic opportunities across regions. Interestingly, empirical evidence for the US indicates that foreign migrants do play an important role in speeding up the process of wage convergence and in helping the national labor market reach an efficient allocation of its resources. Similar evidence has been uncovered also by Dustmann, Frattini, and Preston (2010) for the UK.

In general, to assess whether immigration is a 'sensible' solution to labor or skill shortages at various levels of government, an analysis of alternative interventions should be carried out. For example, a shortage in a low skill sector may be addressed by employers by rising wages and improving working conditions in order to attract workers from other sectors, the inactive population, especially women, or the unemployed (see e.g. Martin and Ruhs 2011). A shortage of high skill workers could instead be addressed, in the long run, by investing in education and training. Some labor shortages could also be addressed by reducing domestic production and increasing imports from abroad. However, all these alternative solutions may not be as flexible as migration: wages in some sectors of the economy, e.g. the health care sector, cannot be freely set by employers and upgrading the skills of the native populations takes time. Moreover, in some other sectors, home production cannot easily be replaced by imports (e.g. construction, health care etc.). Migration may thus be a more easily implementable short run solution to labor shortages.

When addressing shortages via migration, however, long run and potentially negative effects on the economy should be considered. Complete reliance on foreign workers may lead to dependence on them and generate perverse effects. For example, employers might end up adopting less advanced, labor intensive technologies, and to remain competitive they will continue to require migrants in the future, contributing to the creation

of new shortages (see e.g. Martin and Ruhs 2011, International Organization for Migration 2012).

Given the difficulties in assessing the presence of shortages in the labor market and in analyzing the potential effects of alternative interventions, more and more destination countries, like Australia, Canada, Spain and the UK, have set up special government units or independent bodies with the specific aim of analyzing labor shortage issues (Martin and Ruhs 2011).

Open issues

More effort should be made to improve the analytical tools available to identify and measure labor and skill shortages at both national and subnational level. The development of effective policies to address shortages requires systematic analysis of the short and long run effects of international migrants' recruiting and of the available structural long term alternatives. Even if existing point based immigration policy schemes have proved quite effective in selecting skilled immigrants, further analysis is needed in order to provide accurate and systematic evaluation of migrants' selective policies across destination countries. In particular, the difficulties in the identification and fill of subnational shortages should not be overlooked by economists and policy makers.

1.7 International migration and the health care sector

In the previous section we have argued that migration can be a short run solution to skill shortages affecting destination countries labor markets. We turn now to consider two specific sectors, in which immigration has played an increasingly significant role – healthcare and old age care. We start by investigating the role of immigrants as suppliers of those services (Subsections 1.7.1 and 1.7.2), and turn next to consider their impact on the demand side of this market (Subsection 1.7.3). Empirical analyses show that in the short run there is no evidence of adverse effects of immigration on the labor market outcomes of natives in the healthcare sector (Subsection 1.7.1). In the long run, wage effects continue to be negligible, but there is some evidence of a crowding out of natives. As for the provision of old age care, the data suggest a growing importance of immigration in this area, but there is little systematic evidence on the impact of foreign workers on native labor market outcomes (Subsection 1.7.2). The last part of this section (Subsection 1.7.3) considers instead immigrants' demand for health care services. While the patterns differ significantly across countries, immigrants appear to systematically underutilize preventive medical services, whereas they tend to over-utilize emergency care services.

1.7.1 International migration of health care professionals

Migrant workers are playing an increasingly important role in the health care sector. Immigration is often seen as the quickest and cheapest solution to perceived short-term shortages in the availability of medical staff. Foreign trained workers can also be a useful tool to address local shortages in underserved and/or rural areas or in case of shortages in specific medical specialties, e.g. those related to an ageing population. Moreover, Western countries are starting to use foreign health care professionals to address the needs of an increasingly diverse population whose health needs may be more efficiently met by an ethnically diverse medical staff (see Grignon et al. 2013 for a recent review).

Major supplier of health care workers are African countries, India and the Philippines, whereas destination countries who have historically recruited large numbers of foreign trained health professionals are Australia, Canada, the UK and the US (Bach 2003).

Recent data collected by the World Health Organization (WHO 2014) show that the employment of immigrants in the health industry[19] is becoming more widespread (Table 1.5). By 2008, almost half of the nurses employed in Ireland were foreign trained, and the same is true for over a third of the doctors registered there. In New Zealand almost 39% of the doctors are foreign trained, and so are almost a quarter of the nurses. At the same time, the US continues to remain the main destination of medical professionals, with over 100 thousand foreign trained medical doctors and almost a quarter of a million of foreign trained nurses. Important differences exist though among the OECD countries for which data are available. In particular Nordic European countries report very small numbers of registered foreign medical professionals, and in many Eastern European countries the number of foreign trained professionals is negligible.

One key feature that distinguishes the health care industry from other skilled labor intensive sectors is the important role played by the rules and regulations that shape its activities and the requirements in place concerning who can gain employment as a doctor or as a nurse.

The arrival of migrants' medical staff has both short and long run consequences on the host country labor market. In particular, it may affect the employment and wages of natives in the sector and importantly, it might have a significant impact on the overall quality of the health care services provided.

[19]Information is available for foreign trained and foreign citizen registered workers.

Table 1.5: Foreign-trained (or foreign) nurses and doctors in selected OECD countries, based on professional registries Source: WHO (2014), p. 87.

	Year	Number	Share (%)	Sources
Nurses				
Foreign -trained				
Finland	2008	530	0.5	National Supervisory Authority for Welfare and Health (Valvira)
Netherlands	2005	3479	1.4	BIG Register (Beroepen in de Individuele Gezondheidszorg)
Sweden	2007	2585	2.6	Swedish National Board of Health and Welfare
United States	2004	100791	3.5	National Council of State Boards of Nursing(NCSBN)
Denmark	2005	5109	6.2	National Board of Health, Nursing Adviser
Canada	2007	20319	7.9	CIHI Workforce Trends of Regulated Nurses in Canada
United Kingdom	2001	50564	8	Nursing and Midwivery Council
New Zealand	2008	9895	22.1	Ministry of Health/Nursing Council of New Zealand
Ireland	2008	37892	47.1	An Bord Altranais
Foreign				
Belgium	2008	2271	1.5	Federal Public Service Health, Food Chain Safety and Environment
France	2005	7058	1.6	DREES, DELI
Portugal	2008	2037	3.6	Ordem dos Enfermeiros
Italy	2008	33364	9.4	Federazione Ipasvi
Doctors				
Foreign-trained				
Poland	2005	734	0.6	Polish Chamber of Physicians and Dentists
Austria	2008	1556	4.1	Austrian Medical Chamber
France	2005	12124	5.8	Ordre des Médecins
Denmark	2008	1282	6.1	National Board of Health, Labour Register for Health Personnel
Netherlands	2006	3907	6.2	BIG Register (Beroepen in de Individuele Gezondheidszorg)
Belgium	2008	289	6.7	Federal Public Service Health, Food Chain Safety and Environment
Finland	2008	2713	11.7	National Supervisory Authority for Welfare and Health (Valvira)
Canada	2007	14051	17.9	CIHI, SMDB Scott's Medical Database
Sweden	2007	6034	18.4	Swedish National Board of Health and Welfare
Switzerland	2008	6659	22.5	FMH Swiss Medical Association
United States	2007	243457	25.9	American Medical Association
Unite d Kingdom	2008	48697	31.5	General Medical Council
Ireland	2008	6300	35.5	Irish Medical Council
New Zealand	2008	4106	38.9	New Zealand Ministry of Health, Information Directorate
Foreign				
Slovak Republic	2004	139	0.8	Ministry of Health of Slovak Republic
Japan	2008	2483	0.9	Statistic Bureau Ministry of Internal Affairs and Communication
Greece	2001	897	2.5	General Secretariat of the National Statistical Service of Greece
Italy	2008	14747	3.7	AMSI Associazione Medicidi Origine Straniera, based on ENPAM
Germany	2008	21784	5.2	Bundesärztekammer
Portugal	2008	4400	11.1	Immigration Observatory, ACIDI, I.P.
Norway	2008	3172	15.9	Den Norske Legeforening

As for the short term labor market effects, the main evidence so far comes from the US. Combining data from the National Survey of Registered Nurses and data from the Current Population Survey for the period 1995 - 2008, Schumacher (2011) studies earnings differentials between foreign-born/trained and native nurses and the effects of foreign nurses' immigration on natives' wages. He finds evidence of a negative wage gap

only for recent immigrants and of a very small, if any, negative effect of immigration on native wages. Based on this evidence he concludes that migration represents a viable strategy to address short term shortages in the nursing sector, with limited effects on native workers (Schumacher 2011).

Cortés and Pan (2014) also analyze the labor market impact of foreign health professionals, but from a long run perspective, focusing on how foreign trained nurses in the US affect the employment and wage of their native counterparts. Following Card's (2001) spatial correlation approach,[20] they exploit the variation in the distribution of foreign nurses across US cities and across labor market experience groups within cities, and find a large displacement of native nurses and provide evidence that the crowding out is due to natives changing occupation or to individuals deciding not to enter the nursing profession at all. The overall wage effect is, instead, negligible and this can be partly explained by the wage rigidity that characterizes the health sector. Nonetheless, the authors suggest that immigration might lead to a deterioration in working conditions, and this idea is supported by survey based evidence.

Given the specific status of the health care industry, a particularly important question that is often at the heart of the debate on the migration of health care professionals concerns the "quality" of the human capital supplied by migrants. Cortés and Pan (2015) tackle this important issue by comparing foreign educated and native born nurses in the US using Census and American Community Survey data covering the period 1980 - 2010. Interestingly, they find a positive wage gap for Filipino nurses, whereas no significant wage premium is found for nurses educated in other countries. Moreover, the positive wage gap for Filipino nurses cannot be explained by socio-demographic or economic characteristics, thus suggesting that this is driven by unobserved positive human capital attributes. Cortés and Pan (2015) conclude that the "high quality" of Filipino nurses is likely to be driven by a strong positive selection into the profession in the country of origin. Similar effects have also been found by Huang (2011) using data from the National Sample Survey of Registered Nurses.

Besides selection in the country of origin, the high "quality" of foreign health care professionals is likely to be driven also by the strict rules put in place in immigrant destination countries, which severely limit access to health care professions and often discriminate against foreigners. Several papers have tried to study to what extent these policies are in place to respond to legitimate public concerns, or rather as a response to pressures by native physicians to limit competition in the sector. The main evidence also in this case comes from the United States.

Glied and Sarkar (2009) focus on the institutional factors affecting the size of the International Medical Graduate (IMG) population in the US, and assess the role played by the US medical profession in shaping it. To this end, they construct estimates of the stringency of the tests required for foreign educated professionals over time and combine it with evidence on the underlying IMG cohort characteristics taken from Census data. They then investigate the quality of different cohorts of foreign graduates and construct an indicator for the "rate of return" to the medical profession over time, using yearly data from the Current Population Survey and data from the Socioeconomic Monitoring Surveys collected by the American Medical Association. Interestingly, their analysis suggests that in setting the pass rate for the medical licensing examination required for the IMGs, the medical profession tries to maintain a constant rate of return to the human capital investment

[20] Using U.S. Census data from 1990, Card (2001) studies the impact of immigration on the occupation-specific wages and employment rates in the host country local labor markets by exploiting variation in the concentration of immigrants across specific skill groups and across 175 metropolitan statistical areas (MSAs).

of domestic doctors. The role played by medical associations in shaping access to the profession has been investigated also in a recent paper by Peterson et al. (2014), exploiting US cross-state variation in licensing requirements for foreign educated physicians over the period 1973-2010. The authors find that states with self-financing - rather than state government-funded medical boards end up with stricter rules for migrant licensing, and in particular foreign trained doctors require lengthier residency training in the US in order to gain access to the profession. The role played by re-licensing requirements in creating rents for native health professionals is analyzed also by Kugler and Sauer (2005) using quasi-experimental data from Israel.

The migration of health care professionals has received considerable attention also in the development literature and much has been written to assess whether it creates a "brain drain" or a "brain gain" for the source country. While this issue is very important, it goes beyond the scope of this survey and we refer the interested reader to the excellent review by Docquier and Rapoport (2012).

1.7.2 International migration of old-age carers

As discussed in Section 1.2, the population of Europe is ageing rapidly. The most recent demographic projections indicate that, by 2060, the share of people aged 65 and over will rise from 18% to 28% of the EU population, whereas the share of people aged 80 and over is expected to increase from 5% to 12% of the population (European Commission 2014a).

As a result, the demand for long term care (LTC) is expected to rise significantly and it is very likely that foreign old age care workers will play an important role in addressing the growing needs of an elderly population. Table 1.6 shows long term care expenditures as percentage of GDP for EU-27 member states as forecasted by the Ageing Working Group (AWG) for the European Commission. All the European countries considered will experience an increase in spending by 2060, with Northern countries such as Belgium, Denmark, Finland, Sweden and the Netherlands being particularly affected. The magnitude of these effects varies considerably though, and Eastern European countries, such as Bulgaria and Estonia are almost not impacted at all.

Table 1.6: Long-term care spending as % of GDP - AWG reference scenario
Source: European Commission (2012), p. 354.

Country	2015	2030	2045	2060
Belgium	2.6	3.2	4.3	5
Bulgaria	0.5	0.6	0.7	0.8
Czech Republic	0.8	1.1	1.2	1.5
Denmark	4.6	5.8	7	8
Germany	1.6	2	2.7	3.1
Estonia	0.5	0.6	0.7	0.8
Ireland	1.2	1.5	2.1	2.6
Greece	1.5	1.7	2.1	2.6
Spain	0.8	0.9	1.2	1.5
France	2.4	2.8	3.8	4.2
Italy	2	2.1	2.6	2.8
Cyprus	0.2	0.2	0.2	0.3
Latvia	0.7	0.7	0.9	1
Lithuania	1.3	1.4	1.9	2.3
Luxemburg	1.1	1.5	2.2	3.1
Hungary	0.9	1	1.2	1.4
Malta	0.7	1.2	1.2	1.5
Netherlands	4.1	5.4	7.2	7.9
Austria	1.7	2.1	2.6	2.9
Poland	0.8	1	1.4	1.7
Portugal	0.3	0.4	0.5	0.6
Romania	0.6	0.8	1.2	1.7
Slovenia	1.6	1.9	2.6	3
Slovakia	0.3	0.4	0.5	0.7
Finland	2.8	3.9	4.9	5.1
Sweden	3.9	4.8	5.6	6.4
United Kingdom	2.1	2.3	2.5	2.7
Norway	3.8	4.8	6.5	7.7
EU27	2	2.3	3	3.4
EA17	1.9	2.3	3	3.4

While the international flow of highly skilled health professionals has received a lot of attention in the literature, much less is known about the migration of old-age care workers. Employment in the LTC sector continues to be female dominated in most EU Member States (Bettio and Verashchagina 2012). However, different patterns in the division of care work between the state, the private market and the family have given rise to a variety of models of care, in which foreign migrants play a very different role.

In what follows we provide an overview of the different long term care regimes, and we compare their main features focusing on the role of migrants and their employment conditions. While little is known on the direct effect of immigrant workers on natives employed in the same sector, a few studies have highlighted the impact of migration on the labor supply decisions of younger and possibly better educated Europeans, who would have been otherwise in charge of caring for their elderly family members.

Models of long-term elderly care

The role played by migrants in LTC provision varies with the destination country traditions and institutional contexts, and three main approaches have been identified in the literature. We consider next the main features of each of them.

Broadly speaking, a 'migrant in the family' model characterizes Southern European countries. In this context, care for the elderly is typically not delegated to private or public institutions and remains instead the responsibility of the family (see Bettio et al. 2006), and Italy is a fitting example of this tradition. A large demand for care workers, and a limited supply of native providers, has led many Italian families to rely heavily on low skilled migrant workers to manage family care needs. A majority of the workers in this sector come from Eastern European countries (Van Hooren 2012). They are typically middle-aged females, with children and family left in their origin country. This type of migration is often temporary or rotational, and sees migrant women visiting regularly their origin country to keep ties with their children and families left behind (Bettio et al. 2006). Migrants' employment conditions vary substantially, and are highly sensitive to their legal status (Van Hooren 2012).

Two additional models of care are common in other Western European countries. The United Kingdom well represents the so called 'migrant in the market' case, where access to publicly provided services is means tested and high-income people often have to purchase care services on the market. Within this framework, migrants are often employed in the private formal sector, rather than in the informal or public sectors. Foreign workers employment conditions, however, are found to be on average worse than those of natives and of carers employed in the public sector. In particular, they are more likely than natives to work longer hours and do night shifts (Van Hooren 2012). The last model is prevalent in the Netherlands and in Nordic countries, where citizens are entitled to publicly financed services. Care services are provided by private organizations, working in close collaboration with the government. In this context the incidence of immigrants is much lower than in the other two regimes and their employment conditions are typically comparable to those of native workers.

Care workers and high skilled natives' labor supply

Besides directly addressing specific needs for long term elderly care, the availability of immigrant care workers – and more generally of low skilled domestic workers - is likely to impact native labor supply, and in particular the employment decision of highly skilled women. The available empirical evidence, building both on US and European data indicates a positive impact of low-skilled immigration on the labor supply of high skilled native women.

Cortes and Tessada (2011) provide evidence from the US, using data from the 1980, 1990 and 2000 Census. In particular, they find a positive and significant effect of low skilled immigration on the number of hours worked per week by women in the top quartile of the female wage distribution. They also show that this positive effect decreases in size and significance for women at lower points of the wage distribution, becoming insignificant for those with wages below the median. Importantly, immigration affects mainly the intensive margin, i.e. the number of hours worked, whereas no significant effect is found on the extensive margin, that is on the probability to enter the labor market. The former effect is particularly large for occupations demanding long hours of work, like law, medicine and research. Interestingly, the authors find that the increase in labor

supply is accompanied by a reduction in the time devoted to household work.

Similar results have been found, using Italian data, by Barone and Mocetti (2011) for the period 2006-2008. Once again, the availability of female immigrants specialized in household production increases the domestic supply of female skilled workers, and also in this case the effect takes place mainly through changes in the intensive margin.

Farré et al. (2011) analyze the recent Spanish experience, and while they also find a positive impact of female immigration on the labor supply of college educated women with family responsibilities, their findings are driven mainly by an effect on the extensive rather than the intensive margin. In particular, the presence of immigrants allows native women to return to work earlier after childbirth, and to remain in employment.

1.7.3 Immigrants' demand for health care

As migrants represent an increasing proportion of the European population, we need a better understanding of their health patterns and their access to health care. For many European health systems, equity in access remains a fundamental objective and understanding the impact of immigrant flows on the sustainability of existing public health care systems is an important policy priority.

In what follows we review the main results from the empirical literature on the differences in access to health services by the immigrant and native populations, focusing on the use of primary care, preventive care, specialists, hospitalization and emergency ward services. Given the lack of detailed systematic data, the results are highly heterogeneous and depend on both the specific health care service considered and the country studied. Still, some general patterns can be highlighted, revealing that immigrants systematically under-utilize preventive medical services, especially prenatal care, compared to the native population. On the other hand, they report higher use of emergency services, which is often the result of barriers in the access to ordinary health care services.

Models for the demand for health care

Traditional models for the demand for health care have highlighted the main factors able to explain differences in access to health services by groups of individuals (see e.g. Andersen 1968, 1995, Grossman 1972). Predisposing characteristics (such as socio-demographic status and health beliefs), enabling factors (such as personal/family and community characteristics like income and health insurance systems), need variables (both perceived and assessed needs) and characteristics of the health care system have been identified as the main drivers of the demand for health services.

Health care demand is a derivative of migrants' health. Many studies report that immigrants have a good health status at their arrival in the host country (see e.g. Fennelly 2007, Kennedy et al. 2006). The so called "healthy migrant effect", however, tends to disappear once individuals' demographic characteristics such as age are accounted for. Moreover, once in the host country, immigrants' exposure to risk factors such as poverty and exclusion may deteriorate their mental and physical health status (see WHO 2010).

Evidence of immigrants' health is scarce given the lack of exhaustive and cross-country comparable data on health status (see e.g. Ingleby 2009, Nielsen et al. 2009). Where data are available, large heterogeneity is found in migrants' health depending on age, gender, country of origin, legal status and economic wellbeing (see Rechel et al. 2011). Overall, however, migrants appear to be particularly vulnerable to communicable

diseases (see Carballo 2009a), report higher rates of accidents at work and work-related diseases (see Carballo 2009b) and a higher incidence of mental illnesses (see Ingleby 2008) compared to the native population. Evidence of higher maternal and infant mortality of immigrants compared to natives is also found in some destination countries (see the overview by Bollini et al. 2009, Carballo 2009b). The higher vulnerability of migrants to specific diseases can be partly explained by migration-related traumatic events, health conditions in the country of origin and migrants' over-representation in occupations characterized by low wages and poor working conditions (see the overview by Gushulak et al. 2010).

The empirical literature also emphasizes a substantial heterogeneity in access to health care across countries, and much emphasis has been put on the provision model.

In the United States, where the health care is dominated by the private sector and health insurance coverage has traditionally not been universal, the empirical literature has looked at both differences in health insurance take up between migrants and natives, and at their respective use of health care services (see e.g. Ku and Matani 2001, Lucas et al. 2003, Goldman et al. 2005, Kao et al. 2010, Derose et al. 2011, Vargas Bustamante et al. 2014). In an interesting study Akresh (2009) examines the utilization patterns of Asian and Hispanic immigrants included in the 2003 New Immigrant Survey (NIS) and finds that duration of residence, knowledge of host country language, and being insured increase immigrants' access to health care services. This evidence confirms previous findings by Leclere et al. (1994) using data from the 1990 National Health Interview Survey.

Differently from the US, health care provision in Europe is dominated by a model based on universal coverage, even if differences exist concerning the ultimate providers of health care services. Most EU Member States extend health coverage to third country nationals,[21] but the empirical evidence suggests that inequalities in access and health status between migrants and natives are pervasive also in Europe (see e.g. Ingleby et al. 2005, Mladovsky 2007), even though the patterns differ substantially across countries. Solé-Auró et al. (2012) carry out a cross-country analysis of the patterns of utilization of health services among elderly migrants and natives in eleven European countries using the 2004 round of the Survey of Health, Ageing, and Retirement in Europe (SHARE), which focuses on individuals aged 50 years and above. Immigrants are found to significantly over utilize health care services compared to natives, even after controlling for socio-economic and demographic characteristics. Differences in utilization are almost halved when need factors are included in the analysis, and this highlights the role played by worse health status of old age migrants compared to natives in explaining observed differences in access to health care services. Macro-economic factors at the host country level, such as relative health expenditures and the structure of the health system, also affect differential health care usage between the two groups (Solé-Auró et al. 2012).

Other studies focus on specific types of health services. The evidence on the usage of general practitioners' health care services does not exhibit a clear pattern: some papers emphasize a overutilization by the immigrant

[21] The differences in health care entitlements vary according to migrants' legal status and across countries (see Pace 2011). Immigrants' access to health services in the host country often varies a lot depending on whether migrants are living in the country legally or illegally and whether they are asylum seekers rather than labor migrants. In particular, many EU member states do not guarantee illegal immigrants full access to health care services: some EU member states have recently tightened access to health care in order to be able to exclude undocumented immigrants even from emergency wards services, others limit their access to health services only in case of emergency treatments, while only France, Italy, Portugal and the Netherlands allow irregular migrants almost full access to health care services under proof of identity or residence (for a comprehensive overview of rights granted to undocumented migrants in the EU see Suess et al. 2014). Legal restrictions to access to health care are in place also for asylum seekers which are often guaranteed access to emergency services only (see e.g. Norredam et al. 2006).

or minority ethnic population (see e.g. Smaje and Le Grand 1997, Reijneveld 1998, Winkelmann 2002, Morris et al. 2005, Uiters et al. 2006), which is almost completely explained though by gender and health status, whereas other researchers find no significant differences in primary care use between migrants and non-migrants (see e.g. Antón and De Bustillo 2010, Wadsworth 2013) or even under-utilization of primary health care services by migrants (see e.g. Gimeno-Feliu et al. 2013). Overall these studies suffer from a lack of detailed, comparable data across countries, which makes it difficult to draw a clear picture.

A similar inconclusive picture emerges also from the study of the usage of specialist services. For instance, evidence from Spain suggests that immigrants under-utilize specialists services compared to natives (see e.g. Rubio 2008, Antón and De Bustillo 2010). Studies carried out using Dutch data offer contrasting results: for instance Reijneveld (1998) finds no overall differences between migrants and non-migrants use of specialists visits, whereas Uiters et al. (2006), basing identification of immigrants on self and parents' country of birth, point out that migrants are more likely to use specialist services.

Similarly contrasting results are found also when it comes to immigrants' utilization of hospitalization services. Reijneveld (1998) finds evidence of over-utilization in the Netherlands, and similar results have been obtained by Cacciani et al. (2006) using data on discharges from hospitals by nationality of patients collected in Italy. Antón and De Bustillo (2010), instead, find no significant differences in hospital stays using Spanish data.

A consistent pattern emerges instead when it comes to access to preventive care. All the existing empirical evidence is consistent with the existence of barriers to access to preventive services for migrants, especially in the case of women and undocumented migrants. Migrant and ethnic minority women are found to have difficulties in accessing prenatal care services as well as cancer screenings (see e.g. Webb et al. 2004, Wolff et al. 2008, McCormack et al. 2008, Moser et al. 2009, Price et al. 2010). Similarly, the existing evidence indicates that migrants tend to over utilize emergency services compared to natives (see Dyhr et al. 2007 for Denmark and Cots et al. 2007, Rubio 2008 and Antón and De Bustillo 2010 for Spain).

Open issues

The studies we have reviewed highlight that we have a good understanding, at least for some countries, of the effect of immigration on the supply of skilled healthcare professionals, and on how they impact the destination country labor market. Much more work is instead needed to understand the impact of LTC workers, and in particular, we need better individual level data on both the migrants themselves and the native household benefitting from their services. Given the often informal nature of work arrangements in this area, this will not be an easy task. As for the analysis of the impact of migration on the demand side of healthcare services, a large array of studies exist, but there is clearly a need to improve the cross-country comparability of the data used in the analyses, as to better understand the sources of the significant differences reported in the various studies we have reviewed.

1.8 The Floridization of Europe – Old age North-South migration

The relatively recent phenomenon of amenity – led migration of retirees from Northern European towards Mediterranean coastal areas is likely to have important consequences on the demographic structure, health-

care demand and provision and more generally the working of welfare states in both source and destination countries. Little systematic evidence exists on intra-European old age migration, but several studies have considered instead late age migration within the United States. We will review this evidence, which will help identifying the important questions that need to be addressed in the European context. In Subsection 1.8.1 we consider the existing evidence on the drivers of old age migration. Besides location specific amenities, such as a mild climate, the literature emphasizes how elderly decisions to migrate are influenced by tax and welfare policies both in the origin and destination country and by the portability of social security benefits. We turn next to consider the effects of retirement migration on destinations (Subsection 1.8.2). Existing studies indicate that retirement migrants make a positive contribution to the host economy, especially by increasing local demand and tax base. However, in the long run, migrant retirees may increase the demand for health care and long-term care services. Knowledge of retirees' complete migration trajectories is needed to provide robust estimates of the long-term economic effects of retirement migration.

1.8.1 Determinants of old-age migration

A useful conceptual framework to understand the main forces at play in shaping old age migration decisions has been developed by Litwak and Longino (1987). Three main stages are identified: the first occurs at retirement, and the migration decision is driven by the maximization of utility, which depends upon environmental and lifestyle amenities. At this stage migrants are likely to be married, in good health and wealthy. The second stage is characterized by a decline in the health status and the potential loss of the spouse. Migration is mainly driven by the need to migrate back to the origin country to be close to the family. Finally, in the last stage the migrant needs permanent care, the health status has declined and the individual moves into structures providing formal care to the elderly.

Evidence on the determinants of elderly migration reveals that socio-economic and demographic characteristics play an important role. Differences in late age migration patterns are also determined by age at migration, by distance moved, as well as by consumption preferences and fiscal factors (see Sander et al. 2010).

Conway and Houtenville (1998) develop a theoretical model for elderly migration which takes into consideration the role played by government policies, with a focus on state or local level fiscal policies. By estimating outmigration and in-migration equations using US data, the authors suggest that the public sector is an important determinant of elderly migration and conclude that state government public expenditures on education, as well as crime levels and taxation on property and income are important determinants of elderly migration behavior. Gale and Heath (2000) extend Conway and Houtenville's model by decomposing state revenues and spending. Interestingly, the authors find that elderly migrants are more likely to move towards states where the costs of public government policies fall mainly on individuals who are still active in the labor market (Gale and Heath 2000). The composition of local revenues and spending is found to play an important role also at the county level (Duncombe et al. 2001). In particular, elderly migrants are found to be repelled by inheritance, property and sales taxes, as well as by government spending on welfare and housing. They are instead attracted by locations characterized by relatively high public expenditures on public safety and recreational facilities (Duncombe et al. 2001).

In order to analyze the role played by age-related heterogeneous effects, some empirical studies divide the

elderly population into subgroups. Conway and Houtenville (2003) examine patterns of elderly migration by age groups using data from the 1990 US Census. Younger elderly migrants' location decisions are mainly affected by characteristics such as the presence of specific amenities, climate and government fiscal policies; older migrants are instead more likely to react to push factors driving them out of their origin state, such as income and property taxes and the cost of living in their origin country.

Among the main determinants of elderly migration, the issue of the portability of social security benefits between source and destination plays a key role affecting for instance how return migration (see Section 1.4) impacts the fiscal cost of ageing in destination countries (see Section 1.5).

Portability is defined by Holzmann and Koettl (2014) as a mechanism able to grant and transfer social security rights independently of an individual's country of residence, citizenship status or current or previous occupation. As pointed out by Holzmann et al. (2005) and Holzmann and Koettl (2014), the redistributive component within each social security benefit is the main driver behind the observed difficulties in terms of portability. The separation and identification of each component of a benefit is thus fundamental to make the pre-funding component readily transferable and set up bilateral or multilateral agreements to coordinate on the mobility of the redistributive component (Holzmann and Koettl 2014).

Countries which rely on defined contribution social security systems are less touched by the issue of portability, whereas the problem is particularly severe for European countries, which have traditionally relied on defined benefit schemes and where the welfare state is relatively more generous. This is true even within EU member countries, where uncertainty remains concerning the entitlements of family-oriented and amenity-seeking EU national retirement migrants. International migrants who move for work reasons and then decide to retire in the host country have their portability rights more clearly regulated, and are in a better position than those who decide to migrate after retirement (see e.g. Ackers and Dwyer 2004, Dwyer and Papadimitriou 2006). Under EU regulation, migrants' social status and rights to claim welfare benefits in the host country strongly depend on their connections with the host country labor market. In particular, the right to reside in the host country by economically inactive individuals is constrained by a "resources requirement"[22] according to which migrants' must provide proof that they have enough resources not to become a burden for the host country welfare state. At the same time, elderly migrants' decision to return back home after some time spent in the host country may not entitle them to the rights they could have enjoyed in their origin country before departure, since entitlement to specific forms of benefits may require proof of habitual residence (Dwyer and Papadimitriou 2006). This translates into large numbers of migrant retirees which do not regularize their position since they fear the difficulties in reverting the process if at some point they decide to migrate back to their origin country. Moreover, elderly migrants fear that by regularizing their position they may lose some of the benefits they would be otherwise entitled to (see Dwyer 2000, Legido-Quigley and La Parra 2007).

1.8.2 Effects on the host country economy

Late age migration flows might have significant effects on the host country economy, but little systematic evidence exists on this issue. Most of the existing studies focus on the US, and have mainly considered the

[22] Article 1 of the European Union Council Directive 90/365 limits the right to reside to economically inactive persons by two important conditions: ". . . [that they] are covered by sickness insurance . . . [and] . . . have sufficient resources to avoid becoming a burden on the social assistance system of the host Member State during their period of residence."

short run, rather than the long run effects of elderly migration (Serow 2003).

Overall, late-age migration appears to have positive effects on the destination's economy, at least in the short run, and some US sunbelt and coastal states have progressively adopted aggressive policies to attract wealthy and relatively young retirees (Haas and Serow 2002). The positive effects for the host communities are mainly associated with the increases in overall demand and tax payments. However, in the long run, migrant retirees may increase the demand for health care and long-term care services in particular. The net effect on the destination's public finances has not yet been exhaustively studied, even though some attempts have been made, by separately considering old age and young age retirees. In particular, using data from the Bureau of Labor Statistics' Consumer Expenditure Survey, Stallmann et al. (1999) find an overall positive fiscal impact of both young and old elderly migrants, with the rise in local government expenditures being covered by the increased revenues, even in the case of older elderly.

To reach more general conclusions on the long term economic effect of retirement migration, further research is needed. In particular, more information on whether elderly migrants return back to their origin country once they have to rely on family or formal assistance should be made available and included in the analysis.

Open issues

Even if most observers expect intra EU amenity-led migration to become increasingly important over the coming decades, very little is known on who migrates and on what are the effects of elderly European migration on the destination countries. To tackle this important policy issue, a systematic data collection exercise is needed, that would allow tracing the entire migration history of European individuals.

1.9 Conclusions

The demographic developments in Europe and beyond, the rapid increase in population flows, both within Europe and between Europe and the rest of the world, and their consequences for the provision of healthcare services raise a host of very important policy questions, which have been reviewed in this survey. Several important elements emerge from our discussion.

First, most of the issues we have tackled have been considered in separate studies and only a few papers have tried to develop general frameworks able to capture at least some of the interactions between demographic changes, migration and healthcare provision. More work is required to develop richer theoretical models to understand the interplay between these different forces, taking into account that these issues are intrinsically dynamic in nature.

Second, on the measurement side, our analysis has identified several key critical areas where more research is needed. Our current understanding of migration and population dynamics is shaped by our limited ability to systematically track individuals over time in existing datasets, and in particular by the lack of information on an individual's entire migration history. This important shortcoming in the data makes it difficult to provide fully satisfactory answers to some key policy questions, like the extent to which migration is permanent or temporary, the individual level characteristics that affect the decision to migrate multiple times, and the extent to which subsequent immigrant cohorts integrate and assimilate in the destination countries. Gaining

a better grasp of the relevance of temporary migration patterns is also crucial to our understanding of the interaction between immigrants and the welfare state, both in the host and in the source country.

Third, our analysis has argued that immigration plays a key role in providing a flexible response to short term skill shortages in a variety of sectors of the economy, and in particular in the case of healthcare and long term care services. While progress has been made in understanding the impact of foreign care workers on the destination country's labor force, the evidence is still rather sparse, and much more work is needed to assess the effective impact of health workers migration in European countries. This need is especially urgent when it comes to assessing the role of long term care workers, who are often employed in the informal sector and as a result are less likely to be captured in the official statistics.

Last but not least, population ageing in a common market, where people are free to move is likely to lead to large flows of migrants looking for better amenities while retired. The phenomenon has been ongoing for several decades in the United States, and we have some basic understanding of the drivers and consequences of old age migration for the sun-belt states. Little is known instead in the European context, where the flow of elderly migrants to the Mediterranean is starting to become significant. Much more work is needed in this area, and data allowing to capture individual level migration histories would greatly facilitate the analysis.

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Chapter 2

Mind what your voters read: Media exposure and international economic policy making[†]

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Abstract

We investigate how media exposure affects elected representatives' response to preferences on immigration and trade policy. Using a novel dataset spanning the period 1986-2004, in which we match individual opinion surveys with congressmen roll call votes, we find that greater exposure to media coverage tends to increase a politician's accountability when it comes to migration policy making, while we find no effect for trade policy. Our results thus suggest that more information on the behavior of elected officials affects decisions only when the policy issue is perceived to be salient by the electorate.

JEL classification: F22, J61.

Keywords: Trade Reforms, Immigration Reforms, Individual preferences, Media exposure.

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"To better understand the impact the media has on political accountability at the level of the politician, we need more studies of decisions made by individual politicians." (Lim et al. 2014)

2.1 Introduction

Liberalizing trade and migration policies brings about efficiency gains, that have been documented in several studies, using a variety of theoretical frameworks.[23] Still, as argued by many observers, important distortions continue to exist to the international flow of both goods and workers, and a distinguished literature has developed over the years to understand why and how these distortions are put in place. As argued by Rodrik (1995), the starting block of all these analyses is represented by individual preferences towards globalization. While several studies have investigated the drivers of attitudes towards globalization, little *direct* evidence exists on the process through which they are taken into account in the actual policy making. Importantly, as argued by several scholars in economics and political science, knowledge of the behavior of elected representatives is key to insure their accountability to the electorate.

The goal of this paper is to address this important question by investigating how media exposure affects the elected representatives response to constituent's preferences for immigration and trade reform.

Our analysis will focus on the United States, a country for which we have been able to gather information on the preferences of the electorate on these two issues, and for which we also have data on the decisions taken by elected officials. In particular, we have constructed measures of aggregate opinion towards trade and migration at the congressional district level, and combined that information with data on the voting behavior of each congressman on trade and migration policy, together with a wealth of additional district and individual policy maker information. Our data cover two decades spanning the period 1986-2004 during which Congress acted on several key pieces of legislation, like the 1993 approval of the North American Free Trade Agreement, the 1994 ratification of the Uruguay Round Agreements of the GATT and the 1996 Illegal Immigration Reform and Immigrant Responsibility Act. To capture the role played by the media our analysis builds on previous work by Snyder and Strömberg (2010) who have convincingly argued that the geographic mismatch between the market for local newspapers and the shape of the congressional district provides useful insights on the actual information that is *exogenously* available to the individual constituent.

Our analysis suggests that important differences exist between the mechanisms through which preferences towards international trade and migration inform the actual policy making. In particular, we find that greater exposure to the scrutiny exercised by the media has a statistically significant and sizeable disciplining effect when it comes to migration policy. The same is instead not true when we consider international trade. This basic result continues to hold when we control for a variety of additional district and individual level characteristics that have been found in the previous literature to be important drivers of representative's voting behavior in international economic policy making.

How can these findings be rationalized? Standard economic models in the tradition of Heckscher and Ohlin suggest that trade and migration share similar causes and have analogous consequences when it comes to the labor market position of workers in the destination country. At the same time, it is well known that there are important differences between the drivers of preferences towards trade and migration. For instance,

[23] E.g. see Hamilton and Whalley 1984, Feenstra 1995, Arkolakis et al. 2012, di Giovanni et al. 2012, Battisti et al. 2014.

welfare state considerations are likely to play a much bigger role for the latter rather than the former, and the same is true when it comes to cultural factors (Hanson et al. 2007). As a result, while in many opinion surveys immigration appears as one of the most important issues facing the individual respondent, this is hardly the case for trade policy. For example, data from the Cooperative Congressional Election Study highlight that in 2006 over 40% of the respondents in the United States thought that migration was an extremely important issue in determining whom they voted for, suggesting that this issue is as relevant as social security, taxes and education. Trade, on the other hand, was rated at the same level of salience only by 16% of the respondents (see Guisinger 2009). One possible explanation for our findings is thus that media exposure enhances accountability only for issues which are perceived to be salient by the electorate.

The remainder of the paper is organized as follows. Section 2.2 relates our work to the existing literature, whereas Section 2.3 presents the measure of media exposure. Section 2.4 presents our dataset, and Section 2.5 discusses our main results. Section 2.6 addresses potential reverse causality concerns, while 2.7 assesses the robustness of our findings. Section 2.8 concludes.

2.2 Literature

The analysis carried out in this paper contributes to fill an important gap in the literature by directly exploring the link between individual preferences towards globalization and the voting behavior of U.S. representatives on trade and migration policy reforms. In particular, our focus is on the role of the media in enhancing political accountability. Thus, our work is related to at least three strands of literature: the growing set of studies that have analyzed public opinion towards globalization and its determinants; the research that has investigated the drivers of the voting behavior of elected officials on these matters in the U.S. Congress, and the more recent contributions that have studied the causal effect that media exposure has on political accountability.

The literature on public opinions has analyzed and emphasized the role that both economic and non–economic individual–level characteristics play in shaping preferences towards trade and migration. The main message that emerges from studies in this tradition is that economic drivers that work through the labor market and the welfare state do play an important role in informing opinions towards migration and (at least when it comes to the labor market channel) trade (see for instance Scheve and Slaughter 2001a, Mayda and Rodrik 2005, Facchini and Mayda 2009, Blonigen 2011 etc.). Non–economic drivers are also found to matter. This is true both in the case of opinions towards migration – where the role of cultural and national-identity issues and of racial and cultural prejudice has been emphasized (see Mayda 2006, Dustmann and Preston 2007, Card et al. 2012) – and towards trade (Mayda and Rodrik 2005), where patriotic and nationalistic feelings have been found to reduce support for opening up the economy to international competition. Importantly, while many studies have highlighted the role that the public's preferences play in a democratic society as a key driver of economic policy making (e.g. Rodrik 1995), very limited evidence is available on how this process actually takes place (for an exception, see Facchini and Mayda 2010).

The determinants of congressional action on trade and migration policy have been extensively analyzed. Several contributions have examined individual pieces of legislations (for trade, see for instance Baldwin 1985, Marks 1993 and Baldwin and Magee 2000; for migration, see Gonzalez and Kamdar 2000, Fetzer 2006).

A few studies have instead taken a broader, longer term perspective. Hiscox (2002) has investigated the determinants of support for thirty major pieces of trade legislation introduced between 1824 and 1994 to compare the relative performance of the Heckscher–Ohlin and Ricardo–Viner models in explaining support for trade reforms. Conconi, Facchini, and Zanardi (2012) looked instead at the determinants of support for trade liberalization in the post–1970 era, considering fifteen major trade bills introduced in the period, and uncovering the important role played by election proximity in shaping protectionist behavior. Milner and Tingley (2011) and Facchini and Steinhardt (2011) focus instead on a large set of migration policy reforms, introduced starting after 1970, and investigate the role of both economic and non-economic determinants. In a recent paper, Conconi, Facchini, Steinhardt, and Zanardi (2012) consider congressional action on both trade and migration liberalization during the same period. Interestingly, they find that economic factors that work through the labor market play a similar role in both areas. Importantly, in these studies, the role of public opinion towards trade and migration is not explicitly considered as a driver of the voting behavior of individual representatives. The purpose of this paper is to fill this gap, by modeling the impact that the scrutiny of a representative's action by the media has in shaping her voting behavior.

For this reason, this paper is also related to the growing literature in economics and political science that studies how the media shape public opinion and the electoral accountability of politicians. As argued by Ashworth (2012) in his recent review, the key challenge in this research area is to identify plausibly exogenous variation in the features that the theory identifies as important determinants of the responsiveness of politicians to their electorate. To this end, Snyder and Strömberg (2010) have exploited mismatches between the geography of congressional districts and the geography of media markets in the United States to trace the entire process through which an increase in information leads to greater or smaller responsiveness to election concerns. Interestingly, in their analysis of broad patterns in roll call votes, Snyder and Strömberg (2010) find that representatives of districts characterized by higher congruence tend to vote less often in line with their party orientation, and they also find that the extra news coverage induced by higher congruence makes representatives roll call votes less ideologically extreme. In our analysis of roll call votes on trade and migration we contribute to this literature by investigating whether the media's information transmission has a different impact depending on the saliency of the issue at stake, which as argued by Guisinger (2009) is likely to be comparatively high in the case of migration and low in the case of trade.

2.3 Measuring media exposure

Assessing the role of media exposure on a politician's responsiveness to her constituency preferences presents a series of significant challenges. First and foremost, media coverage is typically endogenous vis a vis most of the outcomes we might be interested in studying. For instance, consider the role that the media can play in supporting the work of democratic institutions. The observation that countries with a freer press are more democratic does not necessarily lead to conclude that free media *cause* an increase in democracy, as it is governments that are in the position to allow or not political coverage, and less democratic governments have stronger incentives to silence the press. Similarly, evidence suggesting that more news coverage of political activities results in better informed citizens can hardly be deemed causal, as both higher demand for news and better knowledge could be simply the result of the unobserved intrinsic preferences of the electorate for

more information (see Ashworth 2012).

Several attempts have been made to address the potential endogeneity of media coverage with respect to political accountability. Particularly relevant for our analysis is the recent contribution by Snyder and Strömberg (2010), who introduce the measure of "congruence" between the electoral district of a representative and local media markets in the United States, which we will be using throughout our analysis. As it had already been pointed out by Hess (1991) and Vinson (2003) media like local television provide substantially less coverage of congressmen activities than local newspapers. For this reason Snyder and Strömberg (2010) build their measure focusing on the markets for local newspapers. To grasp the basic idea behind their research design, consider a metropolitan area including an inner city district and multiple suburban districts. In this example, it is likely that many of the suburban voters will obtain their local news from a paper based in the big city and sold all over the metropolitan area. If the newspaper dedicates more attention to the politician elected in the inner city district, then inner city voters will obtain more information on their representative than their suburban counterparts. If models of electoral accountability are correct, this will lead to greater responsiveness to the electorate for the inner city representative, closely scrutinized by the media, than for the representatives elected in the suburbs receiving only limited attention.

The basic assumption that must hold for this type of measure of political coverage to be exogenous is that the "economic geography" factors that shape media markets should be different from the "political geography" factors that determine congressional district boundaries. This is likely to be the case, as on the one hand congressional districts boundaries are drawn so that all districts in each state have the same population, representation is guaranteed to different racial groups, incumbents are protected etc. On the other hand, the boundaries of local newspaper markets are driven by other factors. In particular, local newspapers are typically based in urban areas, with strong demand for advertising and news about the city's public affairs. At the same time, their sales in the surrounding areas strongly depend on the distance between the suburb and the newspaper's headquarters and on the socio–economic characteristics of the area's residents.[24] As a result, the overlap of congressional districts and local newspaper markets exhibits substantial variation across space.

Formally, Snyder and Strömberg (2010) define their measure of congruence for district d as follows:

$$Congruence_d = \sum_n MarketShare_{nd} ReaderShare_{nd} \tag{2.1}$$

where $MarketShare_{nd}$ indicates newspaper's n share of total newspaper sales in district d, and $ReaderShare_{nd}$ is the share of newspaper's n readers that live in district d. This measure varies depending on the number of newspapers serving a given district, their respective market shares, as well as on the importance that each district has for a newspaper's total sales. The measure ranges between zero and one, with the latter value representing a situation in which an electoral district is perfectly matched with newspapers' markets. As noted by Snyder and Strömberg (2010) "...since *Congruence* is defined using market shares, it is not dependent on total newspaper penetration... This is important since total newspaper readership in an area is related to characteristics such as education and income levels which are also related to political knowledge" (see also Lim et al. 2014).

[24] For an excellent analysis of the working of the US newspaper market, see Fan (2013).

To fix ideas consider Figure 2.1, where we illustrate three equally sized congressional districts A, B, C covered by three local newspapers a, b, c. In the left panel we consider the situation in which there is perfect overlap between congressional districts and media markets, i.e. each district is served by only one newspaper ($MarketShare_{nd} = 1$ if $n = d$, and 0 otherwise), and each newspaper is only sold in one district ($ReaderShare_{nd} = 1$ if $n = d$, and 0 otherwise). As a result, congruence takes a value of one everywhere. In the central panel, we depict instead an alternative scenario, in which newspaper a sells only in district A, and no other paper is read there. Newspapers b and c are instead sold in both districts B and C and split each market equally. In this case congruence takes a value of 1 in district A and a value of $1/2$ in districts B and C. Finally, the right most panel illustrates a situation in which all newspapers are sold in all districts, and they enjoy the same market share in each of them. Consequently, congruence takes a value of $1/3$ everywhere.

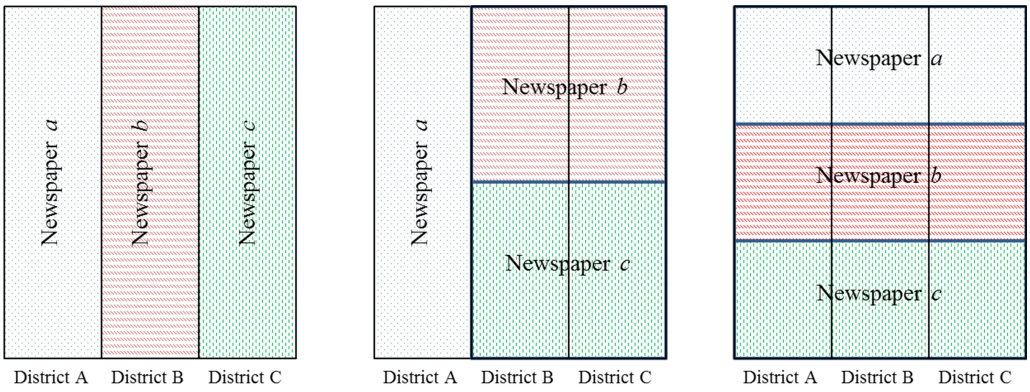


Figure 2.1: Congruence

Using this measure, Snyder and Strömberg (2010) show that greater congruence implies that more information about the representative is available to a district's resident. In particular, their results suggest that in each electoral term "...congruence going from zero to one is associated with 170 more articles about the congressman appearing in an average paper selling in his or her district. It is associated with 100 more articles reaching an average household and around 30 more articles being read." Furthermore, they provide evidence that the average district resident takes advantage of this increased information flow and is better able to recognize her representative's name, ideological leanings etc. For all these reasons, *Congruence* appears to be a good proxy for the amount of information available on the behavior of House Representatives to their constituents, and we will use it to study the role that media exposure might play in insuring that an elected politician's choices will reflect her constituency preferences on international economic policy.

To causally identify the effect of media exposure on the accountability of an elected official to her constituency's preferences on trade and migration one identifying assumptions must be satisfied: *Congruence* must not be systematically correlated with the voting behavior of Representatives on trade and migration. If this were the case, our estimates would be biased. For instance, if congruence and voting on migration liberalization were positively correlated, we would over–estimate the effect of media coverage on a politician's responsiveness to her constituency's preferences. Our data allow us to directly assess the validity of this assumption and we find that there is no statistically significant relationship between *Congruence* and

representatives' voting behavior on either trade or migration.[25]

2.4 Data

The construction of our dataset draws on a number of different sources. We collect information on legislative votes on trade and migration policy measures in the U.S. House of Representatives, which have been obtained from the Congressional Roll Call Voting Dataset of the Policy Agenda Project and the Library of Congress (THOMAS). Since these datasets provide only rough information about the content of the bills, we have supplemented them using additional sources, like the Congressional Quarterly publications and existing historical accounts like the ones by Gimpel and Edwards (1999) and Destler (2005) (see also Conconi, Facchini, Steinhardt, and Zanardi 2012 for more details).

As for legislation related to trade, we focus on all major trade bills introduced in the U.S. Congress between 1986 and 2004 (see Table 2.1).[26] In particular, we include in our analysis votes on the implementation of multilateral trade agreements (Tokyo and Uruguay rounds of the GATT) and preferential trade agreements (e.g. NAFTA) negotiated in this period, as well as the votes on the conferral and extension of fast track trade negotiating authority to the President, which, as it has been argued by the literature, makes it easier to negotiate trade agreements (see Conconi, Facchini, and Zanardi 2012). With respect to immigration, following Facchini and Steinhardt (2011) we restrict our analysis to bills with a potential impact on labor supply, i.e. that either regulate legal immigration or tackle illegal immigration. We proceed in this way to more closely match the voting behavior of elected representatives to the available information on individual preferences towards immigration.[27]

We restrict our attention to final passage votes, which determine whether a bill clears the House or not. In particular, we do not consider votes on amendments. We follow this approach because voting on amendments is often strategic and therefore is less likely to distinctly reflect the interests of a legislator's constituency. Table 2.1 summarizes the votes on trade and immigration legislation that took place in the U.S. House of Representatives between 1986 and 2004, which constitute the basis of our empirical analysis.[28]

[25] In particular, regressing the representatives' voting behavior on congruence and state–year interactions we obtain a coefficient (standard error clustered at the district-decade level) of -0.0289 (0.204) for migration and 0.132 (0.109) for trade.

[26] In particular we cover bills granting or extending fast track authority and ratifying bilateral or multilateral trade agreements.

[27] In particular, we exclude, for instance, bills that deal primarily with the provision of public goods to illegal migrants or the federal reimbursement of health and education costs to states.

[28] Note that this is not an exhaustive list because of limits to the availability of our key explanatory variable. For details on the full sample of votes on migration and trade that took place in this period, see Conconi, Facchini, Steinhardt, and Zanardi (2012).

Table 2.1: Final passage votes on trade and migration reforms in the House of Representatives 1986-2004

						Votes			Districts covered in ANES		
Cong.	**Date**	**Bill**	**Description**	**Issue**	**Dir**	***Yes***	***No***	***Sum***	***Yes***	***No***	***Sum***
99	22.05.1986	H.R.4800	Omnibus Trade Bill, incl. fast track authority	Trade	Contra	295	115	410	70	36	106
100	13.07.1988	H.R.4848	Omnibus Trade and Competitiveness Act, incl. fast track authority	Trade	Pro	376	45	421	73	14	87
100	09.08.1988	H.R.5090	Approval of CUSFTA	Trade	Pro	366	40	406	75	10	85
103	22.06.1993	H.R.1876	Extension of fast track authority	Trade	Pro	295	126	421	92	42	134
103	17.11.1993	H.R.3450	Approval of NAFTA	Trade	Pro	234	200	434	64	73	137
103	29.11.1994	H.R.5110	Approval of Uruguay Round Agreements	Trade	Pro	288	146	434	77	33	110
105	25.09.1998	H.R.2621	Approval of fast track authority	Trade	Pro	180	243	423	42	52	94
108	24.07.2003	H.R.2738	Approval of US-Chile FTA	Trade	Pro	270	156	426	59	42	101
108	24.07.2003	H.R.2739	Approval of US-Singapore FTA	Trade	Pro	272	155	427	61	42	103
108	14.07.2004	H.R.4759	Approval of US-Australia FTA	Trade	Pro	314	109	423	66	28	94
108	22.07.2004	H.R.4842	Approval of US-Morocco FTA	Trade	Pro	323	99	422	65	23	88
104	21.03.1996	H.R.2202	Illegal Immigration Reform and Immigrant Responsibility Act	Migration	Contra	333	87	420	127	46	173
105	25.09.1998	H.R.3736	Skilled Immigration. Skilled Workers and H-1B	Migration	Pro	288	133	421	61	31	92

Cong. and Date describe the congress/date in which/when the vote took place. Bill shows the name under which the bill is originating in the House of Representatives ("H.R."). Description provides some basic information about the content of the legislation. Dir. shows the direction of the bill, i.e. whether the bill is pro or contra liberalizing trade. In "Votes": Yes/No show the overall number of Yes/No Votes, Sum shows the overall number of votes. In "Districts covered in Anes" we only focus on those districts for which we have observations on opinion in the American National Election Survey dataset. All figures are calculated on the basis of individual voting records. FTA stands for free trade area.

Next, we combine our data on trade and immigration bills with the corresponding records of individual voting behavior of House representatives. This information is provided by the VOTEVIEW project (http://voteview.ucsd.edu) of Poole and Rosenthal (1997). In addition, the VOTEVIEW database includes information on congressmen's name, party affiliation, state of residence, and congressional district, which enable us to link legislators to their constituencies. With respect to information on representatives' age and gender, we use data from three sources: up to 2000, we rely on ICPSR Study number 7803 and the data base built by Swift et al. (2000); from 2001 onwards, we rely on data provided by the Biographical Directory of the US Congress.

Finally, we match our data on individual voting records with information on the characteristics of electoral constituencies. For this purpose, we use data from the American National Election Studies (ANES), a biannual representative survey carried out in election years that contains detailed information on the place of residence of individual respondents,[29] and the Congressional District Data Files of Lublin (1997) and Adler (2003), who

[29]This data has been used extensively in the literature. For recent analyses based on it, see for instance Hanson et al. (2007) and Snyder and Strömberg (2010).

have aggregated Census data at the congressional-district level, taking into account the decennial redistricting. We supplement them using information taken directly from the U.S. Census whenever needed.

Our dependent variable is the representative's votes on bills regulating trade and immigration ($Vote_{bdt}$). In the case of bills liberalizing trade or migration, a vote coded 1 indicates that the district's representative supports more open trade or immigration, and 0 otherwise. In the case of legislation restricting trade or immigration, a vote is coded 0 if the representative votes in favor of a restrictive policy and 1 otherwise. In other words we have coded these variables so that a value of 1 indicates a vote supporting the liberalization of trade or immigration, or opposing their restriction. Conversely, a value of 0 indicates that the representative has voted in favor of restrictions, or against lifting restrictions, on trade or migration.

Our key explanatory variables are a measure of a district's preferences towards trade and migration and the indicator for congruence between media markets and congressional districts described in Section 2.3. We assess individual opinions towards international economic policy using two questions that have been asked in several waves of the ANES, and which have been extensively used in the literature to study the determinants of preferences towards trade and migration (e.g. see Citrin et al. 1997, Scheve and Slaughter 2001a, Scheve and Slaughter 2001b, Hanson et al. 2007). The question on trade reads as follows: "Some people have suggested placing new limits on imports in order to protect American jobs. Others say that such limits would raise consumer prices and hurt American exports. Do you favor or oppose placing new limits on imports, or haven't you thought much about this?" and the possible answers are "Favor new limits", "Oppose new limits", "Don't know" and "Haven't thought much".[30] We have constructed a "pro–trade" dummy that takes a value of one if the respondent answered "Oppose new limits" and zero if the answer was "Favor new limits", while we have disregarded "Don't know" and "Haven't thought much" replies. As for the question on migration, it reads as follows in all years: "Do you think the number of immigrants from foreign countries who are permitted to come to the United States to live should be increased, stay as now, or decreased?". We have constructed a "pro–immigration" dummy that takes a value of one if the individual is in favor of increasing migration or leaving it as it is now, and zero otherwise. Also in this case we have disregarded "Don't know" replies. [31] For our main specification we use the mean of the "pro–trade" ($TradeOp_{dt}$) and "pro–immigration" ($MigOp_{dt}$) dummies to measure district–level preferences. In robustness checks we have also experimented using their median values.

Two additional sets of drivers are used to explain voting behavior. The first focuses on district-level characteristics, whereas the second considers instead individual features of the representative. As it has been argued in the literature (see for instance Conconi, Facchini, Steinhardt, and Zanardi 2012) a district's factor endowment might play an important role in shaping policy preferences, and we capture it using the variable $SkillRatio_{dt}$, which measures the proportion of high-skilled individuals in the total population over 25 years of age at time t in congressional district d. High-skilled individuals are defined as those having earned at least a bachelor's degree. To proxy for the sectoral structure of the local economy, we use instead the share of individuals in the labor force employed in each one digit sector.[32] We also include a measure of district-level

[30] In 1986 the "Haven't thought much" option was not available.

[31] The share of "Don't know" in the migration question is approximately 3 percent, whereas for the trade question, the share of "Don't know" and "Haven't thought much" answers is consistently above 30 percent. In our robustness checks we experiment with different definitions of both variables, obtaining broadly similar results.

[32] Details on the data construction are available from the National Historic Geographical Information System website,

unemployment ($Unemployment_{dt}$), which is defined as the share of individuals in the total labor force not having a job, but who have been looking for it in the past four weeks.

The literature on public opinions towards trade and migration has emphasized that the redistribution among different groups within society carried out by the welfare state is an important driver of preferences towards globalization (Hanson et al. 2007, Facchini and Mayda 2009). To capture the role of the welfare state in our analysis, we consider the mean family income within a district ($Log\ mean\ family\ income_{dt}$). Alternatively, in robustness checks we experiment with the median family income ($Log\ median\ family\ income_{dt}$) or with the ratio of average to median family income, which measures the extent of inequality within a district ($Inequality_{dt}$).

Finally, we include also proxies for the degree of urbanization and ethnic composition. To this end we use Census data, and construct the variable $Urban_{dt}$ that captures the share of the population living in urban areas, to account for potential differences in attitudes towards immigration and trade between rural and urban areas. In a robustness check we use also a measure of population density per square mile ($Log\ Pop\ Density_{dt}$). Next, we define the variable $Foreign-born_{dt}$, which measures the share of foreign-born in the district's population. Finally, we explore the existence of possible coalitions among minorities in shaping migration policy by including $African-American_{dt}$, i.e. the share of blacks in the population.

Turning now to individual-level controls for the representative's characteristics, we start with a measure of ideology, which is proxied by $Democrat_{dt}$, a dummy variable taking a value of one if the representative is a member of the Democratic party. We have also used two alternative indicators: the first dimension of the DW nominate score ($DW-Nominate\ score_{dt}$), and the ADA score ($ADA\ score_{dt}$), which have been normalized so that a higher score identifies a more liberal politician.[33] Age ($Age-Representative_{dt}$) and gender ($Gender-Representative_{dt}$) have been shown to play a significant role in shaping individual attitudes towards trade and migration (see for instance Mayda and Rodrik 2005 and Facchini and Mayda 2009). For this reason, we also include these demographic characteristics of legislators in our analysis, and in robustness checks we also experiment with a measure of tenure in office ($Tenure_{dt}$). As educational background might affect the voting behavior on globalization, in some specifications we account also for whether a representative has attended an elite educational institution ($Educ-Representative-ivy_{dt}$). This information is recorded in the Biographical Directory of the United States Congress.[34] The last individual-level controls we use are proxies for the influence of pressure groups on U.S. representatives. In particular, we employ data on labor and corporate Political Action Committees (PACs) contributions ($PACLabor_{dt}$ and $PACCorporate_{dt}$ respectively), which are provided by the Federal Election Commission (http://www.fec.gov/).

Opinions on trade and migration are not elicited in every bi-annual wave of the ANES. In particular, the former are available for the 1986 through 2000 and 2004 election cycles, and the latter for the 1992 through 2000 and 2004 election cycles. Thus, our sample covers those Congresses during which a bill on trade or migration came to the floor and information on public opinion on the two issues is available in the ANES. As

https://www.nhgis.org/ and Bureau of Labor Statistics website http://www.bls.gov/iag/home.htm.

[33] The DW-nominate measure is provided by the VOTEVIEW project (http://voteview.ucsd.edu), whereas the ADA score is constructed by the American for Democratic Action, a lobby group. The main difference between the former and the latter is that the ADA score uses only votes on a sub-sample of bills, whereas the DW nominate score employs every roll call vote in each congress, and is based on a more sophisticated estimation procedure.

[34] This information is available in digital format as ICPSR Study 3371 until 1989, and then from the following website http://bioguide.congress.gov/biosearch/biosearch.asp.

a result, our analysis considers the 13 bills listed in Table 2.1. For an overview of the content of the various pieces of legislation we include in our analysis, see Conconi, Facchini, Steinhardt, and Zanardi (2012).

Table 2.2 provides summary statistics for the data used in our analysis, where we report separate figures for votes on trade and migration. The first stylized fact that emerges is the broad difference in support for trade and migration in the US House of Representatives: while in only 40% of our observations a vote in favor of freer immigration was recorded, the corresponding figure for trade was 63%. Turning to our main explanatory variables, the value of congruence is remarkably similar in the two samples at just above 40 percent. As for the opinion variables, the mean value of the pro–trade dummy is 36% while the value of the pro–immigration dummy equals 45%. Note, though, that given the difference in the phrasing of the two questions, the two measures are not directly comparable.[35] As for the other regressors, they all appear not to differ significantly across samples.

[35] Given that in our empirical analysis we will exploit the variation of opinions on each separate topic across districts, this is not a concern for the interpretation of our main results.

Table 2.2: Summary statistics

Variable		Obs	Mean	Std. Dev.	Min	Max
Vote $_{dt}$	*Migration*	265	0.402	0.491	0	1
	Trade	1139	0.627	0.484	0	1
Mean Opinion $_{dt}$	*Migration*	265	0.445	0.211	0	1
	Trade	1139	0.363	0.246	0	1
Congruence $_{dt}$	*Migration*	265	0.401	0.214	0.038	0.821
	Trade	1139	0.430	0.226	0.035	0.893
SkillRatio $_{dt}$	*Migration*	265	0.200	0.093	0.053	0.514
	Trade	1139	0.194	0.087	0.041	0.569
Unemployment $_{dt}$	*Migration*	265	0.062	0.028	0.018	0.204
	Trade	1139	0.064	0.026	0.018	0.219
Log mean family income $_{dt}$	*Migration*	265	3.733	0.289	3.124	4.681
	Trade	1139	3.698	0.455	2.400	4.954
Farmer $_{dt}$	*Migration*	265	0.022	0.021	0.002	0.209
	Trade	1139	0.022	0.023	0.000	0.209
Construction $_{dt}$	*Migration*	265	0.058	0.015	0.023	0.130
	Trade	1139	0.059	0.017	0.010	0.130
Manufacturing $_{dt}$	*Migration*	265	0.159	0.059	0.047	0.313
	Trade	1139	0.174	0.068	0.038	0.347
Wholesale, Retail and Transportation $_{dt}$	*Migration*	265	0.238	0.022	0.171	0.314
	Trade	1139	0.225	0.028	0.130	0.304
Finance $_{dt}$	*Migration*	265	0.064	0.023	0.022	0.159
	Trade	1139	0.061	0.022	0.022	0.171
Professionals $_{dt}$	*Migration*	265	0.066	0.023	0.030	0.164
	Trade	1139	0.066	0.030	0.024	0.197
Education and Health $_{dt}$	*Migration*	265	0.174	0.031	0.078	0.262
	Trade	1139	0.180	0.035	0.092	0.310
Entertainment Services $_{dt}$	*Migration*	265	0.014	0.009	0.006	0.095
	Trade	1139	0.040	0.032	0.006	0.183
Public Administration $_{dt}$	*Migration*	265	0.050	0.026	0.016	0.192
	Trade	1139	0.048	0.024	0.016	0.243
Urban $_{dt}$	*Migration*	265	0.667	0.290	0.034	1
	Trade	1139	0.695	0.271	0.001	1
Foreign - born $_{dt}$	*Migration*	265	0.078	0.085	0.004	0.585
	Trade	1139	0.076	0.086	0.004	0.585
Foreign - born growth $_{dt}$	*Migration*	265	0.162	0.656	-0.819	5.458
	Trade	1139	0.266	0.590	-0.819	5.458
African - American $_{dt}$	*Migration*	265	0.139	0.187	0.001	0.739
	Trade	1139	0.131	0.173	0.001	0.921
Age - representative $_{dt}$	*Migration*	265	51.208	9.238	29	86
	Trade	1139	50.882	9.861	28	85
Gender - representative $_{dt}$	*Migration*	265	0.086	0.281	0	1
	Trade	1139	0.076	0.266	0	1
Democrat $_{dt}$	*Migration*	265	0.479	0.501	0	1
	Trade	1139	0.508	0.500	0	1

Vote $_{dt}$ is coded as 1 if the representative of district d at time t votes pro trade or pro migration, 0 otherwise. *Mean Opinion* $_{dt}$ is the average opinion of district d at time t and ranges between 0 and 1 (the closer to 1 the more in favor of trade liberalization or pro-immigration). *Congruence* $_{dt}$ measures the match between newspaper markets and U.S. congressional districts. *SkillRatio* $_{dt}$ measures the percentage of the population over 25 with at least a bachelor degree. *Unemployment* $_{dt}$ is the share of unemployed individuals in the total labor force. *Log mean family income* $_{dt}$ measures the logarithm of mean family income within a district in dollars. *Farmer* $_{dt}$ measures the share of farm workers in the total labor force. *Construction* $_{dt}$ measures the share of people employed in construction in the total labor force. *Manufacturing* $_{dt}$ is the share of people employed in the manufacturing industry in the total laborforce. *Wholesale, Retail and Transportation* $_{dt}$ is the share of people employed in the wholesale, retail trade and transportation sectors in the total labor force. *Finance* $_{dt}$ measures the share of people employed in the financial, insurance and real estate industry in the total labor force. *Professionals* $_{dt}$ measures the share of people employed in professional, scientific, management, administrative, and waste management services in the total labor force. *Education and Health* $_{dt}$ is the share of people employed in the educational sector and in the health and social services sector in the total labor force. *Entertainment Services* $_{dt}$ measures the share of people employed in the entertainment, recreation, accommodation and food services industries in the total labor force. *Public Administration* $_{dt}$ measures the share of individuals employed in public administration in the total labor force. *Urban* $_{dt}$ is a measure of the share of population living in urban areas. *Foreign - born* $_{dt}$ is the share of foreign-born individuals in the total population. *Foreign - born growth* $_{dt}$ measures how the share of Foreign-Born has changed relatively to the previous period. *African - American* $_{dt}$ is the share of African-American individuals in the total population. *Age - representative* $_{dt}$ is the age of congressperson of district d at the beginning of current congress. *Gender - representative* $_{dt}$ is coded as 1 for female congresspersons, 0 otherwise. *Democrat* $_{dt}$ is coded as 1 if the representative of the district belongs to the Democratic Party.

Figures 2.2 and 2.3 highlight a clear pattern that emerges from the data. The first illustrates Florida's congressional districts 3 and 15 in 1998. Both districts are characterized by electorates that support more open immigration policies. In particular, over 62 percent of the population in district 3 and 56 percent of the population in district 15 have declared to be in favor of increasing migration or leaving it as it is now (panel 3.2.2). At the same time, only district 15 exhibits a high level of congruence (76 percent), whereas district 3 is characterized by low levels of congruence (20 percent; see panel 3.2.3). Interestingly, Dave Weldon, the representative of the "high congruence" district 15 voted in favor of freer migration, supporting H.R. 3736, whereas Corrinne Brown, the representative of the "low congruence" district ended up opposing that bill (panel 3.2.4).

Figure 2.3 focuses instead on Texas' districts 7 and 9 in 1998. Also in this case, public opinion in the two constituencies is similar: in both cases well over two thirds of the electorate is in favor of trade liberalization, but while in district 9 congruence is high at 63.3 percent, in the case of district 7 congruence is low, at approximately 14 percent. Importantly, in this case, there is no obvious relationship between the electorates' preferences and the voting behavior of House Representatives. Focusing on H.R. 2621, we see that Nick Lampson, elected in district 9 ended up voting against trade liberalization, even if the congruence between his district and the local newspaper market was very high, while William Archer Jr. ended up voting in favor of it even if congruence was low.

While these examples suggest that congruence plays an important role in shaping the voting behavior of elected officials when it comes to migration, they also indicate that this is not true in the case of trade policy. In the remainder of the paper, we will systematically investigate the role that the media play in enhancing the accountability of elected officials on these two dimensions of international economic policy.

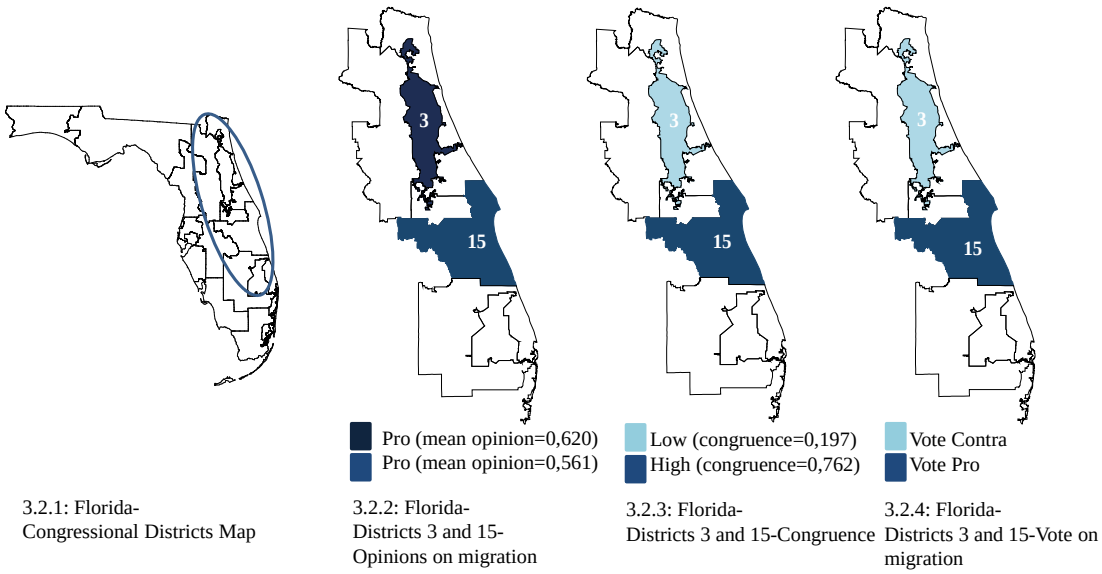


Figure 2.2: Individual opinions on migration, congruence and voting behavior on HR 3736 (1998)

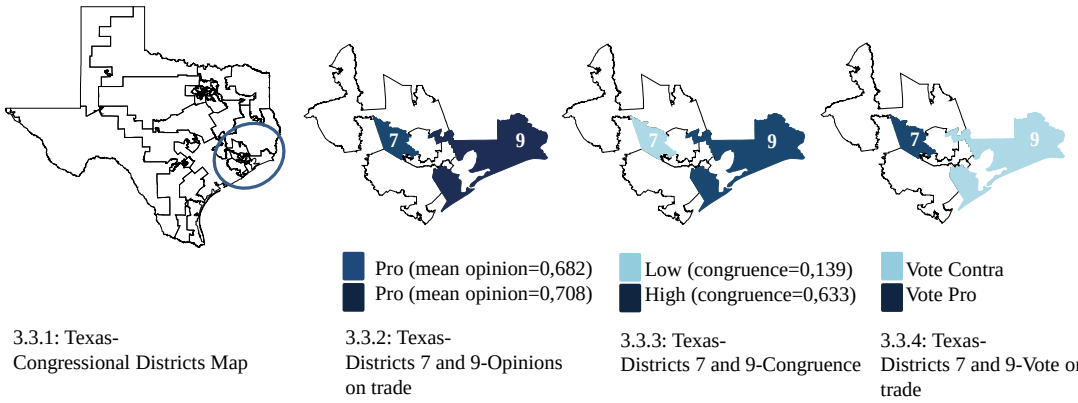


Figure 2.3: Individual opinions on trade, congruence and voting behavior on HR 2621 (1998)

2.5 Empirical Analysis

In this section we present the core of our analysis. We start by describing our empirical strategy, we turn then to discuss our main results and finally we present evidence on the role played by electoral concerns in explaining our findings.

2.5.1 Specification

In our empirical analysis we study to what extent the probability that a representative votes pro-trade or pro-migration depends on the preferences of its electorate and on the press coverage that the politician's behavior receives. Specifically, we estimate two linear probability models, taking the following form:

$$Vote^{M}_{bdt} = \alpha^{1} Op_{bdt} + \beta^{1} Cong_{dt} + \gamma^{1} Op_{bdt} \times Cong_{dt} + \mathbf{X}_{dt}\delta^{1} + I_{st} + u^{M}_{bdt} \tag{2.2}$$

$$Vote^{T}_{bdt} = \alpha^{2} Op_{bdt} + \beta^{2} Cong_{dt} + \gamma^{2} Op_{bdt} \times Cong_{dt} + \mathbf{X}_{dt}\delta^{2} + I_{st} + u^{T}_{bdt} \tag{2.3}$$

where $Vote^{M}_{bdt}$ and $Vote^{T}_{bdt}$ are dummy variables taking a value of one if the representative of district d has voted respectively pro immigration or pro trade on a bill b at time t. Op_{bdt} is the share of residents of district d that, in year t, are in favor of more open policies on the subject dealt with by bill b (either migration or trade), and $Cong_{dt}$ is the measure of "congruence" between the electoral district and the market for local newspapers defined in Section 2.3. These are our key variables of interest. The vector $\mathbf{X}_{dt}$ contains instead additional controls at the district and individual representative level. In particular, we account for a district's economic characteristics – skill composition, unemployment rate, income level, sectoral composition of employment – and demographic features like the share of urban, foreign born and African-American in the population. As for the individual representative, we control for party affiliation, age and gender. In all our specifications we include also a set of state–year interaction dummies I_{st} to account for unobserved state-specific effects, which can vary over time. u^{M}_{bdt} and u^{T}_{bdt} are mean zero idiosyncratic shocks, which we assume to be uncorrelated

with the explanatory variables. We allow for the shock to be correlated within congressional districts and cluster standard errors at the district–decade level.[36]

The key parameters of interest in our analysis are the coefficients γ^1 and γ^2. A positive sign indicates that an increase in congruence will make the elected official's behavior more in line with the prevailing opinion of her electorate. Conversely, a lack of significance would instead indicate the absence of any accountability–enhancing effect of press coverage.

2.5.2 Main results

Our main findings are contained in Table 2.3 which reports each set of results in two separate columns and allows comparison of the effects of the various drivers of votes on trade and migration bills. In column (1) we simply regress our dependent variable on districts' average opinion and state–year interactions. Our results suggest that representatives of more pro–migration districts are more likely to support legislation aimed at liberalizing the flow of foreigners, and this effect is significant at the ten percent level. At the same time, the electorate's opinions do not play a significant role when it comes to trade. What drives this finding? In the remaining columns of the Table, we show that the impact of migration attitudes is driven by more congruent districts. In particular, in column (2) we allow the effect of opinion to vary across districts depending on their level of *Congruence*. The results show that the estimates of the coefficients of the interaction term between opinion and congruence is different between immigration and trade. In the former case it is positive and highly significant, whereas in the latter it is not different from zero. This suggests that – in the case of migration – higher congruence between the representatives' district and local newspapers' markets makes it more likely that the elected official will cast a ballot in accordance with the preferences of her constituency. This is not true for the case of trade.

[36] Decadal redistricting implies that district borders are redrawn every ten years and we need to take this into account while clustering.

Table 2.3: Baseline specification

	(1)		(2)		(3)		(4)		(5)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	0.294	0.043	-0.236	-0.078	-0.316	-0.142	-0.447	-0.159	-0.428	-0.052
	(0.153)	(0.092)	(0.237)	(0.139)	(0.231)	(0.117)	(0.235)	(0.117)	(0.240)	(0.113)
Congruence $_{dt}$			-0.775**	-0.037	-0.654	-0.345	-0.447	-0.264	-0.316	-0.207
			(0.288)	(0.188)	(0.343)	(0.211)	(0.359)	(0.233)	(0.370)	(0.214)
Interaction $_{dt}$			1.694**	0.474	1.663**	0.217	1.781**	0.231	1.665**	-0.132
			(0.582)	(0.416)	(0.547)	(0.367)	(0.549)	(0.364)	(0.577)	(0.355)
SkillRatio $_{dt}$					3.435*	2.220*	3.913*	2.256*	3.716*	1.095
					(1.601)	(0.980)	(1.578)	(0.960)	(1.729)	(0.924)
Unemployment $_{dt}$					6.597	-3.929**	5.174	-3.702*	5.214	-2.613
					(3.636)	(1.483)	(3.158)	(1.498)	(2.875)	(1.475)
Log mean family income $_{dt}$					-0.762	-0.261	-0.733	-0.206	-0.547	-0.190
					(0.468)	(0.284)	(0.464)	(0.295)	(0.493)	(0.265)
Farmer $_{dt}$					2.687	6.078**	3.934	5.837**	4.625	3.853*
					(3.131)	(1.722)	(3.184)	(1.699)	(3.115)	(1.670)
Construction $_{dt}$					3.884	4.896*	5.667	5.338*	5.827	1.771
					(4.344)	(2.134)	(4.209)	(2.188)	(4.424)	(2.343)
Manufacturing $_{dt}$					1.944	0.743	2.447	0.914	2.619	0.168
					(2.508)	(1.246)	(2.287)	(1.252)	(2.195)	(1.326)
Wholesale, Retail and Transportation $_{dt}$					3.908	-0.367	4.700	-0.399	5.940*	-1.721
					(2.914)	(1.459)	(2.917)	(1.615)	(2.826)	(1.619)
Finance $_{dt}$					2.341	2.440	1.829	2.597	2.191	0.955
					(3.598)	(1.980)	(3.431)	(1.989)	(3.292)	(2.031)
Professionals $_{dt}$					0.634	-3.547	-1.467	-4.309	-1.294	-3.589
					(4.394)	(2.654)	(4.530)	(2.638)	(4.347)	(2.725)
Education and Health $_{dt}$					0.072	-0.081	0.069	0.362	0.114	0.112
					(2.522)	(1.479)	(2.210)	(1.556)	(2.057)	(1.642)
Entertainment Services $_{dt}$					2.769	1.192	3.425	1.358	3.323	0.939
					(4.737)	(2.159)	(4.337)	(2.157)	(4.235)	(2.015)
Public Administration $_{dt}$					0.010	1.925	0.581	2.486	0.865	1.999
					(2.604)	(1.363)	(2.423)	(1.441)	(2.412)	(1.571)
Urban $_{dt}$							0.090	0.028	0.004	0.238
							(0.215)	(0.174)	(0.209)	(0.169)
Foreign - born $_{dt}$							1.377**	0.539	1.252**	0.712
							(0.474)	(0.382)	(0.448)	(0.369)
Foreign - born growth $_{dt}$							-0.031	-0.036	-0.043	-0.043
							(0.035)	(0.036)	(0.037)	(0.037)
African - American $_{dt}$							0.455	-0.052	0.530	-0.223
							(0.388)	(0.225)	(0.378)	(0.207)
Age - representative $_{dt}$									0.005	-0.000
									(0.004)	(0.002)
Gender - representative $_{dt}$									0.077	-0.020
									(0.099)	(0.080)
Democrat $_{dt}$									0.114	-0.335**
									(0.091)	(0.057)
State*year fixed effect	YES		YES		YES		YES		YES	
Observations	265	1,139	265	1,139	265	1,139	265	1,139	265	1,139
R-squared	0.329	0.272	0.350	0.276	0.399	0.368	0.424	0.371	0.439	0.414

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables.

When deciding how to vote, a representative is likely to have imperfect information on the exact distribution of opinions in the district. For this reason, she might base her choices on a broader set of socio-economic and demographic characteristics that would allow her to better infer the preferences of her electorate. In column (3) we start by controlling also for the skill composition, unemployment rate and mean family income of the district. We additionally account for the sectoral composition of employment by including the share of employees in each one digit sector, whereas in column (4) we include also a set of district level demographic controls, i.e. the share of the urban population, the share of foreign born and the share of African Americans. Last, in column (5) we add also a set of representative's characteristics including her party affiliation, age and gender. Introducing all these additional controls does not alter the sign, significance and magnitude of our key coefficient of interest.[37] Moreover, focusing on the result reported in column (5), several interesting patterns emerge. First, our findings suggest that a higher average skill level is associated to a more open stance towards migration, while this effect is not significant for trade.

As for family income, it does not play a role on either dimension of international economic policy. Turning to sectoral cleavages, we find that the share of workers employed in agriculture positively affects support for trade liberalization, and this result could be driven by the comparative advantage enjoyed by the United States in agricultural products. We also detect a positive impact of employment in the wholesale and retail trade and transportation sector on support for migration liberalization, and this finding could be driven by the fact that these service sectors tend to employ large numbers of immigrants.

Finally, we find that districts characterized by a higher share of foreign born tend to be more in favor of both migration and trade liberalization.[38] This result is likely to be driven by the role that ethnic channels play in channeling support for migration, as well as by the role that ethnic networks play in international trade. During the first half of our sample in particular, growing regional integration with Mexico and other Latin American countries was at the forefront of the political debate and several latino pressure groups were actively engaged in the promotion of these preferential trading arrangements (see Baldwin and Magee 2000).

All other controls do not play a role. Among the representatives' characteristics, we find that only affiliation with the democratic party has an effect, negatively influencing support for trade liberalization, whereas it has a positive impact on migration, even if the latter is not statistically significant. These results are broadly consistent with previous findings in the literature (see for instance Baldwin and Magee 2000, Conconi, Facchini, Steinhardt, and Zanardi 2012 etc.).[39]

To quantify the impact of public opinion on the representative's voting behavior on migration and trade, we focus on our benchmark specification in column (5), and in Figure 2.4 we illustrate how the marginal effect of public opinion on the representative's voting behavior changes with congruence. Panel (a) focuses on migration, whereas panel (b) illustrates the effect for trade. As we can see, the marginal impact of a district's average opinion on support for migration is not statistically significant for low levels of congruence. For values of congruence above 0.43 the effect becomes instead positive and significant at the five percent level. As a result, in a district characterized by slightly above average congruence – like Florida's 4th in 1996 – a ten

[37] Wald tests reject the equality of γ^1 and γ^2 in all specifications, with p-values ranging from 9% in the basic specification of column (2) to 0.55% in the full specification of column (5).

[38] The latter effect is significant at the 10 percent level.

[39] Note that – differently from previous studies in the literature – in all our specifications we are already capturing the pro–migration stance of the democratic electorate by including average opinions in the district.

percentage points increase[40] in the share of the population which favors pro-migration policies would lead to a 2.9 percentage points[41] increase in the probability of the representative casting a pro-migration vote. At the same time, for a congressional district with a congruence score of 0.70 (at the 90th percentile of the congruence distribution) like Pennsylvania's 5th congressional district in 1998, the same increase in the share of pro-migrant's population would lead to a 7.4 percentage points (over 14% of a standard deviation) increase in the probability of a pro-migration vote. On the other hand, as it is apparent from panel (b) of the Figure, even for very high levels of congruence, public opinion does not significantly affect a representative's voting behavior on trade policy.

2.5.3 The role of electoral accountability

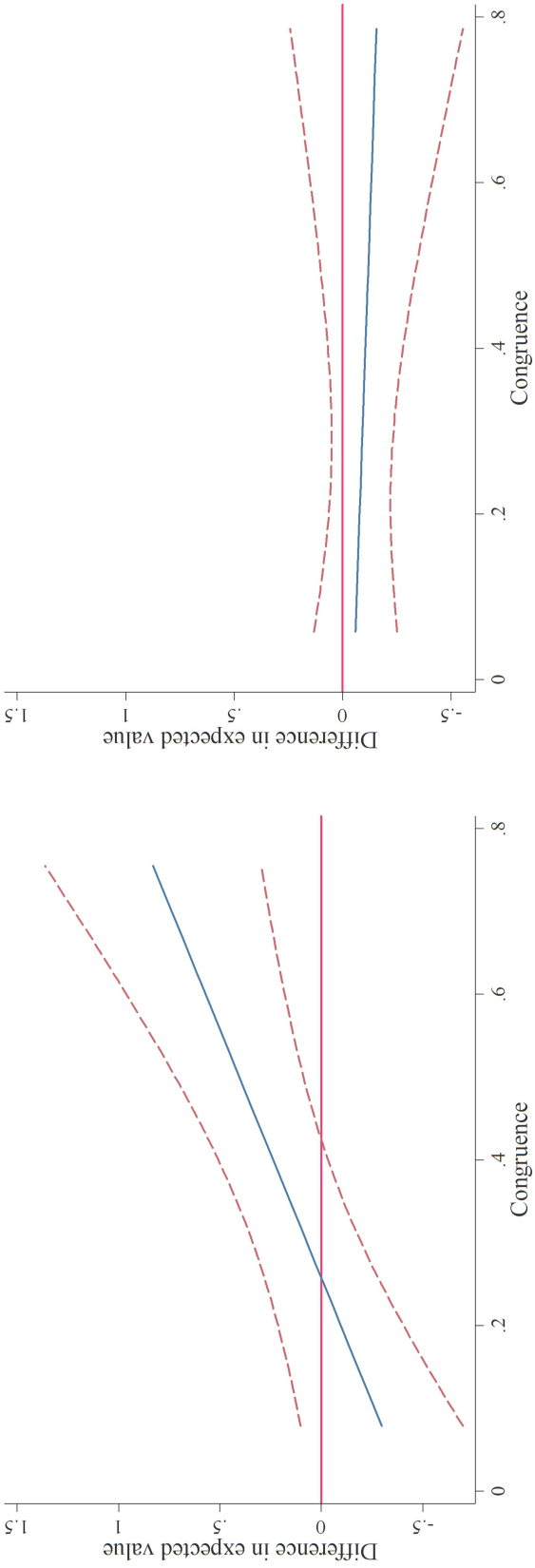
Why are elected officials from more "congruent" districts more likely to follow their constituents' preferences on migration? In this subsection we provide evidence suggesting that electoral considerations play a key role. In particular, we show that the results identified in Subsection 2.5.2 are driven by those districts in which politicians in office have faced more competitive races. The basic idea we exploit is that if representatives respond to electoral pressures, we expect them to adhere more closely to the preferences of their constituents whenever they won their seat in a more strongly contended election (Mian et al. 2010). We capture this idea in two ways. First, we expect the effect of congruence to be larger in those districts where the margin of victory in the previous election has been smaller. To empirically assess this hypothesis, we allow for the effect of congruence to be heterogeneous by defining an indicator variable MoV_{dt} that takes a value of one if the representative in office has been elected with a margin of victory above the average in that congressional election, and interact it with our measure of congruence. Formally, we have estimated the following specification, where to simplify notation we define the vector $(t_o, t_c, t_m) = (Op_{bdt}, Cong_{dt}, MoV_{dt})$:

$$Vote^M_{bdt} = \left(\sum_i \alpha^1_i t_i\right) + \beta^1_{oc} t_o t_c + \beta^1_{om} t_o t_m + \beta^1_{cm} t_c t_m + \gamma^1 t_o t_c t_m + \mathbf{X}_{dt}\delta^1 + I_{st} + u^M_{bdt} \tag{2.4}$$

$$Vote^T_{bdt} = \left(\sum_i \alpha^2_i t_i\right) + \beta^2_{oc} t_o t_c + \beta^2_{om} t_o t_m + \beta^2_{cm} t_c t_m + \gamma^2 t_o t_c t_m + \mathbf{X}_{dt}\delta + I_{st} + u^T_{bdt} \tag{2.5}$$

where $i \in \{o, c, m\}$. We report the results of our estimation in Table 2.4, which mimics the structure of Table 2.3.

[40] Corresponding to approximately half a standard deviation.
[41] Corresponding to about 6% of a standard deviation.



(a) Migration **(b)** Trade

Figure 2.4: Marginal effect of public opinion over congruence

Table 2.4: The role of election competitiveness

	(1)		(2)		(3)		(4)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	-0.323	-0.076	-0.414	-0.139	-0.390	-0.168	-0.447	-0.017
	(0.283)	(0.199)	(0.297)	(0.163)	(0.296)	(0.161)	(0.309)	(0.162)
Congruence $_{dt}$	-0.838*	-0.145	-0.762	-0.368	-0.434	-0.290	-0.434	-0.282
	(0.368)	(0.232)	(0.401)	(0.244)	(0.424)	(0.267)	(0.439)	(0.258)
MoV $_{dt}$	0.025	-0.158	-0.049	0.027	0.026	0.034	-0.004	-0.032
	(0.260)	(0.139)	(0.273)	(0.133)	(0.260)	(0.132)	(0.266)	(0.128)
Congruence $_{dt}$ **Opinion* $_{dt}$	2.235**	0.405	2.087**	0.274	1.848*	0.315	1.936*	-0.186
	(0.754)	(0.558)	(0.737)	(0.491)	(0.734)	(0.486)	(0.760)	(0.471)
MoV $_{dt}$ **Opinion* $_{dt}$	0.297	0.048	0.371	-0.000	-0.025	0.028	0.128	-0.032
	(0.490)	(0.268)	(0.465)	(0.228)	(0.429)	(0.233)	(0.445)	(0.233)
Congruence $_{dt}$ **MoV* $_{dt}$	0.139	0.162	0.108	0.050	-0.175	0.046	-0.082	0.181
	(0.554)	(0.357)	(0.606)	(0.328)	(0.604)	(0.333)	(0.612)	(0.353)
Congruence $_{dt}$ **Opinion* $_{dt}$ **MoV* $_{dt}$	-2.071	0.121	-2.012	-0.090	-1.066	-0.174	-1.511	0.051
	(1.220)	(0.792)	(1.194)	(0.700)	(1.141)	(0.715)	(1.182)	(0.752)
SkillRatio $_{dt}$			3.682*	2.238*	4.076**	2.213*	3.417*	1.230
			(1.552)	(1.006)	(1.480)	(0.994)	(1.611)	(0.921)
Unemployment $_{dt}$			6.488	-4.095**	4.580	-3.782*	4.765	-2.844
			(3.367)	(1.534)	(3.050)	(1.540)	(2.793)	(1.522)
Log mean family income $_{dt}$			-0.805	-0.258	-0.755	-0.200	-0.530	-0.241
			(0.473)	(0.297)	(0.461)	(0.311)	(0.490)	(0.273)
Farmer $_{dt}$			3.738	5.974**	4.223	5.645**	5.327	3.705*
			(3.327)	(1.733)	(3.096)	(1.722)	(3.201)	(1.709)
Construction $_{dt}$			5.410	4.853*	7.402	5.292*	6.548	1.560
			(4.418)	(2.152)	(4.172)	(2.217)	(4.545)	(2.339)
Manufacturing $_{dt}$			2.513	0.658	2.596	0.831	2.985	-0.064
			(2.594)	(1.232)	(2.236)	(1.249)	(2.228)	(1.305)
Wholesale, Retail and Transportation $_{dt}$			6.185	-0.606	7.397*	-0.735	8.891**	-2.190
			(3.316)	(1.452)	(3.138)	(1.641)	(3.210)	(1.627)
Finance $_{dt}$			2.103	2.452	1.256	2.645	1.906	0.724
			(4.023)	(2.046)	(3.727)	(2.081)	(3.641)	(2.100)
Professionals $_{dt}$			2.199	-3.927	1.303	-4.625	2.161	-4.266
			(4.300)	(2.672)	(4.256)	(2.647)	(4.122)	(2.685)
Education and Health $_{dt}$			1.500	-0.195	0.629	0.354	1.243	-0.162
			(2.643)	(1.483)	(2.263)	(1.569)	(2.226)	(1.626)
Entertainment Services $_{dt}$			3.428	0.966	3.181	1.100	3.561	0.848
			(4.932)	(2.213)	(4.255)	(2.221)	(4.190)	(2.024)
Public Administration $_{dt}$			0.207	1.866	-0.239	2.497	0.747	1.771
			(2.840)	(1.362)	(2.456)	(1.461)	(2.565)	(1.572)
Urban $_{dt}$					-0.107	0.044	-0.152	0.258
					(0.228)	(0.183)	(0.228)	(0.172)
Foreign - born $_{dt}$					1.471**	0.520	1.242**	0.703
					(0.509)	(0.387)	(0.477)	(0.375)
Foreign - born growth $_{dt}$					-0.037	-0.031	-0.043	-0.039
					(0.037)	(0.037)	(0.037)	(0.037)
African - American $_{dt}$					0.803*	-0.116	0.805*	-0.237
					(0.371)	(0.228)	(0.374)	(0.209)
Age - representative $_{dt}$							0.007*	-0.001
							(0.004)	(0.002)
Gender - representative $_{dt}$							0.102	-0.011
							(0.112)	(0.080)
Democrat $_{dt}$							0.033	-0.340**
							(0.092)	(0.059)
State*year fixed effect	YES		YES		YES		YES	
Observations	260	1,130	260	1,130	260	1,130	260	1,130
R-squared	0.378	0.279	0.430	0.367	0.458	0.370	0.473	0.412

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. MoV_{dt} is an indicator variable that takes a value of one if the representative in office has been elected with a margin of victory above the average in that congressional election and takes a value of zero otherwise.

We are interested in studying the behavior of the marginal effect of opinion on the probability to vote for migration or trade liberalization for representatives elected in districts with respectively a high and low margin of victory. The former is given by $\alpha_o^j + \beta_{om}^j + \left(\beta_{oc}^j + \gamma^j\right) Cong_{dt}$, whereas the latter is given by $\alpha_o^j + \beta_{oc}^j Cong_{dt}$ where $j \in \{1, 2\}$. We illustrate them in Figure 2.5.

In panel (a) we display the marginal effects for votes on migration, respectively in districts with a large (left migration panel) and small (right migration panel) margin of victory. As we can immediately see opinion does not have any effect on the voting behavior of representatives for any value of congruence when the past election was not close. On the other hand, in competitive districts a higher congruence leads to greater responsiveness of politicians to the preferences of their electorate. As a result, the average effect we have uncovered in Figure 2.4 appears to be driven by competitive districts. Turning now to votes on trade, panel (b) shows that constituents' opinions do not have an impact on politicians' voting behavior in either competitive or non competitive districts and for any value of congruence.

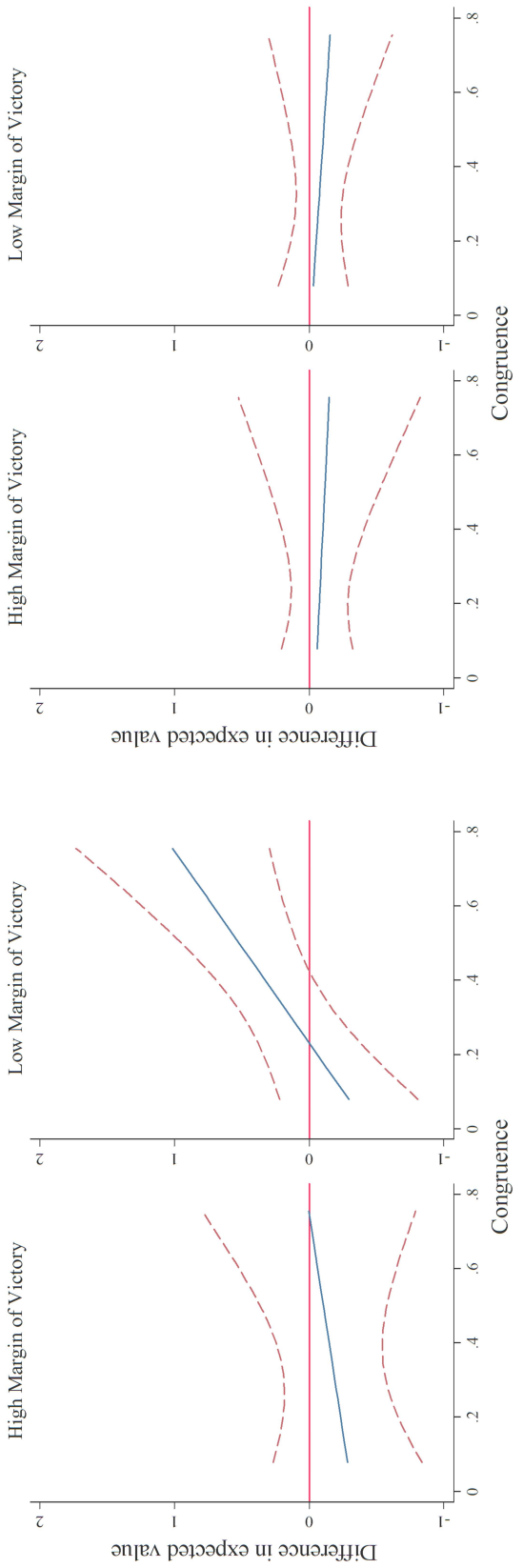
A second way to assess the role of the competitiveness of the election is to look at the extent of voter participation in the poll. In fact, as suggested by the literature, more competitive elections typically see higher turnout rates (Verba et al. 1978, Blais 2000). To assess this idea we have therefore collected information on voter turnout in the previous election, and repeated the analysis carried out in equations 2.4 and 2.5, by replacing the MoV_{dt} indicator with a dummy $Turnout_{dt}$ that takes a value of one if the representative in office has been elected in a district characterized by a turnout rate above the average in that congressional elections. The marginal effects of opinion on the probability to vote for trade or migration liberalization are illustrated in Figure 2.6.[42] Our results confirm the patterns we have observed in Figure 2.5, i.e. the average effect we uncovered for votes on migration appears to be driven by districts characterized by a higher turnout rate, whereas no significant heterogeneity exists when it comes to votes on trade.

2.6 Reverse Causality

One concern with the estimates of Section 2.5 is that they may be biased because of reverse causality. If the political discourse shapes individual opinions, then politicians can influence their electorate's views toward migration and trade. What is more, their influence could well be greater in districts where newspapers' coverage of local politicians' is higher, i.e. in districts characterized by higher congruence. This would lead to an upward bias in our estimates of γ^1 and γ^2, as they would measure not only the influence of the electorate's opinions on the voting behavior of the representative for a given level of congruence, but also the influence of the representative's stand on international economic policy issues on her electorate's attitudes.

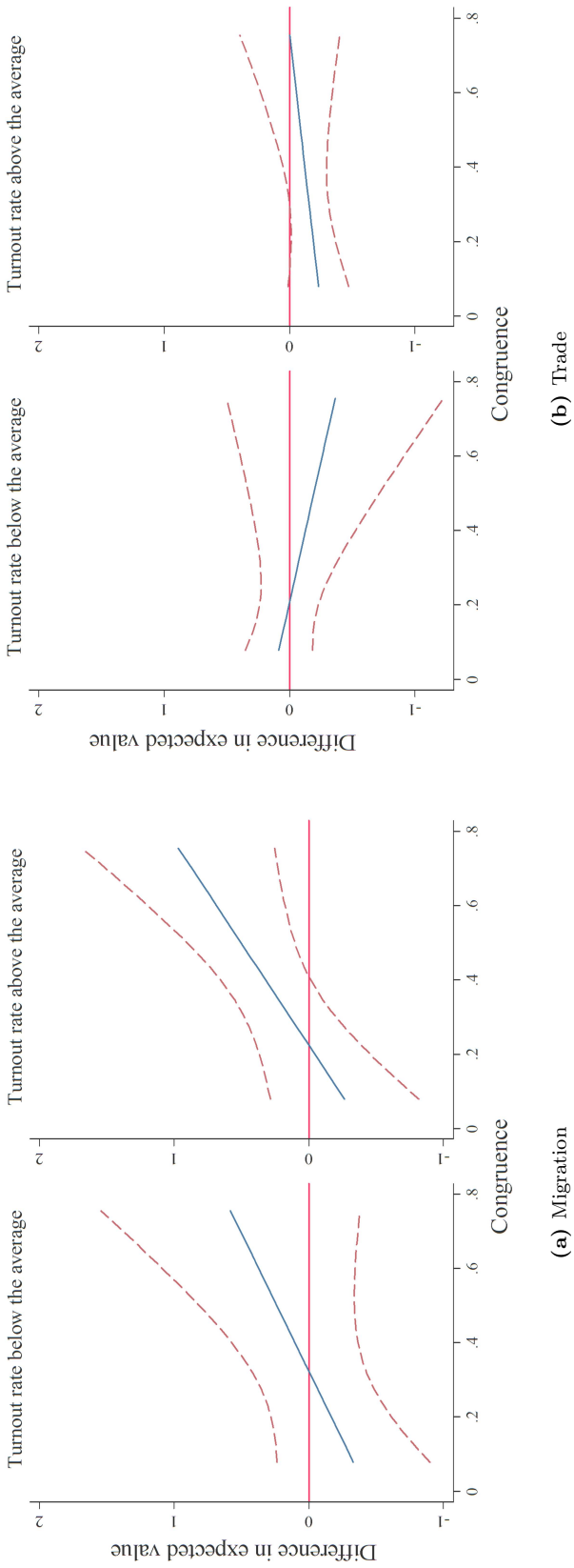
We are particularly concerned with the possibility that the political discourse may influence the electorate's opinions through local media, as this would directly bias our estimates of γ. Therefore, we start by investigating whether congruence and opinions are systematically correlated. To this end, we run a series of specifications reported in Table 2.A2, which show that district–level opinions are not systematically correlated with congruence, both in the case of migration and trade. These results are reassuring evidence against the possibility of reverse causality. Still, since the presence of one endogenous regressor might bias all our estimates, to further address this concern, we implement an IV strategy that builds upon the literature on

[42] See Table 2.A1 in Appendix A for the corresponding point estimates.



(a) Migration **(b)** Trade

Figure 2.5: Margin of victory



(a) Migration **(b)** Trade

Figure 2.6: Voters' turnout

individual level determinants of attitudes towards trade and migration. We proceed in two steps. In the first step, we construct for each individual a measure of opinion based on individual characteristics that are predetermined with respect to politicians' terms in office and that is therefore arguably exogenous to politicians' stand and voting behavior on any issue. To this end, we build on Hanson et al. (2007) and use data from the ANES to regress individual opinions on trade and on migration on education (dummies for high-school not completed, high school completed, some college, BA level degree and advanced degree, with grade school or less as the reference category), gender, age (we include dummies for 10-years age groups), ethnicity (Black, Asian, native American, Mexican and Hispanic non Mexican, with White the reference category), allowing the effects of both education and age to vary by ethnicity. We report the main results of this regression in Table 2.A3 in Appendix A.[43] Consistently with expectations (see Hanson et al. 2007) we find that a higher level of education is associated with both a higher likelihood of being both pro–migration and pro–trade, and these effect do not vary across ethnicity, with the only exception of educated blacks that appear to be less in favor of globalization than their white counterparts. Females are less likely to support trade liberalization than males, whereas gender does not affect support for migration. On average, Black respondents appear to be more in favor of free migration than whites, and the same is true for Asian and Native American when it comes to trade. Based on the results of these individual–level specifications we then construct an individual level "predicted opinion" on trade and migration. In the second step we compute district–level averages of individual "predicted opinions", and construct a variable $\widehat{Op}_{bdt}$ which can be interpreted as the share of residents of district d predicted to be in favor of more open migration and trade policies in year t based on their personal characteristics. We then estimate equations (2.2) and (2.3) by 2SLS using $\widehat{Op}_{bdt}$ and $\widehat{Op}_{bdt} \times Cong_{dt}$ as instruments for Op_{bdt} and $Op_{bdt} \times Cong_{dt}$.

IV regressions results are reported in Table 2.5. As in Table 2.3 we gradually include additional control variables as we move from columns (1) to (4). The last row of each column reports the Kleibergen-Paap version of the Wald F statistic routinely performed, and the results suggest that our instruments are sufficiently strong.[44]

Importantly, the IV results are reassuringly in line with the OLS findings of Table 2.3: the coefficient on the interaction term is positive and significant only for migration bills. It is instead close to zero and not statistically significant, once districts' characteristics are controlled for, in the case of trade bills. The marginal effect of a district's average opinions on the probability of representatives' casting a pro–migration vote are larger than those implied by the OLS estimates, and only statistically significant at 5% for values of congruence above 0.61. Our IV estimates imply that for a district characterized by that level of congruence a ten percentage points increase in the share of the population which favors pro-migration policies would lead to a 10.6 percentage points increase in the probability of the representative casting a pro-migration vote. Note that IV estimates indicate a stronger marginal effect of opinions on representatives' voting behavior than implied by OLS estimates. This suggest that reverse causality is not a concern as it would have led to a higher OLS estimates compared to the IV. On the other hand, our IV estimates suggest that if anything the

[43] The full set of results are available from the authors upon request.

[44] The values of this statistics for votes on trade and migration are always high, i.e. they are above the "rule of thumb" value of 10 suggested by Staiger and Stock (1997). They are also above the values tabulated by Stock and Yogo (2005) under the assumption of i.i.d. errors, which give a critical value of 7.03 for maximum 10% bias of the IV estimator in the case of two endogenous regressors and two instruments.

OLS estimates may suffer from measurement error–induced attenuation bias. In Section 2.7 we systematically tackle this issue pursuing several alternative strategies.

Table 2.5: IV Results

	(1)		(2)		(3)		(4)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	-1.375*	0.213	-1.737**	-0.038	-2.094**	-0.057	-1.975**	-0.053
	(0.611)	(0.251)	(0.581)	(0.230)	(0.681)	(0.228)	(0.672)	(0.208)
Congruence $_{dt}$	-2.083**	-0.291	-2.029**	-0.532*	-1.989**	-0.487	-1.952**	-0.460
	(0.607)	(0.265)	(0.666)	(0.254)	(0.681)	(0.272)	(0.699)	(0.238)
Interaction $_{dt}$	4.447**	1.326*	4.775**	0.858	5.056**	0.889	4.972**	0.708
	(1.231)	(0.639)	(1.335)	(0.567)	(1.353)	(0.567)	(1.390)	(0.525)
Unemployment $_{dt}$			4.997	-4.043**	4.452	-3.868**	4.449	-2.736
			(3.576)	(1.470)	(3.231)	(1.472)	(3.067)	(1.441)
Log mean family income $_{dt}$			-0.110	0.236	-0.003	0.295	0.060	0.106
			(0.355)	(0.162)	(0.369)	(0.175)	(0.375)	(0.164)
Farmer $_{dt}$			0.595	6.271**	0.867	6.102**	1.527	4.197**
			(2.916)	(1.600)	(2.998)	(1.559)	(2.937)	(1.542)
Construction $_{dt}$			1.887	3.643	1.730	3.869	0.503	0.975
			(3.980)	(2.104)	(4.047)	(2.141)	(4.150)	(2.185)
Manufacturing $_{dt}$			0.570	1.169	1.117	1.308	1.086	0.422
			(2.289)	(1.180)	(2.196)	(1.190)	(2.114)	(1.229)
Wholesale, Retail and Transportation $_{dt}$			2.275	-0.169	2.770	-0.003	3.417	-1.067
			(2.798)	(1.435)	(2.771)	(1.568)	(2.741)	(1.554)
Finance $_{dt}$			-0.462	2.640	-0.265	2.838	-0.257	0.788
			(3.152)	(1.951)	(3.149)	(1.976)	(3.000)	(1.991)
Professionals $_{dt}$			7.616	-0.383	5.550	-0.810	4.254	-1.770
			(4.472)	(2.143)	(4.415)	(2.189)	(4.185)	(2.176)
Education and Health $_{dt}$			-0.999	1.069	-0.290	1.373	-0.086	0.399
			(2.399)	(1.303)	(2.291)	(1.342)	(2.131)	(1.407)
Entertainment Services $_{dt}$			-1.134	2.333	-1.224	2.446	-0.669	1.557
			(4.964)	(2.176)	(5.284)	(2.184)	(4.962)	(1.959)
Public Administration $_{dt}$			-2.702	2.449	-1.083	2.885*	-0.267	2.116
			(2.542)	(1.278)	(2.478)	(1.407)	(2.527)	(1.500)
Urban $_{dt}$					0.066	-0.025	0.066	0.146
					(0.228)	(0.147)	(0.229)	(0.145)
Foreign - born $_{dt}$					1.739**	0.408	1.538**	0.732*
					(0.554)	(0.361)	(0.500)	(0.354)
Foreign - born growth $_{dt}$					-0.065	-0.026	-0.068	-0.037
					(0.037)	(0.035)	(0.035)	(0.036)
Age - representative $_{dt}$							0.008*	0.000
							(0.004)	(0.002)
Gender - representative $_{dt}$							0.076	-0.026
							(0.094)	(0.075)
Democrat $_{dt}$							0.002	-0.335**
							(0.088)	(0.054)
Kleibergen-Paap Wald rk F statistic	12.16	45.58	13.83	30.58	12.37	30.19	11.88	30.23
State*year fixed effect	YES		YES		YES		YES	
Observations	263	1,118	263	1,118	263	1,118	263	1,118

The table reports coefficients from an IV specification, where Opinion is predicted using predetermined individual level characteristics. See Table A3 in Appendix A. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables.

2.7 Additional results

In this section, we assess the robustness of our empirical findings by implementing a number of additional specifications. We start by experimenting with different sub–samples of our votes. We turn next to consider alternative measures and definitions of our key explanatory variable. We then experiment with alternative district level controls and politician's characteristics. Next, we carry out a series of placebo test, taking advantage of the richness of the issues covered in the ANES public opinion questions. Finally, we experiment with an alternative econometric methodology.

Our first concern is that the results in column (5) of Table 2.3 might be driven by differences in the sample of votes on trade and migration. In fact, as shown in Table 2.1, we can match individual opinion with votes on eleven trade related bills, but only with votes on two migration related initiatives, which were on the House floor respectively in 1996 and 1998. To address this concern we have experimented by restricting our sample of trade bills to those that took place in years close to 1996 and 1998, and the results are reported in Table 2.6. In column (1) we start by restricting our sample of trade votes to those two bills that were voted during or immediately before the congresses for which we have observations on migration policy initiatives (i.e. H.R. 5110 of 1994 and H.R. 2621 of 1998). In column (2) we slightly expand that set to include also H.R. 1876 and H.R. 3450 of 1993. In column (3) we focus instead on the trade votes that took place during or immediately after the congresses for which we have observations on migration policy initiatives (i.e. we include H.R. 2621 of 1998 and H.R. 2738 and H.R. 2739 of 2003), whereas in column (4) we expand that sample to include also H.R. 4759 and H.R. 4842 of 2004. Importantly, the results we have uncovered for the full sample of trade bills presented in Table 2.3 continue to hold when we look at all the different subsamples considered in this Table. In particular, greater congruence between the congressional district and the local newspaper market does not increase the likelihood that the elected official will vote in favor of trade liberalization.

Table 2.6: Years included in the analysis

	(1)		(2)		(3)		(4)	
	Years 94-96-98		**Years 93-94-96-98**		**Years 96-98-03**		**Years 96-98-03-04**	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	-0.428	-0.055	-0.428	0.167	-0.428	-0.053	-0.428	-0.040
	(0.240)	(0.235)	(0.240)	(0.202)	(0.240)	(0.208)	(0.240)	(0.169)
Congruence $_{dt}$	-0.316	0.441	-0.316	-0.372	-0.316	0.338	-0.316	-0.076
	(0.370)	(0.484)	(0.370)	(0.361)	(0.370)	(0.359)	(0.370)	(0.320)
Interaction $_{dt}$	1.665**	-0.504	1.665**	-0.477	1.665**	-0.461	1.665**	-0.284
	(0.577)	(0.653)	(0.577)	(0.599)	(0.577)	(0.536)	(0.577)	(0.459)
SkillRatio $_{dt}$	3.716*	0.621	3.716*	2.209	3.716*	-1.158	3.716*	-0.508
	(1.729)	(2.138)	(1.729)	(1.612)	(1.729)	(1.611)	(1.729)	(1.420)
Unemployment $_{dt}$	5.214	-4.971	5.214	-0.922	5.214	-1.819	5.214	-5.166
	(2.875)	(3.445)	(2.875)	(2.335)	(2.875)	(3.719)	(2.875)	(3.530)
Log mean family income $_{dt}$	-0.547	0.101	-0.547	-0.408	-0.547	0.799	-0.547	0.388
	(0.493)	(0.649)	(0.493)	(0.418)	(0.493)	(0.510)	(0.493)	(0.410)
Farmer $_{dt}$	4.625	6.506	4.625	8.253**	4.625	1.156	4.625	4.162
	(3.115)	(4.677)	(3.115)	(2.941)	(3.115)	(3.014)	(3.115)	(2.837)
Construction $_{dt}$	5.827	-8.311	5.827	1.573	5.827	-9.045	5.827	-4.887
	(4.424)	(6.157)	(4.424)	(3.959)	(4.424)	(4.755)	(4.424)	(4.698)
Manufacturing $_{dt}$	2.619	-0.814	2.619	2.330	2.619	-3.768	2.619	-3.409
	(2.195)	(3.458)	(2.195)	(2.151)	(2.195)	(2.724)	(2.195)	(2.308)
Wholesale, Retail and Transportation $_{dt}$	5.940*	-5.260	5.940*	-2.066	5.940*	-4.730	5.940*	-2.097
	(2.826)	(3.898)	(2.826)	(2.801)	(2.826)	(2.922)	(2.826)	(2.592)
Finance $_{dt}$	2.191	-2.329	2.191	0.255	2.191	0.415	2.191	0.706
	(3.292)	(5.561)	(3.292)	(3.457)	(3.292)	(3.521)	(3.292)	(2.727)
Professionals $_{dt}$	-1.294	-7.499	-1.294	-4.682	-1.294	-9.718*	-1.294	-7.772*
	(4.347)	(6.869)	(4.347)	(5.183)	(4.347)	(4.049)	(4.347)	(3.615)
Education and Health $_{dt}$	0.114	-0.340	0.114	4.381	0.114	-3.321	0.114	-3.006
	(2.057)	(3.627)	(2.057)	(2.480)	(2.057)	(3.199)	(2.057)	(2.796)
Entertainment Services $_{dt}$	3.323	-4.742	3.323	-0.996	3.323	4.683	3.323	4.849
	(4.235)	(5.767)	(4.235)	(3.383)	(4.235)	(4.621)	(4.235)	(3.306)
Public Administration $_{dt}$	0.865	-0.134	0.865	4.547	0.865	-0.722	0.865	-2.105
	(2.412)	(3.892)	(2.412)	(2.599)	(2.412)	(3.590)	(2.412)	(3.161)
Urban $_{dt}$	0.004	0.482	0.004	0.704**	0.004	-0.015	0.004	-0.060
	(0.209)	(0.346)	(0.209)	(0.234)	(0.209)	(0.274)	(0.209)	(0.257)
Foreign - born $_{dt}$	1.252**	-0.032	1.252**	-0.533	1.252**	1.357*	1.252**	1.158*
	(0.448)	(0.850)	(0.448)	(0.615)	(0.448)	(0.624)	(0.448)	(0.522)
Foreign - born growth $_{dt}$	-0.043	0.006	-0.043	0.004	-0.043	-0.053	-0.043	-0.014
	(0.037)	(0.088)	(0.037)	(0.058)	(0.037)	(0.059)	(0.037)	(0.067)
African - American $_{dt}$	0.530	-0.133	0.530	-0.874**	0.530	-0.351	0.530	0.247
	(0.378)	(0.436)	(0.378)	(0.291)	(0.378)	(0.385)	(0.378)	(0.395)
Age - representative $_{dt}$	0.005	0.005	0.005	0.003	0.005	-0.002	0.005	-0.004
	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
Gender - representative $_{dt}$	0.077	0.138	0.077	0.018	0.077	0.022	0.077	0.045
	(0.099)	(0.120)	(0.099)	(0.107)	(0.099)	(0.101)	(0.099)	(0.098)
Democrat $_{dt}$	0.114	-0.383**	0.114	-0.408**	0.114	-0.655**	0.114	-0.559**
	(0.091)	(0.126)	(0.091)	(0.077)	(0.091)	(0.107)	(0.091)	(0.097)
State*year fixed effect	YES		YES		YES		YES	
Observations	265	204	265	475	265	298	265	480
R-squared	0.439	0.454	0.439	0.449	0.439	0.635	0.439	0.575

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables.

Our second set of concerns is with our measure of individual opinion towards trade and migration. First, we are worried with the fact that while the ANES is a representative study of the U.S. population, its sample size is not very large, as each cross–section included in our analysis on average involves 1800 individual observations. As a result the number of datapoints available for some districts might be low, and we are concerned with the accuracy of the opinion measures included in our sample. We address this issue in several ways in Table 2.7. First, in column (1) we use information on the average opinion by district during the decade in which the bill was voted on, in other words we take advantage of information contained in up to five rounds of the ANES survey. In columns (2), (3) and (4) we drop instead from our analysis districts for which respectively a maximum of one, two or three individual observations are available. Our main results are unaffected, i.e. greater media exposure continues to increase accountability on migration, whereas there is no significant effect when it comes to trade policy.

Second, in our benchmark analysis the district level measure of preferences is based on the average opinion; in column (5) we replace this with a measure based on the district's median opinion. While the standard errors tend to be larger in this case, the basic patterns we have uncovered in our benchmark specification continue to hold.[45] Finally, in column (6) instead of using the mean or the median of our pro-migration dummy, we take full advantage of the three possible answers for the migration question listed in the ANES survey – "increased", "same as now" and "decreased" – and code them as 2, 1 and 0 respectively. We then use the mean of this variable in our regression, and obtain results which are similar to those in the benchmark.[46]

[45]The opinion by congruence interaction coefficient is significant at the ten percent level in the migration regression.
[46]Note that the answer to the trade question only takes two values, and as a result we cannot carry out a similar robustness check.

Table 2.7: Alternative measures of opinion

	(1)		(2)		(3)		(4)		(5)		(6)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Mean opinion decade $_{dt}$	-0.294	-0.142										
	(0.393)	(0.135)										
Mean opinion $_{dt}$			-0.523	-0.051	-0.495	-0.069	-0.781	-0.096				-0.052
			(0.281)	(0.118)	(0.363)	(0.157)	(0.444)	(0.167)				(0.113)
Median opinion $_{dt}$									-0.259	-0.015		
									(0.146)	(0.077)		
Mean opinion rescaled $_{dt}$											-0.329	
											(0.170)	
Congruence $_{dt}$	-0.642	-0.273	-0.490	-0.205	-0.383	-0.214	-0.652	-0.216	0.157	-0.257	-0.249	-0.207
	(0.549)	(0.224)	(0.425)	(0.218)	(0.503)	(0.237)	(0.581)	(0.244)	(0.336)	(0.181)	(0.371)	(0.214)
Mean opinion decade $_{dt}$ **Congruence* $_{dt}$	2.293*	0.078										
	(1.093)	(0.417)										
Mean opinion $_{dt}$ **Congruence* $_{dt}$			2.068**	-0.143	2.064*	-0.281	2.553*	-0.239				-0.132
			(0.685)	(0.373)	(0.876)	(0.481)	(1.012)	(0.511)				(0.355)
Median opinion $_{dt}$ **Congruence* $_{dt}$									0.648	-0.024		
									(0.362)	(0.207)		
Mean opinion rescaled $_{dt}$ **Congruence* $_{dt}$											1.258**	
											(0.476)	
SkillRatio $_{dt}$	3.270	1.205	3.791*	1.073	2.866	1.065	3.033	1.003	3.670*	1.124	3.315	1.095
	(1.695)	(0.916)	(1.820)	(0.939)	(2.134)	(1.078)	(2.526)	(1.076)	(1.751)	(0.929)	(1.692)	(0.924)
Unemployment $_{dt}$	4.832	-2.513	4.614	-2.659	5.045	-2.100	5.083	-2.139	6.380*	-2.574	4.910	-2.613
	(2.793)	(1.472)	(2.882)	(1.512)	(3.192)	(1.624)	(3.528)	(1.634)	(3.071)	(1.486)	(2.910)	(1.475)
Log mean family income $_{dt}$	-0.483	-0.198	-0.559	-0.177	-0.112	-0.178	-0.236	-0.116	-0.492	-0.197	-0.497	-0.190
	(0.487)	(0.265)	(0.518)	(0.271)	(0.652)	(0.308)	(0.777)	(0.310)	(0.492)	(0.267)	(0.494)	(0.265)
Farmer $_{dt}$	3.949	3.842*	4.218	3.907*	4.387	5.488*	4.663	5.528*	4.935	3.879*	4.413	3.853*
	(3.180)	(1.659)	(3.235)	(1.730)	(3.779)	(2.200)	(4.385)	(2.227)	(3.178)	(1.647)	(3.026)	(1.670)
Wholesale, Retail and Transportation $_{dt}$	5.732*	-1.652	5.879	-1.684	6.704	-0.818	6.184	-1.057	7.154*	-1.606	5.685*	-1.721
	(2.824)	(1.604)	(2.979)	(1.660)	(3.481)	(1.841)	(3.959)	(1.861)	(2.818)	(1.611)	(2.820)	(1.619)
Urban $_{dt}$	0.025	0.221	0.001	0.230	-0.095	0.270	0.011	0.289	-0.050	0.231	0.019	0.238
	(0.216)	(0.168)	(0.218)	(0.173)	(0.259)	(0.180)	(0.306)	(0.178)	(0.218)	(0.166)	(0.207)	(0.169)
Foreign - born $_{dt}$	1.117*	0.744*	1.345**	0.743*	1.420*	0.753	1.826*	0.844	1.363**	0.702	1.233**	0.712
	(0.470)	(0.369)	(0.470)	(0.376)	(0.657)	(0.415)	(0.897)	(0.432)	(0.467)	(0.366)	(0.442)	(0.369)
Foreign - born growth $_{dt}$	-0.040	-0.044	-0.045	-0.042	-0.062	-0.040	-0.107	-0.046	-0.041	-0.041	-0.044	-0.043
	(0.038)	(0.037)	(0.040)	(0.038)	(0.050)	(0.040)	(0.067)	(0.040)	(0.036)	(0.037)	(0.036)	(0.037)
African - American $_{dt}$	0.433	-0.209	0.570	-0.205	0.474	-0.227	0.371	-0.214	0.527	-0.206	0.546	-0.223
	(0.382)	(0.207)	(0.386)	(0.213)	(0.457)	(0.223)	(0.534)	(0.229)	(0.384)	(0.207)	(0.378)	(0.207)
Age - representative $_{dt}$	0.005	-0.000	0.005	-0.000	0.007	-0.000	0.007	-0.001	0.005	-0.000	0.005	-0.000
	(0.003)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.006)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Gender - representative $_{dt}$	0.092	-0.023	0.081	-0.027	0.020	-0.024	0.041	-0.019	0.078	-0.019	0.073	-0.020
	(0.102)	(0.081)	(0.104)	(0.082)	(0.124)	(0.094)	(0.161)	(0.096)	(0.097)	(0.079)	(0.098)	(0.080)
Democrat $_{dt}$	0.106	-0.330**	0.119	-0.332**	0.140	-0.340**	0.099	-0.334**	0.117	-0.334**	0.114	-0.335**
	(0.092)	(0.057)	(0.098)	(0.058)	(0.119)	(0.061)	(0.142)	(0.062)	(0.097)	(0.057)	(0.091)	(0.057)
State*year fixed effect	YES		YES		YES		YES		YES		YES	
Other sectors	YES		YES		YES		YES		YES		YES	
Observations	265	1,139	228	1,079	188	908	154	844	265	1,139	265	1,139
R-squared	0.436	0.414	0.454	0.415	0.467	0.435	0.491	0.441	0.434	0.413	0.440	0.414

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. Specification (1) measures opinion as the average opinion of district d over decades.Specification (2) drops all districts in which we observe one single individual expressing her/his opinion on migration or trade issues. Specification (3) drops all districts in which we observe less than three individuals expressing their opinion on migration or trade issues. Specification (4) drops all districts in which we observe less than four individuals expressing their opinion on migration or trade issues. Specification (5) measures opinion as the median opinion of district d at time t. Specification (6) measures opinion on immigration as the average opinion of district d at time t where the original individual opinion variable is a categorical variable taking values 2, 1 and 0 (the closer to 2 the more in favor of immigration).

A related concern is that while constructing our measure of opinion, we have disregarded replies suggesting that the respondent did not have a view, namely "Don't know" and "Haven't thought much" answers. This choice is unlikely to have an impact on our results for migration as less than 3 percent of the individuals surveyed did not express a preference. At the same time, when it comes to trade, these answers might contain valuable information on individual preferences, given the large proportion of "Don't know" and "Haven't thought much" answers. To tackle this issue in Table 2.8 we have redefined our key explanatory

variable by respectively classifying the "Don't know" and "Haven't thought much" answers together with the "Pro liberalization" and "Against liberalization" opinions respectively in columns (1) and (2). Importantly, including these answers in the construction of our main explanatory variable does not affect our benchmark results.

Table 2.8: Alternative definitions of opinion

	(1)		(2)	
	Migration	Trade	Migration	Trade
Opinion $_{dt}$	-0.476	-0.044	-0.421	-0.138
	(0.246)	(0.133)	(0.243)	(0.171)
Congruence $_{dt}$	-0.362	-0.381	-0.294	-0.223
	(0.374)	(0.270)	(0.369)	(0.220)
Interaction $_{dt}$	1.741**	0.256	1.647**	-0.111
	(0.583)	(0.435)	(0.578)	(0.500)
SkillRatio $_{dt}$	3.729*	1.168	3.767*	1.210
	(1.725)	(0.919)	(1.743)	(0.928)
Unemployment $_{dt}$	5.294	-2.512	5.232	-2.611
	(2.878)	(1.478)	(2.874)	(1.467)
Log mean family income $_{dt}$	-0.537	-0.206	-0.564	-0.206
	(0.493)	(0.264)	(0.496)	(0.263)
Farmer $_{dt}$	4.548	3.659*	4.764	3.840*
	(3.123)	(1.654)	(3.122)	(1.673)
Construction $_{dt}$	5.949	1.491	5.913	1.813
	(4.413)	(2.300)	(4.446)	(2.336)
Manufacturing $_{dt}$	2.672	0.057	2.634	0.133
	(2.192)	(1.295)	(2.195)	(1.325)
Wholesale, Retail and Transportation $_{dt}$	5.988*	-1.616	6.010*	-1.684
	(2.827)	(1.595)	(2.821)	(1.601)
Finance $_{dt}$	2.089	0.811	2.349	0.900
	(3.301)	(2.068)	(3.303)	(2.043)
Professionals $_{dt}$	-1.165	-3.803	-1.299	-3.759
	(4.335)	(2.692)	(4.359)	(2.725)
Education and Health $_{dt}$	0.082	-0.059	0.202	0.028
	(2.057)	(1.613)	(2.059)	(1.646)
Entertainment Services $_{dt}$	3.062	0.849	3.471	0.960
	(4.240)	(1.985)	(4.245)	(1.999)
Public Administration $_{dt}$	0.845	1.915	0.875	1.974
	(2.420)	(1.560)	(2.411)	(1.570)
Urban $_{dt}$	-0.001	0.219	0.003	0.237
	(0.209)	(0.167)	(0.210)	(0.166)
Foreign - born $_{dt}$	1.271**	0.680	1.258**	0.715
	(0.450)	(0.365)	(0.449)	(0.371)
Foreign - born growth $_{dt}$	-0.042	-0.039	-0.044	-0.040
	(0.037)	(0.037)	(0.037)	(0.037)
African - American $_{dt}$	0.542	-0.194	0.530	-0.224
	(0.378)	(0.212)	(0.379)	(0.204)
Age - representative $_{dt}$	0.005	-0.000	0.005	-0.000
	(0.004)	(0.002)	(0.004)	(0.002)
Gender - representative $_{dt}$	0.076	-0.021	0.078	-0.018
	(0.098)	(0.080)	(0.100)	(0.081)
Democrat $_{dt}$	0.117	-0.331**	0.113	-0.336**
	(0.090)	(0.056)	(0.091)	(0.057)
State*year fixed effect	YES		YES	
Observations	265	1,139	265	1,139
R-squared	0.441	0.413	0.438	0.415

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. In columns (1) and (2) the opinion variable is redifined by classifying the "Don't know" and "Haven't thought much" answers together with the "Pro liberalization" and "Against liberalization" opinions respectively.

In Table 2.9 we assess the robustness of our findings to the inclusion of alternative district level controls. In columns (1) and (2) we further explore the role that welfare state considerations might play in shaping a representative's voting behavior on international economic policy. In column (1) we control for median rather than mean family income in the district, whereas in column (2) we include also a measure of the extent of inequality within the district. Neither of these controls appear to play an important role, but more importantly, they do not affect our main results.[47] In our benchmark specification we control for the potential differences in attitudes towards trade and migration by accounting for the share of the population living in urban areas. In column (3) we also account for population density, but this does not have a direct impact on the representative's voting behavior on either dimension of globalization. Moreover, doing so does not affect our main results. Finally, as the ANES is designed to be a representative sample of the US population, and it is well known that turnout rates in congressional elections are often low,[48] the set of individuals actually voting might have preferences that differ from those of the underlying population. To account for this possibility, in column (4) we control also for the turnout rate in the previous election and we find that differences in voters' electoral participation rates do not affect the representative's voting behavior. More importantly, accounting for differences in turnout does not affect our main results.

[47] Note that any heterogeneity in the size of welfare provisions at the state level are already accounted for with the inclusion of a full set of state–year interactions.

[48] In particular, the average turnout in our sample is 0.43.

Table 2.9: Alternative district level controls

	(1)		(2)		(3)		(4)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	-0.397	-0.053	-0.403	-0.054	-0.418	-0.055	-0.420	-0.040
	(0.239)	(0.113)	(0.238)	(0.113)	(0.241)	(0.113)	(0.244)	(0.113)
Congruence $_{dt}$	-0.325	-0.208	-0.327	-0.211	-0.324	-0.185	-0.350	-0.201
	(0.375)	(0.214)	(0.374)	(0.214)	(0.370)	(0.217)	(0.375)	(0.214)
Interaction $_{dt}$	1.616**	-0.133	1.625**	-0.131	1.633**	-0.142	1.716**	-0.157
	(0.575)	(0.355)	(0.576)	(0.355)	(0.581)	(0.356)	(0.607)	(0.353)
SkillRatio $_{dt}$	3.633*	1.040	3.747*	1.089	3.646*	1.047	3.366	1.289
	(1.622)	(0.812)	(1.741)	(0.932)	(1.753)	(0.917)	(1.787)	(0.899)
Unemployment $_{dt}$	4.296	-2.815	4.401	-2.835	5.204	-2.701	5.066	-2.014
	(3.078)	(1.538)	(3.184)	(1.585)	(2.976)	(1.474)	(2.935)	(1.492)
Log mean family income $_{dt}$			-0.602	-0.208	-0.551	-0.173	-0.551	-0.178
			(0.511)	(0.265)	(0.495)	(0.263)	(0.501)	(0.269)
Log median family income $_{dt}$	-0.566	-0.190						
	(0.465)	(0.234)						
Inequality $_{dt}$			0.348	0.127				
			(0.565)	(0.352)				
Farmer $_{dt}$	4.026	3.711*	4.188	3.741*	3.685	4.068*	4.720	4.133*
	(2.842)	(1.674)	(3.134)	(1.657)	(3.221)	(1.692)	(3.240)	(1.671)
Wholesale, Retail and Transportation $_{dt}$	5.949*	-1.628	5.917*	-1.643	5.354	-1.817	5.913*	-1.007
	(2.774)	(1.619)	(2.794)	(1.648)	(2.935)	(1.622)	(2.898)	(1.662)
Urban $_{dt}$	0.014	0.239	0.016	0.241	0.136	0.195	0.025	0.237
	(0.207)	(0.168)	(0.209)	(0.168)	(0.259)	(0.188)	(0.215)	(0.169)
Log Pop Density $_{dt}$					-0.045	0.018		
					(0.050)	(0.032)		
Foreign - born $_{dt}$	1.171*	0.683	1.183*	0.684	1.447**	0.599	1.455*	0.458
	(0.452)	(0.374)	(0.459)	(0.368)	(0.486)	(0.410)	(0.627)	(0.447)
Foreign - born growth $_{dt}$	-0.038	-0.040	-0.039	-0.040	-0.033	-0.044	-0.041	-0.033
	(0.036)	(0.037)	(0.036)	(0.037)	(0.035)	(0.037)	(0.037)	(0.038)
African - American $_{dt}$	0.527	-0.223	0.527	-0.223	0.550	-0.245	0.567	-0.320
	(0.374)	(0.207)	(0.375)	(0.208)	(0.386)	(0.211)	(0.395)	(0.210)
Age - representative $_{dt}$	0.005	-0.000	0.005	-0.000	0.005	-0.000	0.005	-0.000
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Gender - representative $_{dt}$	0.064	-0.024	0.066	-0.023	0.066	-0.017	0.091	-0.003
	(0.103)	(0.080)	(0.104)	(0.081)	(0.101)	(0.080)	(0.118)	(0.083)
Democrat $_{dt}$	0.107	-0.334**	0.107	-0.335**	0.114	-0.338**	0.113	-0.352**
	(0.092)	(0.057)	(0.093)	(0.057)	(0.091)	(0.057)	(0.092)	(0.057)
Turnout Rate Previous Elections $_{dt}$							0.540	-0.464
							(0.702)	(0.539)
State*year fixed effect	YES		YES		YES		YES	
Other sectors	YES		YES		YES		YES	
Observations	265	1,139	265	1,139	265	1,139	260	1,128
R-squared	0.440	0.414	0.440	0.414	0.442	0.414	0.432	0.411

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. In column (1) we control for median rather than mean family income in the district, *Log median family income* $_{dt}$ measures the logarithm of the median family income within a district in dollars. In column (2) we include *Inequality* $_{dt}$ which measures the ratio between mean and median family income within a district. In column (3) we control for *LogPop Density* $_{dt}$, that is logged population per square mile. In column (4) we control for the turnout rate in the previous election in district d (*Turnout Rate Previous Elections* $_{dt}$).

Our benchmark analysis accounts for a wealth of individual level characteristics of the representatives. In Table 2.10 we expand/experiment with this set of controls in several ways. First, in column (1) we replace the representative's age with her tenure in office, and we find that more experienced members of the House are more likely to support migration liberalization, but not trade. In column (2) we additionally control for a representative's education, using information taken from the Congressional Directories and digitized in ICPSR study 3371. Interestingly, we find that representatives who attended an Ivy League school are more likely to support both immigration and trade liberalization than members of the House who either did not go to college or attended another type of higher education institution, even if only the latter effect is strongly statistically significant. In columns (3) and (4) we experiment with alternative measures of the ideological orientation of the representative and replace democratic party affiliation with the normalized DW nominate score (column 3) and ADA score (column 4). More liberal–leaning representatives are more likely to vote against trade liberalization and in favor of migration liberalization. Importantly, our main result continues to be unaffected. So far, our analysis has focused on the role played by the opinions of the districts' average or median voter. In column (5), we include information on organized groups, which have received great attention both in the trade and migration literature.[49] Our measure of the intensity of the lobbying activity is given by Political Action Committee Contributions (PACs), which can be easily traced to the elected officials receiving them. In particular, we focus on the role played by contributions offered by corporations (*PacCorporate*) and by unions (*PacLabor*). As PACs measure lobbying effort on a variety of different issues, we have considered a politician to have been "influenced" if the corporate (labor) contributions she has received are at or above the eightieth percentile of all corporate (labor) contributions in that year.[50]

In line with the existing literature, we find that lobbying activities do affect the voting behavior of elected representatives on trade policy. In particular, larger contributions by labor organizations tend to result in a more protectionist bias by the politician, whereas larger contributions by business related lobbies have the opposite effect. This result confirms earlier findings by Baldwin and Magee (2000). At the same time, corporate and labor PAC contributions do not appear to affect the voting behavior of elected officials on immigration policy. This is in line with the findings of Facchini et al. (2011), who show that PAC contributions are not a significant driver of immigration policy, whereas the opposite is true for lobbying expenditure directly related to migration policy.[51]

[49] For a survey, see Facchini (2004).

[50] We have experimented with different thresholds, and the results are unaffected.

[51] Facchini et al. (2011) use a dataset that allows to identify the purpose of the lobbying activity in the United States, showing that pressure groups at the sectoral level have a statistically significant and important effect on the allocation of work and related visas. Unfortunately, this data cannot be used in our analysis of congressmen's voting behavior, since it does not contain information on the identity of politicians contacted by lobbies.

Table 2.10: Alternative controls for representatives' characteristics

	(1)		(2)		(3)		(4)		(5)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	-0.441	-0.055	-0.420	-0.048	-0.394	-0.077	-0.360	-0.056	-0.368	0.001
	(0.238)	(0.113)	(0.240)	(0.113)	(0.240)	(0.112)	(0.249)	(0.113)	(0.245)	(0.113)
Congruence $_{dt}$	-0.312	-0.208	-0.320	-0.265	-0.226	-0.304	-0.220	-0.359	-0.171	-0.269
	(0.348)	(0.217)	(0.375)	(0.206)	(0.370)	(0.221)	(0.373)	(0.217)	(0.395)	(0.194)
Interaction $_{dt}$	1.721**	-0.119	1.638**	-0.217	1.581**	0.003	1.526**	-0.056	1.404*	-0.205
	(0.565)	(0.356)	(0.572)	(0.359)	(0.574)	(0.346)	(0.584)	(0.345)	(0.598)	(0.346)
SkillRatio $_{dt}$	3.808*	1.062	3.848*	1.018	3.916*	1.212	3.510	1.434	3.936*	1.038
	(1.556)	(0.927)	(1.764)	(0.881)	(1.720)	(0.952)	(1.936)	(0.914)	(1.741)	(0.840)
Unemployment $_{dt}$	5.389*	-2.700	5.303	-2.764	5.151	-3.703*	3.315	-3.883*	3.964	-2.940*
	(2.725)	(1.460)	(2.921)	(1.469)	(2.842)	(1.501)	(2.707)	(1.512)	(2.987)	(1.466)
Log mean family income $_{dt}$	-0.616	-0.196	-0.569	-0.172	-0.529	-0.214	-0.550	-0.244	-0.593	-0.200
	(0.472)	(0.267)	(0.500)	(0.257)	(0.487)	(0.276)	(0.511)	(0.259)	(0.512)	(0.237)
Farmer $_{dt}$	5.349	3.991*	4.455	3.508*	4.612	4.937**	3.032	4.486**	3.708	4.600**
	(3.102)	(1.671)	(3.140)	(1.639)	(3.046)	(1.733)	(3.003)	(1.677)	(3.200)	(1.645)
Wholesale, Retail and Transportation $_{dt}$	6.020*	-1.546	5.747*	-2.324	5.887*	-1.637	4.981	-1.505	6.154*	-1.029
	(2.779)	(1.634)	(2.835)	(1.525)	(2.713)	(1.691)	(2.829)	(1.639)	(2.930)	(1.515)
Urban $_{dt}$	0.047	0.233	0.009	0.267	-0.034	0.160	-0.127	0.183	-0.157	0.295
	(0.211)	(0.169)	(0.209)	(0.164)	(0.209)	(0.175)	(0.219)	(0.166)	(0.235)	(0.160)
Foreign - born $_{dt}$	1.171**	0.689	1.271**	0.725*	1.237**	0.745	1.101*	0.677	1.378**	0.570
	(0.440)	(0.374)	(0.453)	(0.366)	(0.442)	(0.385)	(0.461)	(0.376)	(0.484)	(0.365)
Foreign - born growth $_{dt}$	-0.035	-0.040	-0.040	-0.039	-0.046	-0.040	-0.033	-0.038	-0.043	-0.022
	(0.037)	(0.037)	(0.038)	(0.035)	(0.037)	(0.037)	(0.039)	(0.036)	(0.039)	(0.037)
African - American $_{dt}$	0.605	-0.194	0.527	-0.259	0.521	-0.069	0.609	-0.087	0.702	-0.141
	(0.356)	(0.207)	(0.380)	(0.203)	(0.376)	(0.214)	(0.409)	(0.210)	(0.391)	(0.207)
Age - representative $_{dt}$			0.005	0.000	0.004	0.000	0.002	-0.000	0.003	-0.000
			(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Tenure $_{dt}$	0.024**	0.003								
	(0.009)	(0.006)								
Gender - representative $_{dt}$	0.128	-0.016	0.088	0.007	0.050	0.012	0.051	0.009	0.048	0.032
	(0.105)	(0.080)	(0.100)	(0.082)	(0.100)	(0.082)	(0.103)	(0.084)	(0.104)	(0.077)
Democrat $_{dt}$	0.066	-0.341**	0.102	-0.352**					0.084	-0.295**
	(0.092)	(0.057)	(0.095)	(0.056)					(0.097)	(0.059)
Educ - representative - ivy $_{dt}$			0.068	0.176*						
			(0.104)	(0.073)						
DW - nominate score $_{dt}$					0.209	-0.335**				
					(0.114)	(0.076)				
ADA score $_{dt}$							0.002	-0.005**		
							(0.001)	(0.001)		
PACLabor $_{dt}$									0.174	-0.099
									(0.130)	(0.054)
PACCorporate $_{dt}$									0.053	0.209**
									(0.090)	(0.045)
State*year fixed effect	YES		YES		YES		YES		YES	
Other sectors	YES		YES		YES		YES		YES	
Observations	265	1,139	265	1,139	265	1,139	252	1,124	251	1,124
R-squared	0.456	0.414	0.440	0.420	0.445	0.397	0.446	0.421	0.455	0.447

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. In column (1) we replace the representative's age with *Tenure* $_{dt}$, which is a measure of tenure in office. In column (2) we additionally control for *Educ - representative - ivy* $_{dt}$, which is a dummy that takes a value of one if the representative attended an elite educational institution and zero otherwise. In columns (3) and (4) we use alternative measures of the ideological orientation of the representative and replace *Democrat* $_{dt}$ with *DW - nominate score* $_{dt}$, which is the normalized DW nominate score (column (3)) and with the *ADA score* $_{dt}$ (column (4)). Both variables have been normalized so that a higher score identifies a more liberal politician. In column (5), we control for *PACLabor* $_{dt}$ and *PACCorporate* $_{dt}$ which are measures of the intensity of the lobbying activity and take a value of one if the labor/corporate contributions that the representative received are at or above the eightieth percentile of all labor/corporate contributions in that year and zero otherwise.

Next, in Table 2.11 we carry out a series of placebo tests on the effects of individual voters opinion on representatives' voting behavior. In particular, while our robustness checks indicate that greater congruence between a congressional district and local newspaper markets increases the accountability of elected officials to local voters' preferences towards immigration, but not on trade, we expect that opinions towards other issues should not have an impact on how elected officials vote on migration or trade. For this reason, we take advantage of the richness of the range of preferences elicited in the ANES dataset to carry out a falsification exercise using opinion on four additional public policy matters, that are not directly related to either migration or trade. The first is based on opinion towards abortion;[52] the second on opinion towards religion;[53] the third on trust in the federal government[54] and the last on the role of women in society.[55] Our results, reported in columns (1)-(4), show that – as expected – the patterns are quite different from those identified in our benchmark specification. In fact, the direct impact of opinion is never significant and, more importantly, the same holds true for the sign of the interaction term between the opinion variable and congruence. This confirms that opinions towards other issues do not affect voting behavior on migration or trade.

[52] In particular, we use question VCF0838 "There has been some discussion about abortion during recent years. Which one of the opinions on this page best agrees with your view?". The possible answers are "By law, abortion should never be permitted", "The law should permit abortion only in case of rape, incest, or when the woman's life is in danger", "The law should permit abortion for reasons other than rape, incest, or danger to the woman's life, but only after the need for the abortion has been clearly established", "By law, a woman should always be able to obtain an abortion as a matter of personal choice". After excluding the "Not Available" and "Don't know" responses, we construct an *Opinion on Abortion* dummy that takes a value of one if the individual suggests one of the two last options, and zero otherwise.

[53] In particular, we use question VCF0846 "Do you consider religion to be an important part of your life, or not?". The possible answers are "Yes, important" or "No, not so important". After excluding the "Not Available" and "Don't know" responses, we construct an *Opinion on Religion* dummy that takes a value of one if the individual chooses the first answer and zero otherwise.

[54] In particular, we use question VCF0605 "Would you say the government is pretty much run by a few big interests looking out for themselves or that it is run for the benefit of all the people?". The possible answers are "Few big interests" or "Benefit of all". After excluding the "Not Available" and "Don't know" responses, we construct an *Opinion on TrustinFedGov* dummy that takes a value of one if the individual chooses the last answer and zero otherwise.

[55] In particular, we use question VCF0834 "Recently there has been a lot of talk about women's rights. Some people feel that women should have an equal role with men in running business, industry and government. Suppose these people are at one end of a scale, at point 1. Others feel that a women's place is in the home. Suppose these people are at the other end; at point 7. And of course, some people have opinions somewhere in between, at points 2,3,4,5, or 6. Where would you place yourself on this scale or haven't you thought much about this?". After excluding the "Not Available" and "Don't know' - Haven't thought much' responses, we construct a categorical *Opinion on WomenRole* variable that takes a value of one if the respondent answers 6 or 7, minus one if the respondent answers 1 or 2, and zero for answers in between.

Table 2.11: Placebo Tests

	(1)		(2)		(3)		(4)	
	Vote on Migration	Vote on Trade	Vote on Migration	Vote on Trade	Vote on Migration	Vote on Trade	Vote on Migration	Vote on Trade
Opinion on Abortion $_{dt}$	-0.128	-0.094						
	(0.233)	(0.159)						
Opinion on Religion $_{dt}$			0.060	-0.051				
			(0.353)	(0.176)				
Opinion on TrustinFedGov $_{dt}$					-0.129	-0.150		
					(0.301)	(0.147)		
Opinion on WomenRole $_{dt}$							0.303	-0.229
							(0.247)	(0.130)
Congruence $_{dt}$	0.345	-0.563	0.774	-0.205	0.263	-0.484	0.505	-0.020
	(0.462)	(0.333)	(0.750)	(0.459)	(0.391)	(0.254)	(0.429)	(0.299)
OpinionAbortion $_{dt}$ **Congruence* $_{dt}$	0.211	0.575						
	(0.715)	(0.500)						
OpinionReligion $_{dt}$ **Congruence* $_{dt}$			-0.407	-0.049				
			(0.931)	(0.558)				
OpinionTrustinFedGov $_{dt}$ **Congruence* $_{dt}$					0.676	0.702		
					(0.857)	(0.436)		
OpinionWomenRole $_{dt}$ **Congruence* $_{dt}$							0.048	0.413
							(0.572)	(0.369)
SkillRatio $_{dt}$	3.895*	0.955	3.742*	1.048	3.768*	0.985	3.758*	1.154
	(1.816)	(0.902)	(1.821)	(0.911)	(1.825)	(1.008)	(1.791)	(0.989)
Unemployment $_{dt}$	6.337*	-2.447	6.324*	-2.577	6.102*	-3.355*	7.368*	-3.425*
	(2.987)	(1.444)	(3.079)	(1.492)	(2.974)	(1.573)	(3.074)	(1.613)
Log mean family income $_{dt}$	-0.501	-0.146	-0.491	-0.179	-0.517	-0.221	-0.422	-0.272
	(0.505)	(0.256)	(0.498)	(0.262)	(0.508)	(0.289)	(0.516)	(0.280)
Farmer $_{dt}$	6.134	3.879*	6.447	3.784*	6.006	4.307*	5.521	4.296*
	(3.218)	(1.659)	(3.320)	(1.670)	(3.184)	(1.789)	(3.151)	(1.759)
Construction $_{dt}$	7.405	1.428	7.283	1.485	6.891	1.280	7.554	1.118
	(4.548)	(2.288)	(4.524)	(2.370)	(4.521)	(2.469)	(4.490)	(2.426)
Manufacturing $_{dt}$	3.652	0.206	3.932	0.138	3.502	0.231	3.647	0.215
	(2.170)	(1.287)	(2.248)	(1.321)	(2.190)	(1.430)	(2.158)	(1.421)
Wholesale, Retail and Transportation $_{dt}$	7.059*	-1.634	7.100*	-1.582	6.509*	-2.039	7.653**	-1.946
	(2.839)	(1.571)	(2.907)	(1.620)	(2.864)	(1.816)	(2.723)	(1.819)
Finance $_{dt}$	3.191	0.838	3.445	0.738	3.072	0.793	3.246	0.824
	(3.436)	(2.039)	(3.439)	(2.075)	(3.387)	(2.203)	(3.373)	(2.151)
Professionals $_{dt}$	-0.278	-3.472	0.011	-3.753	-0.299	-3.190	0.354	-4.115
	(4.296)	(2.691)	(4.347)	(2.702)	(4.271)	(2.918)	(4.155)	(2.843)
Education and Health $_{dt}$	1.204	0.088	1.501	0.106	0.955	-0.116	0.964	-0.003
	(2.102)	(1.617)	(2.208)	(1.644)	(2.139)	(1.736)	(2.120)	(1.728)
Entertainment Services $_{dt}$	3.736	0.825	4.315	0.833	3.172	1.103	3.939	0.826
	(4.351)	(2.013)	(4.494)	(2.031)	(4.233)	(2.374)	(4.123)	(2.285)
Public Administration $_{dt}$	1.726	1.990	1.997	2.060	1.293	1.860	1.677	2.251
	(2.440)	(1.545)	(2.599)	(1.592)	(2.345)	(1.717)	(2.413)	(1.789)
Urban $_{dt}$	0.057	0.211	0.071	0.237	0.086	0.225	-0.007	0.240
	(0.216)	(0.164)	(0.219)	(0.166)	(0.219)	(0.171)	(0.213)	(0.172)
Foreign - born $_{dt}$	1.224**	0.805*	1.191**	0.777*	1.146*	0.692	1.226**	0.758
	(0.453)	(0.363)	(0.453)	(0.371)	(0.460)	(0.394)	(0.456)	(0.399)
Foreign - born growth $_{dt}$	-0.045	-0.040	-0.045	-0.042	-0.050	-0.045	-0.032	-0.043
	(0.037)	(0.037)	(0.038)	(0.037)	(0.036)	(0.041)	(0.037)	(0.041)
African - American $_{dt}$	0.510	-0.197	0.491	-0.198	0.462	-0.205	0.588	-0.227
	(0.393)	(0.206)	(0.402)	(0.206)	(0.403)	(0.229)	(0.382)	(0.227)
Age - representative $_{dt}$	0.005	-0.000	0.005	-0.000	0.005	-0.001	0.006	-0.001
	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)	(0.004)	(0.002)
Gender - representative $_{dt}$	0.097	-0.026	0.093	-0.015	0.083	0.001	0.105	-0.011
	(0.102)	(0.080)	(0.102)	(0.078)	(0.101)	(0.082)	(0.101)	(0.081)
Democrat $_{dt}$	0.140	-0.334**	0.140	-0.338**	0.138	-0.289**	0.111	-0.297**
	(0.091)	(0.055)	(0.091)	(0.056)	(0.090)	(0.062)	(0.092)	(0.061)
State*year fixed effect	YES		YES		YES		YES	
Observations	265	1,137	265	1,130	264	1,026	264	1,031
R-squared	0.421	0.415	0.421	0.412	0.423	0.396	0.439	0.395

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. In column (1), *Opinion on Abortion* $_{dt}$ measures the average opinion in district d at time t where the original individual level variable is a dummy that takes a value of one if the individual suggests that law should permit abortion for reasons other than rape, incest, or danger to the woman's life and zero if he/she states that abortion should not be permitted at all or that it should be permitted only under particular circumstances. In column (2), *Opinion on Religion* $_{dt}$ measures the average opinion in district d at time t where the original individual level variable is a dummy that takes a value one if the respondent considers religion to be an important part of his/her life and zero if not. In column (3), *Opinion on TrustinFedGov* $_{dt}$ measures the average opinion in district d at time t where the original individual level variable is a dummy that takes a value of one if the individual suggests that the government is run for the benefit of all the people and zero if he/she states that the government is run by a few big interests. In column (4), *Opinion on WomenRole* $_{dt}$ measures the average opinion in district d at time t where the original individual level variable is a categorical variable that takes a value of one if the respondent strongly thinks that women should not have an equal role with men in running business, industry and government, minus one if he/she suggests that women should have an equal role and zero if his/her opinion lies in between these two extremes.

Our last set of robustness checks concerns the econometric methodology we have followed. All of our specifications have been run using linear probability models. We have employed this approach because the linear probability model is consistent under weak assumptions, it works well with fixed effects, and its coefficient estimates – especially in the presence of interaction terms – are simple to interpret. In Table 2.A4 in Appendix A we reproduce our main results from Table 2.3 using instead a probit specification and reporting the corresponding coefficient values. As it can be immediately seen, the broad patterns we have identified in Table 2.3 continue to hold.

2.8 Conclusions

In this paper we have carried out what is – to the best of our knowledge – the first empirical analysis of the effect of media exposure in shaping the accountability of individual representatives' to public opinion towards trade and migration. Focusing on the role of local newspapers, we have shown that greater congruence between a representative's district and a local newspaper market makes congressmen more accountable to their constituency on international migration, whereas we do not find a systematic effect when it comes to international trade. How can this result be explained?

The very heated debates during the last US presidential election indicate that migration continues to be perceived as a "salient" issue by the electorate. At the same time, a large literature suggests that trade is a much less important issue. In a recent contribution, Guisinger (2009) finds "...trade policy salience to be relatively low in terms of stated importance, in voters knowledge of their representatives policy positions..." Importantly, this pattern is confirmed if we use information from the ANES for the time period covered by our analysis. In particular, our data point out that very few respondents did not have a well defined opinion on migration – between 1 and 3 percent of the total, whereas the corresponding figure was between 25 and 45 percent for trade. Thus, one possible explanation for our findings is that media exposure can succeed in making a politician accountable to her electorate, but only if the issue is perceived to be important enough.

We can think of at least two directions along which our analysis could be extended. First, the empirical measure we have used for the information conveyed to the electorate is based on the congruence between the market for local newspapers and electoral districts. In recent years, the printed press has seen its readership decline and at the same time new media have started to play an increasingly important role. In particular, in the recent US presidential campaign social media and blogs have been the focus of much attention,[56] and it would be interesting to construct indicators that would allow us to measure the individual's exposure to these additional sources and assess their effect on electoral discipline.

Second, our analysis has pointed out the role that the salience of the issue plays in making the elected official accountable to her electorate. It would be interesting to investigate whether the pattern we have identified for migration and trade policy holds also in other areas, like gun control or environmental issues. While these are interesting questions, they are left for further research.

[56] See for instance the article by David Rehr on the 2012 campaign "Social media's impact on the presidential election" available at http://www.huffingtonpost.com/david-k-rehr/social-medias-impact-on-t_b_2504414.html.

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Appendix A

Table 2.A1: Turnout Rates

	(1)	
	Migration	Trade
Opinion $_{dt}$	-0.438	0.138
	(0.344)	(0.174)
Congruence $_{dt}$	-0.175	-0.074
	(0.537)	(0.338)
Turnout $_{dt}$	-0.024	0.077
	(0.267)	(0.128)
Congruence $_{dt}$ **Opinion* $_{dt}$	1.350	-0.661
	(0.942)	(0.733)
Congruence $_{dt}$ **Turnout* $_{dt}$	-0.178	-0.278
	(0.619)	(0.404)
Opinion $_{dt}$ **Turnout* $_{dt}$	0.029	-0.394
	(0.491)	(0.233)
Congruence $_{dt}$ **Opinion* $_{dt}$ **Turnout* $_{dt}$	0.476	0.997
	(1.320)	(0.844)
SkillRatio $_{dt}$	3.681*	1.119
	(1.808)	(0.959)
Unemployment $_{dt}$	5.503	-2.570
	(2.909)	(1.479)
Log mean family income $_{dt}$	-0.545	-0.153
	(0.491)	(0.270)
Farmer $_{dt}$	5.148	3.806*
	(3.569)	(1.659)
Construction $_{dt}$	6.412	1.456
	(4.530)	(2.384)
Manufacturing $_{dt}$	3.056	0.180
	(2.357)	(1.270)
Wholesale, Retail and Transportation $_{dt}$	6.409*	-1.645
	(3.173)	(1.568)
Finance $_{dt}$	2.766	0.713
	(3.546)	(2.041)
Professionals $_{dt}$	-0.613	-3.448
	(4.580)	(2.636)
Education and Health $_{dt}$	0.660	0.236
	(2.507)	(1.566)
Entertainment Services $_{dt}$	3.614	1.001
	(4.747)	(2.020)
Public Administration $_{dt}$	1.081	2.188
	(2.867)	(1.523)
Urban $_{dt}$	0.018	0.240
	(0.213)	(0.166)
Foreign - born $_{dt}$	1.285**	0.544
	(0.462)	(0.383)
Foreign - born growth $_{dt}$	-0.041	-0.046
	(0.037)	(0.037)
African - American $_{dt}$	0.532	-0.262
	(0.388)	(0.213)
Age - representative $_{dt}$	0.005	-0.000
	(0.004)	(0.002)
Gender - representative $_{dt}$	0.073	-0.022
	(0.104)	(0.080)
Democrat $_{dt}$	0.118	-0.333**
	(0.092)	(0.056)
State*year fixed effect	YES	
Observations	265	1,139
R-squared	0.441	0.417

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables. *Turnout* $_{dt}$ is a dummy variable which takes a value of one if the representative in office has been elected in a district characterized by a turnout rate above the average in that congressional elections and zero otherwise.

Table 2.A2: Opinions and Congruence

	(1)		(2)		(3)		(4)	
	Opinion on Migration	Opinion on Trade	Opinion on Migration	Opinion on Trade	Opinion on Migration	Opinion on Trade	Opinion on Migration	Opinion on Trade
Congruence $_{dt}$	-0.123	-0.103	-0.060	-0.007	0.061	0.029	0.071	0.045
	(0.083)	(0.060)	(0.133)	(0.096)	(0.141)	(0.101)	(0.146)	(0.107)
SkillRatio $_{dt}$			0.848	-0.019	0.988	-0.055	0.934	-0.033
			(0.743)	(0.633)	(0.707)	(0.639)	(0.740)	(0.659)
Unemployment $_{dt}$			2.495	-0.664	1.789	-0.344	1.788	-0.319
			(1.377)	(1.139)	(1.269)	(1.236)	(1.289)	(1.275)
Log mean family income $_{dt}$			-0.177	0.067	-0.118	0.100	-0.086	0.105
			(0.219)	(0.181)	(0.207)	(0.190)	(0.216)	(0.187)
Farmer $_{dt}$			0.957	0.618	1.239	0.306	1.345	0.476
			(1.548)	(1.177)	(1.460)	(1.211)	(1.472)	(1.221)
Construction $_{dt}$			3.464	1.668	4.142*	1.736	4.126	1.913
			(1.999)	(1.389)	(1.933)	(1.432)	(2.105)	(1.455)
Manufacturing $_{dt}$			1.681	-0.132	1.965	-0.009	1.990	0.123
			(1.096)	(0.829)	(1.077)	(0.814)	(1.104)	(0.814)
Wholesale, Retail and Transportation $_{dt}$			1.632	-1.350	2.738	-1.375	2.907*	-1.172
			(1.462)	(1.064)	(1.446)	(1.099)	(1.448)	(1.123)
Finance $_{dt}$			1.158	1.065	1.175	1.319	1.186	1.535
			(1.687)	(1.360)	(1.684)	(1.395)	(1.695)	(1.405)
Professionals $_{dt}$			3.324	1.698	2.726	1.301	2.753	1.542
			(2.281)	(1.841)	(2.172)	(1.966)	(2.180)	(1.961)
Education and Health $_{dt}$			1.042	-0.272	0.964	0.124	0.973	0.122
			(1.207)	(1.042)	(1.225)	(1.033)	(1.232)	(1.036)
Entertainment Services $_{dt}$			-0.729	-0.860	-0.089	-0.721	-0.081	-0.647
			(2.193)	(1.259)	(2.183)	(1.256)	(2.223)	(1.259)
Public Administration $_{dt}$			0.683	-1.002	1.123	-0.479	1.181	-0.471
			(1.217)	(0.838)	(1.270)	(0.822)	(1.292)	(0.818)
Urban $_{dt}$					-0.103	0.014	-0.112	-0.000
					(0.098)	(0.087)	(0.098)	(0.091)
Foreign - born $_{dt}$					0.785**	0.319	0.765**	0.325
					(0.174)	(0.268)	(0.176)	(0.265)
Foreign - born growth $_{dt}$					-0.010	-0.024	-0.011	-0.023
					(0.017)	(0.024)	(0.017)	(0.024)
African - American $_{dt}$					0.333*	-0.107	0.343*	-0.074
					(0.151)	(0.129)	(0.152)	(0.131)
Age - representative $_{dt}$							0.001	0.001
							(0.002)	(0.001)
Gender - representative $_{dt}$							0.021	-0.062
							(0.046)	(0.058)
Democrat $_{dt}$							0.013	0.011
							(0.034)	(0.036)
State*year fixed effect	YES		YES		YES		YES	
Observations	265	1,139	265	1,139	265	1,139	265	1,139
R-squared	0.195	0.285	0.242	0.347	0.285	0.354	0.287	0.357

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables.

Table 2.A3: Individual level determinants of opinions

	Opinion on Migration	Opinon on Trade
High-School - No diploma $_{it}$	-0.017	-0.012
	(0.071)	(0.036)
High-School - Diploma $_{it}$	0.065	0.017
	(0.065)	(0.030)
Some College- No degree $_{it}$	0.118	0.143**
	(0.064)	(0.032)
BA level degrees $_{it}$	0.264**	0.309**
	(0.069)	(0.034)
Advanced degrees $_{it}$	0.334**	0.360**
	(0.070)	(0.036)
Female $_{it}$	-0.008	-0.090**
	(0.020)	(0.012)
Age Group 25-34 $_{it}$	-0.041	-0.002
	(0.057)	(0.029)
Age Group 35-44 $_{it}$	0.004	-0.044
	(0.056)	(0.029)
Age Group 45-54 $_{it}$	-0.027	-0.023
	(0.057)	(0.030)
Age Group 55-64 $_{it}$	-0.010	-0.034
	(0.062)	(0.030)
Age Group 65-74 $_{it}$	-0.041	-0.027
	(0.064)	(0.032)
Age Group 75-over $_{it}$	0.008	-0.052
	(0.062)	(0.035)
Black $_{it}$	0.570**	0.022
	(0.165)	(0.088)
Asian $_{it}$	0.285	0.453**
	(0.211)	(0.159)
Native-American $_{it}$	-0.069	0.322*
	(0.211)	(0.152)
Mexican $_{it}$	0.240	0.275
	(0.187)	(0.164)
Hispanic - not Mexican $_{it}$	0.660*	0.114
	(0.256)	(0.171)
Race*Educational Attainment	YES	YES
Race*Age group	YES	YES
State*year fixed effect	YES	YES
Observations	2,708	6,390
Pseudo R-squared	0.111	0.155

The table reports coefficients from a linear probability model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%.

Table 2.A4: Baseline specification: probit model

	(1)		(2)		(3)		(4)		(5)	
	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade	Migration	Trade
Opinion $_{dt}$	0.939*	0.136	-1.006	-0.271	-1.342	-0.472	-2.083*	-0.547	-2.061*	-0.211
	(0.457)	(0.274)	(0.716)	(0.409)	(0.726)	(0.399)	(0.830)	(0.406)	(0.827)	(0.409)
Congruence $_{dt}$			-3.171**	-0.071	-2.902*	-1.402	-1.948	-1.188	-1.264	-1.065
			(0.998)	(0.591)	(1.186)	(0.726)	(1.293)	(0.775)	(1.305)	(0.751)
Interaction $_{dt}$			6.572**	1.675	6.925**	0.916	7.912**	0.992	7.592**	-0.162
			(1.937)	(1.286)	(1.969)	(1.211)	(2.094)	(1.217)	(2.070)	(1.241)
SkillRatio $_{dt}$					9.959	7.495*	13.258*	7.511*	14.141*	2.170
					(5.176)	(3.254)	(5.589)	(3.195)	(6.366)	(3.215)
Unemployment $_{dt}$					22.638*	-15.984*	23.405*	-15.104*	27.246**	-14.083*
					(10.972)	(6.513)	(10.604)	(6.609)	(10.207)	(6.485)
Log mean family income $_{dt}$					-2.197	-1.034	-1.998	-0.897	-1.376	-0.951
					(1.565)	(0.933)	(1.619)	(0.976)	(1.698)	(0.913)
Farmer $_{dt}$					11.186	25.998**	26.199*	25.455**	31.284*	22.186**
					(11.393)	(7.699)	(13.182)	(7.642)	(13.508)	(7.724)
Construction $_{dt}$					8.642	13.734	22.959	15.044	30.025	-3.601
					(14.440)	(8.428)	(16.518)	(8.630)	(16.836)	(9.734)
Manufacturing $_{dt}$					6.280	3.823	14.764	4.145	17.773	1.254
					(8.821)	(4.604)	(9.040)	(4.672)	(9.171)	(4.948)
Wholesale, Retail and Transportation $_{dt}$					16.340	0.947	31.618*	-0.144	38.211**	-4.227
					(10.186)	(5.795)	(12.392)	(6.142)	(12.674)	(6.184)
Finance $_{dt}$					6.996	10.425	10.104	10.627	17.052	6.000
					(12.586)	(7.328)	(13.411)	(7.513)	(12.901)	(7.934)
Professionals $_{dt}$					6.846	-10.932	4.955	-13.590	6.215	-7.944
					(16.959)	(9.739)	(18.332)	(9.652)	(19.441)	(9.657)
Education and Health $_{dt}$					-1.256	0.845	3.092	2.641	3.141	1.427
					(8.920)	(5.366)	(8.407)	(5.716)	(8.424)	(6.017)
Entertainment Services $_{dt}$					1.190	6.959	16.289	6.929	12.083	4.734
					(17.541)	(7.330)	(18.207)	(7.321)	(20.962)	(7.172)
Public Administration $_{dt}$					-0.396	9.887	10.682	12.885*	12.868	9.734
					(9.370)	(5.421)	(9.733)	(6.112)	(10.072)	(6.439)
Urban $_{dt}$							0.536	0.283	0.079	1.195*
							(0.762)	(0.556)	(0.797)	(0.579)
Foreign - born $_{dt}$							7.192**	1.857	6.209**	1.891
							(2.331)	(1.251)	(2.027)	(1.222)
Foreign - born growth $_{dt}$							-0.222	-0.166	-0.266	-0.112
							(0.185)	(0.135)	(0.195)	(0.149)
African - American $_{dt}$							2.275	-0.496	2.750*	-1.142
							(1.304)	(0.753)	(1.333)	(0.733)
Age - representative $_{dt}$									0.017	0.002
									(0.011)	(0.008)
Gender - representative $_{dt}$									0.414	-0.153
									(0.327)	(0.273)
Democrat $_{dt}$									0.718*	-1.373**
									(0.355)	(0.223)
State*year fixed effect	YES		YES		YES		YES		YES	
Observations	265	1,139	265	1,139	265	1,139	265	1,139	265	1,139

The table reports coefficients from a probit model. Standard errors, clustered at the district-decade level are reported in parentheses. **Significant at 1%, * significant at 5%. See end of Table 2.2 for the definition of the variables.

Chapter 3

Human capital transferability and immigrant earnings assimilation in the Italian labor market

Cora Signorotto*

Abstract

In this paper we compare immigrant and native earnings profiles in Italy and investigate returns to human capital over time taking into account whether immigrants have acquired their education and work experience before or after migration.

Drawing information from the Italian Labour Force Survey for the period 2009-2014, we find that immigrants suffer a significant penalty in returns to education and years of work experience compared to the native born when human capital is acquired in the country of origin. Most importantly, when analysing the dynamic of returns to education over time we uncover a very slow pace of assimilation of returns to schooling, which begins only after 9 years spent working in Italy. The immigrant-native gap in returns as well as the overall gap in earnings persist even after 30 years of work experience in Italy. Our findings however do not hold for migrants who have attained their education in Italy and for Westerners, who perform very close to natives in the Italian labor market.

JEL classification: J24, J31, J61, F22.

Keywords: Immigration, Earnings, Returns to human capital.

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3.1 Introduction

Italy has been characterized by large emigration rates until the mid 1970s, when the net migration flow turned positive for the first time after the Italian economy boomed in the 1960s, and many Northern European countries closed their doors to immigration as a consequence of the economic recession in the early 1970s (see Del Boca and Venturini 2005, Fasani 2009). The high net migration flows experienced during the 1990s and the early 2000s corroborated Italy's shift into a country destination.

The relatively recent phenomenon of immigration to Italy is one of the reasons behind the paucity of accurate and informative data on migrants, which has made migration a still under-researched field of analysis in Italy. In particular, the comparison of immigrants' and natives' performance in the Italian labor market has received little attention, although of utmost importance for policy makers, especially in the most recent years when Italy has been severely hit by the economic crisis.

The first work on immigrant earnings assimilation in Italy is the one by Venturini and Villosio (2008), who carried out a systematic analysis of immigrant and native earnings and employment differentials, using longitudinal social security data for the period 1990-2003 and taking into account the possibility of return migration. Their analysis uncovers profound immigrant-native differences in labor market outcomes which persist over time.

Evidence of immigrant-native earnings differentials has also been found in the international literature (see e.g. Chiswick 1978, Borjas 1985, Shields and Price 1998, Friedberg 2000) and raised concerns about the costs of immigration for the receiving country and the potentially negative consequences for social and cultural integration in the host society.[57]

The focus of this study is on immigrants' returns to human capital, especially to education, over time and the role of location in which human capital is acquired in explaining the large and persistent immigrant-native differences in earnings found in the literature so far (see e.g.Venturini and Villosio 2008, Dell'Aringa et al. 2015). Friedberg (2000) is one of the first studies in the international economic literature to systematically analyse the importance of the country in which immigrants acquire their education and work experience to explain their performance in the host country labor market. In Italy, however, scarce evidence exists of immigrants' difference in returns to foreign and Italian education and of the path of assimilation of returns to education over time.

To the best of our knowledge, this is the first study in Italy to focus on the profile of immigrant assimilation of returns to education by looking at the dynamic effect of schooling over time spent in Italy and to disentangle the returns to schooling acquired by immigrants before and after migration distinguishing between immigrants with foreign and Italian education. Using data from the Italian Labor Force Survey spanning the period 2009-2014, we look at the most recent developments in immigrant earnings assimilation and compare immigrants' and natives' returns to education over time, studying whether an education penalty persists when immigrants acquire their education in Italy or in another advanced economy. We estimate wage profiles over time by separately considering immigrants who have received all of their education in Italy from those who have not, and investigate how human capital transferability differs by immigrants' area of origin and gender.

[57] For an analysis of immigrants' social integration in a selection of European Union receiving countries see Depalo et al. (2007).

Overall, our results confirm previous findings in the literature, which have emphasized that immigrants under perform in the Italian labor market (see e.g. Venturini and Villosio 2008, Accetturo and Infante 2010, Dell'Aringa et al. 2015), but also bring about new evidence of immigrants' heterogeneity in the returns to human capital depending on where the latter is acquired. We find that pre-migration human capital is valued significantly less compared to that acquired after arrival and the penalty in returns to education suffered by immigrants disappears only for the foreign born who received all of their education in Italy. Estimates of the profile of returns to education over years of work experience in Italy show a decreasing trend during the first years which reverses into a slow pace of assimilation only after about 9 years. The gap in returns to education as well as the overall wage gap however persist even after 30 years of work experience in Italy. Positive selection in return migration may explain the initial declining trend in returns that we find for immigrants: given the cross-sectional nature of our dataset, we cannot control for return migration in the analysis and if the best labor market performing migrants are the most likely to leave Italy during their first years after arrival, this may bias our estimates downward. [58]

Large heterogeneity is found across areas of origin and according to whether immigrants have received their education in Italy or abroad. Immigrants from relatively poorer countries suffer larger penalties in returns to schooling than those from wealthier countries, although they enjoy significant positive returns from education attained in Italy. Women earn on average significantly less than men, while they report higher returns to schooling. The immigrant-native gap in returns to schooling and in earnings is however similar between the male and the female population.

The structure of the paper is as follows: Section 3.2 presents a review of the main international and Italian literature on the topic. Section 3.3 briefly describes the current situation regarding immigrants in Italy and their socio-demographic and economic characteristics. Section 3.4 describes the dataset used and the main stylized facts, while Section 3.5 presents the empirical analysis and the main results. Section 3.6 discusses the robustness of our findings. Section 3.7 concludes.

3.2 Literature

Understanding how immigrants perform in the host country is important to assess the long term consequences of admitting foreign workers, and the subject has received considerable attention in the literature.

Chiswick's (1978) analysis of immigrant and native earnings in the US represents one of the first attempts to estimate immigrants' earnings structure and study their assimilation to the native born population. Based on a cross-section analysis of white male individuals from the 1970 US Census, he finds evidence of an initial immigrant-native wage gap after arrival in the host country and of lower returns to immigrants' human capital compared to natives', explained by the only partial transferability of immigrants' education and work experience into the US labor market. In Chiswick's analysis though, the pace of immigrants' wage growth is so steep that immigrants are found to catch up and eventually outperform natives after 10 to 15 years in the US.

[58] Venturini and Villosio (2008) find evidence of selected return migration of foreign born workers in Italy, with those who earn more being more likely to leave.

Borjas (1985) confirms Chiswick's main findings of lower returns of immigrants' foreign human capital compared to the domestic capital acquired by natives, but argues for the need to disentangle the ageing effect captured by years spent in the host country, from the cohort effect identified by potential differences in the "quality" of arrival cohorts over time. In his 1985 study, Borjas adopts a synthetic panel technique using two cross-sections from the Census and separately identifies the years since migration effect from the cohort quality effect, revealing a much lower rate of wage assimilation compared to previous findings in the literature and a sharp decline in the "quality" of immigrants coming to the US since the 1950s.

Using two US Census years, LaLonde and Topel (1992) also observe relatively low returns to immigrants' human capital compared to natives', although they provide robust evidence of assimilation for most of the ethnic groups considered. They argue that the decline in cohort quality found in Borjas (1985) can be largely explained by changes in the ethnic composition of most recent US immigrants. In fact, controlling for immigrants' country of origin absorbs almost all the effect of different immigration cohorts. In a subsequent paper, Borjas (2000) shows that heterogeneity across countries of origin in terms of e.g. per capita GDP, distance between the receiving and sending country and political stability can explain a large part of the variation in wage growth among cohorts and stresses the importance of source country characteristics in explaining both the immigrant entry wage and its growth rate.

Evidence of penalties in returns to immigrants' human capital has been also found in other destination countries besides the US. Baker and Benjamin (1994) use three Census years to study the economic assimilation of immigrants in Canada. They compare immigrant-native returns to experience and education, splitting the immigrant sample into child immigrants (i.e. those who migrated when children) who acquired a large part of their education in Canada and adult immigrants (i.e. who arrived in Canada when adults) who received their education and part of their job experience abroad. They find that immigrants' returns to both education and work experience are lower than natives' and that the returns to work experience become worse when immigrants arrive in Canada as adults and receive their education abroad. Longva and Raaum (2003) adopt the Borjas (1985) fixed cohort approach to investigate the assimilation profiles of immigrants in Norway using two years from the Census of population and administrative data. They find evidence of large heterogeneity in transferability of human capital and return migration patterns between immigrants coming from OECD and non OECD countries. While entry earnings of OECD immigrants do not systematically differ from those of natives, non OECD immigrants experience a significant gap in entry earnings compared to natives and, despite some evidence of assimilation over time, never catch up with them.

Pooling cross-section data from the UK General Household Survey, Bell (1997) investigates how immigrants perform in the British labor market. He separately identifies the across cohort effect and the years since migration effect and finds evidence of black immigrants reporting the highest wage gap compared to natives. Black immigrants' earnings never catch up with natives', although the size of the gap decreases with time spent in the UK. The earnings differential becomes negligible for immigrants who migrated before the acquisition of any foreign labor market experience. Finally, white immigrants have a positive earning premium at arrival which declines over time spent in the UK until it converges to those of natives.

The available evidence on assimilation for Spain focuses on the employment probabilities of immigrants and natives. Amuedo-Dorantes and De la Rica (2007) examine employment probabilities of working age immigrants to Spain with no more than five years of residence in the host country and find that although

immigrants at arrival are significantly less likely to be employed compared to natives, the employment gap almost disappears within the first year of residence in Spain. Controlling for socio-demographic characteristics, immigrants are actually more likely to be employed than natives. The authors also rank occupations in terms of earnings and estimate the probability for immigrants and natives to be employed in high and low paying occupations. Overall, natives are more likely to be employed in higher ranked occupations compared to immigrants. However, differences exist according to immigrants' country of origin, and EU15 male immigrants are more likely to work in high ranked occupations compared to natives.

Taking into account the temporariness of migration, Dustmann (1993) uses longitudinal data from the first wave of the German Socio-Economic Panel to estimate the earnings profile of temporary migrants (defined on the basis of nationality) to Germany and focuses on migrants' expected total duration of stay, arguing that the latter affects the migrant's investment in host country specific human capital and, as a consequence, migrant's earnings growth in the host country. Dustmann finds that guestworkers in Germany do not assimilate to natives and the immigrant-native wage gap does not close with time spent in the host country. This is explained by temporary guestworkers in Germany not investing enough into the host country specific human capital, given that they expect to return home at some point in time. Using the German Socio-Economic Panel, Constant and Massey (2003) also study the earnings profile of guestworkers in Germany by taking into account their probability of return to the origin country.[59] They find an earnings premium for those which acquired their education in Germany compared to those with no educational qualification in the host country and evidence of assimilation only after 15 years since arrival.

More recent studies have dealt with the issue of the international portability of human capital from a different perspective, focusing on educational mismatch and occupational downgrading of migrants. Chiswick and Miller (2008) carry out a decomposition analysis of the returns to schooling using US Census data on employed males and adopting the Over-Required-Under Education technique. The latter matches individual's years of education to the average or the modal educational attainment in the related occupation and regresses earnings on individual's years of over-, under- and required education. The authors find that a large share of the immigrant-native difference in returns to schooling is driven by the penalty in returns suffered by under educated immigrants, who are over represented compared to natives. Moreover, the earnings penalty for over-educated workers - compared to correctly matched workers - is larger for immigrants than natives and is imputed to the lower transferability of skills of the foreign born population. Using a similar approach, Sanromá et al. (2008) investigate the transferability of human capital of foreign nationals who migrated to Spain by studying the educational mismatch of both immigrants and natives. Immigrants are found to have both a higher probability of educational mismatch as well as a higher intensity (measured in years of mismatch) compared to natives'. Upon arrival immigrants are more likely to be over-educated than natives, the incidence of over-education significantly varies with immigrants' country of origin and is more intense for those coming from developing countries. As previously found for the US (see Chiswick and Miller 2008), the analysis of earnings reveals that differences in returns to human capital by nativity are driven by the educational mismatch and that the returns to over-education are comparatively higher for natives than immigrants. Moreover, human capital acquired after arrival reduces the chances of intense over-education.

[59] Constant and Massey (2003) identify immigrant guestworkers as foreign-born migrants and their German-born offsprings.

Further studies have stressed the role played by location where human capital was acquired as the main determinant of the returns to education and work experience. Shields and Price (1998) and Friedberg (2000) distinguish between education and labor market experience acquired by immigrants in their home rather than in the host country and stress the role played by "cultural" distance in explaining differences in earnings across nativity and ethnicity groups. Using UK Quarterly Labor Force Survey data, Shields and Price (1998) find lower returns from human capital acquired by immigrants in their country of origin compared to human capital acquired in the UK, although a penalty in returns persists with respect to natives. In her study of immigrant earnings assimilation in Israel, Friedberg (2000) uses Census data and provides evidence suggesting that the wage gap between immigrants and natives can be fully explained by lower returns to immigrants' education and experience. In particular, the portability of education varies with the level of qualification obtained such that returns from elementary education are not differently valued according to immigrants' country of origin, while this is the case for high-school education.

In Italy the literature on immigrants' labor market performance is scant and this is likely due to the limited availability of good data. The first rigorous study analysing the labor market assimilation of immigrants in Italy is the one by Venturini and Villosio (2008). They use longitudinal administrative social-security data on employment histories of immigrant and native workers between 1990-2003. The authors analyse both employment and earnings assimilation using the number of days worked in a year and the log of daily wage as outcome variables and taking into account the probability of return migration. Their results show that male immigrants do not assimilate to natives neither in employment nor in earnings and that the earnings profiles of temporary and permanent migrants do not systematically differ, although the best labor market performance are those of immigrant workers most likely to stay only temporarily in Italy. The foreigners' earnings differential is found to increase with years of work experience and the returns to seniority are lower for migrants compared to natives. Immigrants also do not catch up with natives' days of employment and specialize in different sectors according to their origins.

Accetturo and Infante (2010), restrict their attention to immigrants residing in the Italian region of Lombardy and exploit a rich dataset collected by the independent foundation ISMU between 2001-2005 to investigate the international transferability of human capital. They estimate a wage regression by separately considering years of labor market experience obtained in the origin and in the host country. The main findings are in line with the international literature: returns to years of education are much lower for foreign nationals than for Italian workers, while years of work experience in the host country have a significantly higher effect on earnings than pre-migration work experience.

The most recent contribution in the Italian literature is the study by Dell'Aringa et al. (2015), who draw information from the Italian Labour Force Survey. They exploit year 2009 of the Italian Labour Force Survey, which is the first where both information on respondents' earnings and immigrants' year of arrival, country of origin and nationality is available, and analyse the labor market performance of non-Italian citizens compared to that of natives. They focus on male workers and disentangle years of labor market experience acquired by immigrants in the country of origin from work experience acquired in Italy. In line with previous studies, they find that immigrants' marginal return to years of education is lower compared to natives' and that years of work experience in the origin country are not rewarded in the Italian labor market, while returns to host country work experience are positive but significantly lower compared to those of natives. The authors

stress that immigrants' increase in earnings associated to years of schooling and experience is largely driven by within occupation mobility rather than by access to high-paying occupations, suggesting the existence of a "glass ceiling" for immigrants preventing them from accessing highly payed positions in the Italian labor market.

Our analysis goes further, looking at the dynamic effect of schooling and years of work experience on earnings of foreign and native born. Empirical evidence uncovers an initially divergent and then very slowly convergent trajectory of immigrants' returns to education relative to the natives' returns as the years of work experience in the Italian labor market increase. We also distinguish between immigrants who have attained their education before and after migration showing that wage profiles of immigrants who have received all of their education in Italy resemble those of natives. On the other hand, immigrants who have received at least part of their education in their country of origin suffer a large and persistent gap in earnings over time compared to natives.

3.3 Immigration in Italy: some stylized facts

Italy started to experience net immigrant inflows in the early 1990s. A slowdown in new arrivals has occurred at the beginning of the economic crisis in 2008, and in 2012 the inflow of long-term residents amounted to 321,300 persons, a 10% decline compared to 2011 (OECD 2014). Despite this recent downtrend in immigration dynamics, in 2012 the percentage of foreign born over total population in Italy reached 10%, a 1 percentage point increase compared to 2011 (OECD 2014).

Immigration to Italy is made up by relatively young and low skilled individuals compared to the native population (see Del Boca and Venturini 2005). Figure 3.1 reports the distribution of foreign and native born residents in Italy across age groups and by gender using data from the 2011 Census.[60]

[60]We define immigrants as foreign born individuals throughout the paper.

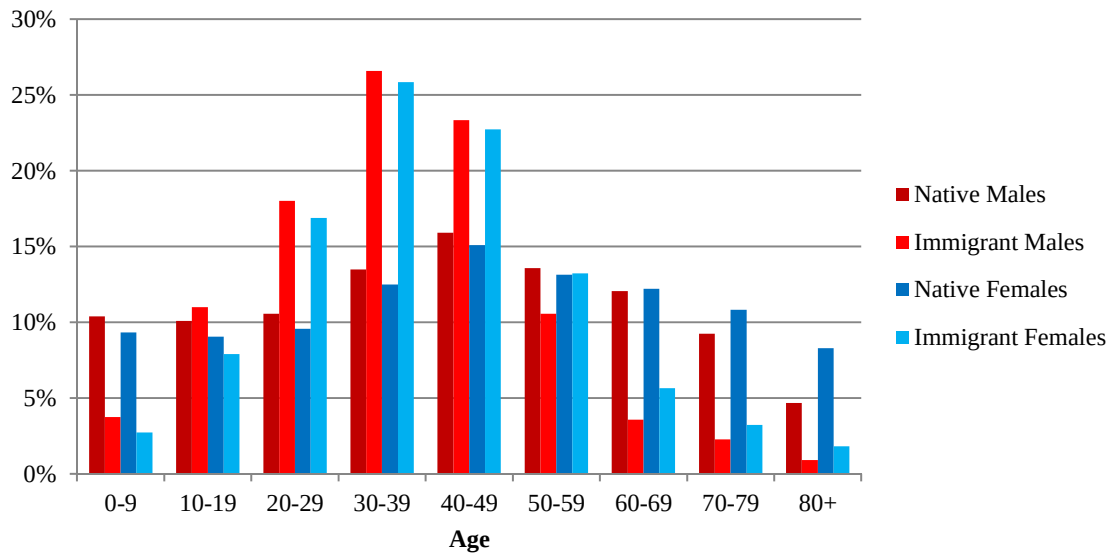

Figure 3.1: Distribution of immigrant and native population across age groups by gender (2011 Census) Source: Censimento della popolazione e delle abitazioni 2011

Both female and male immigrants are over-represented in the 20-49 age group, while they are under-represented in the oldest age groups above 50 years old.

Italy is also characterized by a high incidence of low skilled migration coming from less developed countries. Figure 3.2 reports the distribution of the immigrant and native populations by educational attainment. In 2014, both female and male immigrants are over-represented among the very low-educated (i.e. with at most lower secondary education) compared to their native counterpart, while they are under-represented among the tertiary educated.

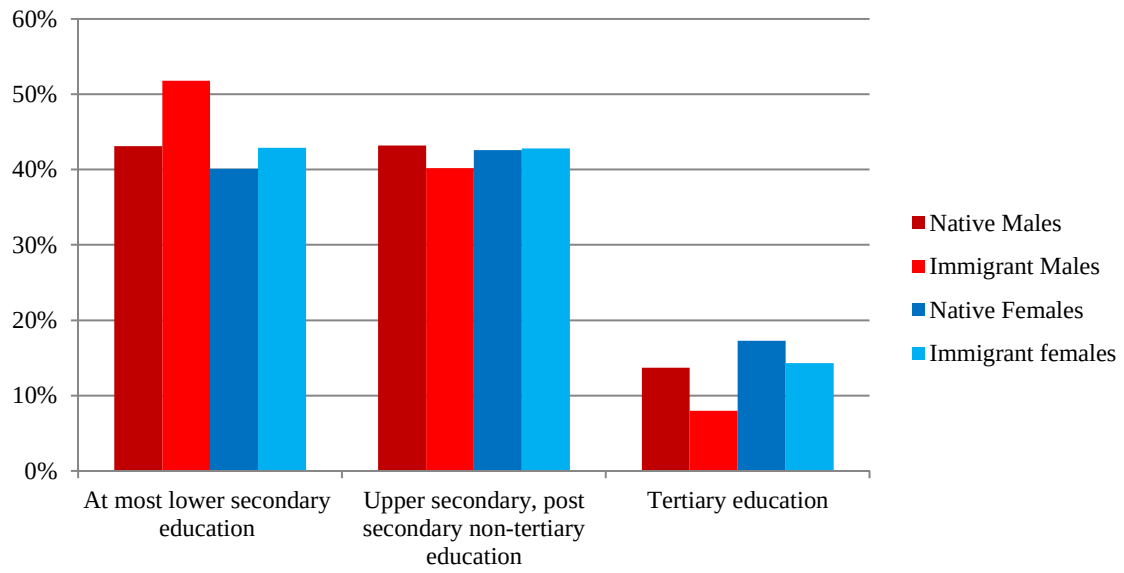

Figure 3.2: Working age population (i.e. 15 to 64) by educational attainment, gender, and country of birth (%) (2014)
Source: Adapted from Eurostat (2014)

Highly educated immigrants in Italy also report significantly higher rates of over-qualification, defined as the condition of being tertiary educated while working in an ISCO 4 to 9 occupation,[61] compared to the native born. This suggests downgrading into relatively low-skilled occupations compared to their level of education: in 2013, 53% of the foreign born tertiary educated in employment aged 15 to 64 is over-qualified, compared to 16% of the tertiary educated native born counterpart. The sizable share of over-educated immigrants makes Italy the second country after Spain with the largest share of over-qualified immigrant workforce across OECD countries.[62]

Focusing on labor market differences between immigrants and native born, Figure 3.3 below reports the average employment, unemployment and inactivity rates by nativity status and gender based on Italian Labour Force Survey data over the years used in our analysis (i.e. 2009-2014). Within the working age population, both male and female foreign born report higher rates of employment compared to their native born counterparts. The unemployment rate is also higher for immigrants compared to natives both for the female and male population. The rate of inactivity is instead lower among the foreign born.

[61] ISCO 4 -9 occupations include: Clerical support workers, Service and sales workers, Skilled agricultural, forestry and fishery workers, Craft and related trades workers, Plant and machine operators, and assemblers, Elementary occupations.

[62] Source: Oecd.StatExtracts http://www.keepeek.com/Digital-Asset-Management/oecd/social-issues-migration-health/international-migration-outlook-2014/over-qualification-rates-among-the-highly-educated-in-employment-15-to-64-year-olds-by-migration-status-2013_migr_outlook-2014-graph26-en#page1

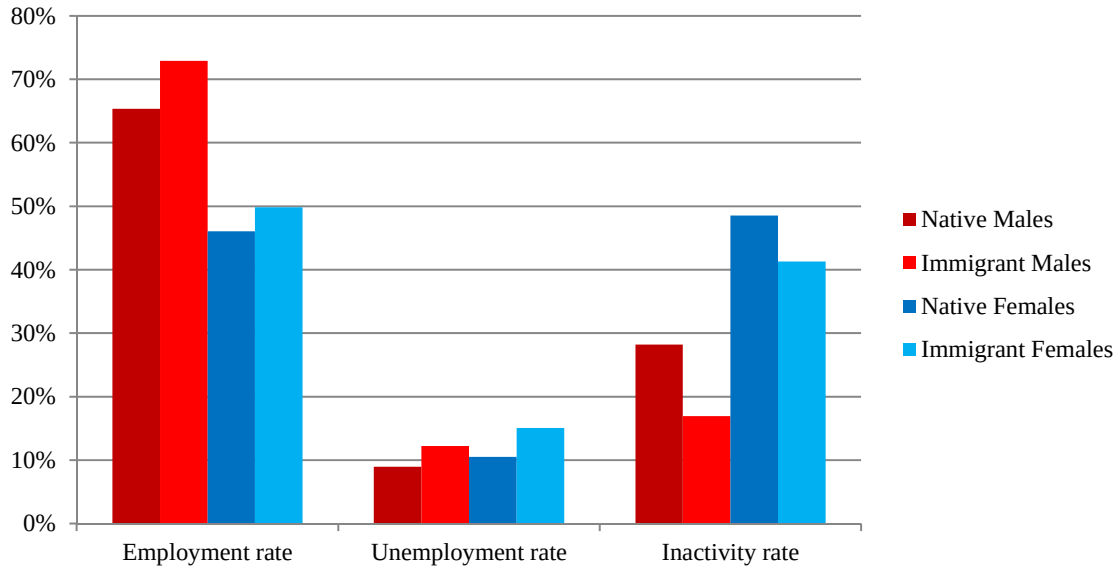

Figure 3.3: Employment, unemployment and inactivity rate by gender and nativity Source: own elaboration using Italian LFS data, years 2009 - 2014 (sample weighted averages).

3.4 Data and descriptives

Our analysis of immigrant and native earnings is based on microdata from the Italian Labour Force Survey (LFS) for the years 2009-2014. Unfortunately, we cannot go backwards in time since no information on earnings is available before 2009. The Italian LFS is a quarterly representative survey of the population residing in Italy. The sample design is a rotating panel and each quarter represents 0.3% of the population and collects information on about 175,000 individuals. It provides information on individuals' socio demographic characteristics, such as age, level of education and civil status, as well as labor market characteristics, such as employment status, job position, hours worked and net monthly wage. The survey also allows for the identification of immigrants by asking individuals their country of birth, nationality, and year of arrival in Italy.

In our analysis, we pool quarterly LFS data from 2009 Q1 to 2014 Q3 included and treat the sample as repeated cross-sections over time. We consider both male and female employees[63] between 16 and 64 years of age[64] and define immigrants as those born outside Italy.

The information on individuals' earnings provided by the LFS refers to net monthly earnings and it is bottom coded at 250€ and top coded at 3000€. For this reason, we drop from the sample the first and the last percentile of the earnings distribution, which correspond to respondents earning 250€ and 3000€ respectively,

[63] Information on earnings is available for workers in dependent employment only. Self-employed workers are excluded from the sample.

[64] Compulsory education in Italy lasts for ten years, until the age of 16. Information on wages in the Italian LFS is collected for individuals aged 16 years and older.

and thus disregard those who have been imputed exactly 250€ and 3000€ net monthly earnings.[65] We finally end up with an overall sample of 818,100 observations over the period 2009-2014, of which 105,997 are foreign born.

Table 3.1 reports some descriptive statistics for the main variables of interest separately for immigrants and natives and by gender. The Table shows that both female and male immigrants earn on average significantly less than their native counterpart, despite working the same (females) or even longer (males) hours weekly. Moreover, the immigrant-native wage difference is on average larger for females than males. Immigrants are also younger than the native born and about half a year less educated than Italians for both genders. Women however have about one more year of education compared to men among both immigrants and natives. More than 80% of immigrants in the sample have completed their education before migrating and this explains why, on average, only about 1.5 years of schooling are acquired in Italy by foreign-born males and females. Immigrants also report less years of work experience[66]compared to the native born (almost 3 years less for males and 1 for females), which is at least partly due to their younger age. Both female and male immigrants have been in Italy on average for approximately 14 years and have attained more than half of their work experience there.[67]

Moreover, female immigrants are significantly less likely to be married and to work full-time compared to both male immigrants and native females.

When we split our sample across wage quartiles, some interesting patterns emerge: Table 3.2 shows that the immigrant-native earnings gap for males is actually slightly positive but not significant in the first quartile, it becomes negative and significant in the second quartile, and increases over the distribution of earnings. Immigrant females report on average lower earnings than native females except for the top quartile of the distribution, where the difference is no longer significant. As for the years of education, it is only in the last quartile of the distribution that male immigrants report significantly less years of education than natives, while female immigrants are on average more educated than their native counterpart in the first earnings quartile and significantly less educated than natives in the third. The average number of years of schooling acquired by immigrants before migration decreases along quartiles of the wage distribution (going from 9.5 to 9.1 among males and from 10.7 to 9.4 among females), while the opposite is true for the years of schooling attained after arrival (going from 1.1 to 3.1 among males and from 0.9 to 5.7 for females).

The profile of total years of work experience over wage quartiles is similar across genders: the average years of work experience are significantly higher for immigrants compared to natives in the first quartile, but

[65] Wages are adjusted to inflation using the average consumer prices Index and 2009 as reference year. Source: IMF http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/weorept.aspx?sy=2005&ey=2015&scsm=1&ssd=1&sort=country&ds=.&br=1&pr1.x=37&pr1.y=10&c=136&s=PCPI&grp=0&a=

[66] Work experience is measured as potential work experience. Individuals are assumed to start working right after the end of their education and work experience equals age minus years of education minus 6.

[67] For natives, years of education and work experience attained in the country of origin equal zero, while years of education (work experience) in the country of destination coincide with the overall years of schooling (experience). For immigrants, years of education (work experience) in the country of origin equal the years of education (work experience) acquired before migration, while years of education (work experience) in Italy are the number of years of education (work experience) attained since arrival in the host country.

To derive a measure of the number of years of education and work experience before and after migration we assume that individuals begin their education at 6 and start working right after the end of their education. We exploit information on immigrant's age and year of arrival (from which we measure years since migration) to split the total number of years of education and work experience accordingly. To see how we construct our measure of years of education and some alternative results to our baseline analysis using different measures of education see Appendix A. See Appendix B for the definition of immigrants' arrival year and an assessment of the robustness of our results to different definitions of year of arrival.

Table 3.1: Descriptive statistics - Main variables of interest

Native Males

Variable	Obs	Mean	Std. Dev.	Min	Max
Married $_{it}$	383113	0.579	0.494	0	1
Full time job $_{it}$	383113	0.946	0.227	0	1
Permanent job $_{it}$	383113	0.883	0.321	0	1
Net monthly wage $_{it}$ *(real)*	383113	1284.140	419.158	235.258	2990
Weekly hours worked $_{it}$	383113	38.938	6.495	1	105
Age $_{it}$	383113	41.372	10.667	16	64
Education $_{it}$	383113	11.520	3.834	2	22
Work exp. $_{it}$	383113	23.852	11.736	0	55

Native Females

Variable	Obs	Mean	Std. Dev.	Min	Max
Married $_{it}$	328990	0.579	0.494	0	1
Full time job $_{it}$	328990	0.713	0.452	0	1
Permanent job $_{it}$	328990	0.859	0.348	0	1
Net monthly wage $_{it}$ *(real)*	328990	1070.340	404.663	235.258	2990
Weekly hours worked $_{it}$	328990	32.606	8.998	1	105
Age $_{it}$	328990	41.553	10.374	16	64
Education $_{it}$	328990	12.688	3.951	3	22
Work exp. $_{it}$	328990	22.866	11.628	0	54

Immigrant Males

Variable	Obs	Mean	Std. Dev.	Min	Max
Married $_{it}$	56031	0.583	0.493	0	1
Full time job $_{it}$	56031	0.906	0.292	0	1
Permanent job $_{it}$	56031	0.840	0.367	0	1
Net monthly wage $_{it}$ *(real)*	56031	1081.304	347.931	235.258	2960
Weekly hours worked $_{it}$	56031	39.086	7.472	1	105
Age $_{it}$	56031	37.916	9.343	16	64
Education $_{it}$	56031	11.047	3.390	2	22
Education in Italy $_{it}$	56031	1.536	3.822	0	22
Education in Italy $_{it}$ *(if strictly positive)*	10671	8.594	4.593	1	22
Education in Origin $_{it}$	56031	9.511	4.586	0	22
Work exp. $_{it}$	56031	20.869	9.660	0	55
Work exp. in Italy $_{it}$	56031	12.453	7.927	0	54
Work exp. in Origin $_{it}$	56031	8.416	8.011	0	47
YSM $_{it}$	56031	14.407	10.691	0	64

Immigrant Females

Variable	Obs	Mean	Std. Dev.	Min	Max
Married $_{it}$	49966	0.420	0.494	0	1
Full time job $_{it}$	49966	0.602	0.489	0	1
Permanent job $_{it}$	49966	0.857	0.350	0	1
Net monthly wage $_{it}$ *(real)*	49966	813.619	325.795	235.258	2900
Weekly hours worked $_{it}$	49966	32.694	11.648	1	105
Age $_{it}$	49966	40.022	10.047	16	64
Education $_{it}$	49966	12.038	3.515	2	22
Education in Italy $_{it}$	49966	1.545	4.044	0	22
Education in Italy $_{it}$ *(if strictly positive)*	8859	9.306	5.129	1	22
Education in Origin $_{it}$	49966	10.493	4.802	0	22
Work exp. $_{it}$	49966	21.984	10.547	0	54
Work exp. in Italy $_{it}$	49966	11.870	8.011	0	52
Work exp. in Origin $_{it}$	49966	10.114	9.705	0	51
YSM $_{it}$	49966	13.816	10.877	0	62

Married $_{it}$ is coded as 1 if the individual i observed in cross section t is married, 0 otherwise. *Full time job* $_{it}$ is coded as 1 if the individual i observed in cross section t is working full time, 0 if working part-time. *Permanent job* $_{it}$ is coded as 1 if the individual i observed in cross section t has a permanent contract, 0 otherwise. *Net monthly wage* $_{it}$ *(real)* measures the individual's last real net monthly wage. *Weekly hours worked* $_{it}$ *(per week)* measures the individual's number of hours usually worked in a week (when not available it measures the average number of weekly hours worked during the 4 weeks before the interview). *Age* $_{it}$ is the age of individual i observed in cross section t. *Education* $_{it}$ measures the individual's total number of years of schooling. *Education in Italy* $_{it}$ measures the number of years of schooling attained by the individual after migration (which coincides with the total number of years of schooling, *Education* $_{it}$, for the native born, i.e. we assume that all the native born population has received its education in Italy). *Education in Italy* $_{it}$ *(if strictly positive)* is the number of years of post-migration schooling of foreign born individual i observed in cross section t, given that he/she reports a positive number of years of education attained after migration. *Education in Origin* $_{it}$ is the number of years of schooling attained by the individual before migration (equals 0 for the native born). *Work exp.* $_{it}$ is the number of potential years of work experience acquired by individual i observed in cross section t. *Work exp. in Italy* $_{it}$ is the number of years of work experience attained by the individual after migration (which coincides with the total number of years of work experience, *Work exp.* $_{it}$, for the native born). *Work exp. in Origin* $_{it}$ is the number of years of work experience attained by the individual before migration (equals 0 for the native born). *YSM* $_{it}$ is the number of years since the individual i observed in cross section t arrived in Italy (equals 0 for the native born).

the pattern reverses in higher quartiles. The level of work experience attained by immigrants before migration decreases along wage quartiles and women in particular report a huge drop (years of work experience in the country of origin for female immigrants are 11.7 in the first quartile and drop to 3.6 at the top). Immigrants' years of work experience after arrival in Italy are instead highest at the top of the wage distribution for both genders.

For both genders, age increases along the distribution of earnings, immigrants are younger than natives in all wage quartiles except the first and work longer hours in all quartiles of the earnings distribution. Finally, immigrants' years since migration increase along earnings quartiles for both women and men.

A preliminary descriptive analysis thus suggests that immigrants earn less on average than their native born counterpart although differences exist between genders and along earnings quartiles. A similar picture also emerges when plotting the sample distribution of log wages separately for immigrants and natives (see Figure 3.4), which reveals that both male and female immigrant earnings distributions are centered at a lower level of earnings and at the left of the distribution of the native born.

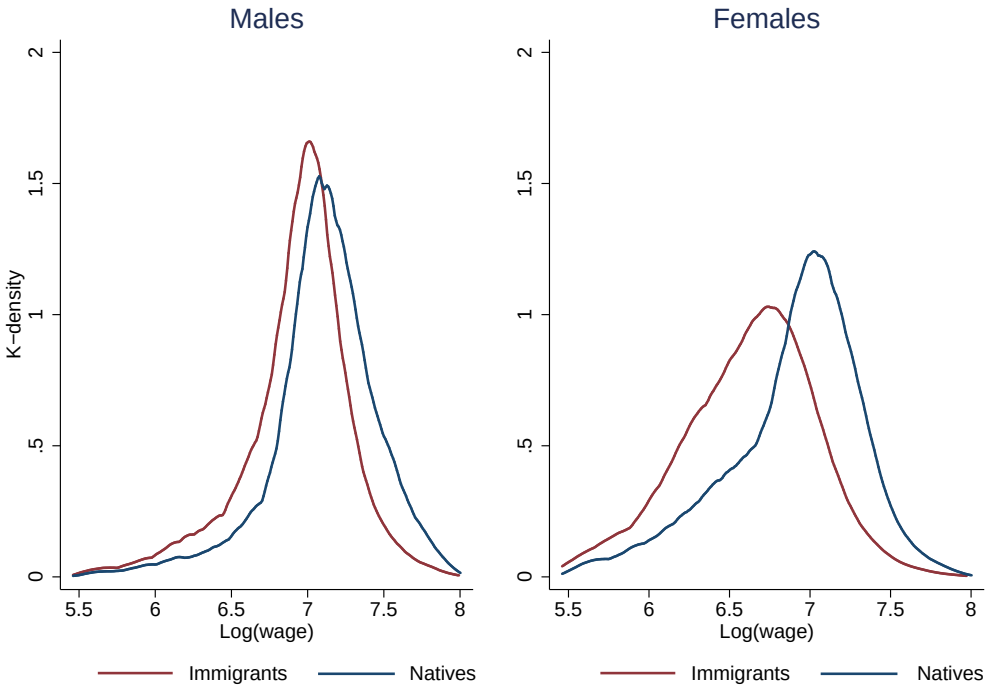

Figure 3.4: Kernel density plot of immigrants' and natives' earnings by gender (pooled sample of repeated cross-sections, years 2009-2014)

In what follows, we carry out a more robust analysis of immigrant and native earnings and investigate the origin of the wage gap. In particular, we focus on the international transferability of human capital by looking at the profile of immigrants' returns to education over time spent in Italy and the potential differences in the returns to human capital between immigrants with foreign and Italian education.

Table 3.2: Descriptive statistics by wage quartiles

Males

	Net monthly wage	Weekly hours worked	Age	Years schooling	Years work experience	Immigrants: Years schooling in Italy	Immigrants: Years of work exp. in Italy	Immigrants: Years schooling in Italy (if >0)	Immigrants: Years schooling in country of origin	Immigrants: Years work exp. in country of origin	Immigrants: Years since migration
QUARTILE I											
Natives	669.590	34.441	35.839	10.606	19.234	-	-	-	-	-	-
Immigrants	672.244	34.665	36.273	10.622	19.651	1.122	10.251	7.113	9.500	9.400	11.670
QUARTILE II											
Natives	1032.627	39.326	38.849	10.636	22.213	-	-	-	-	-	-
Immigrants	1024.054	40.091	37.052	10.850	20.202	1.181	11.571	7.727	9.669	8.631	13.079
QUARTILE III											
Natives	1254.679	39.416	42.129	11.096	25.034	-	-	-	-	-	-
Immigrants	1241.050	40.571	38.971	11.128	21.843	1.563	13.599	9.119	9.565	8.244	15.616
QUARTILE IV											
Natives	1737.821	40.098	44.741	12.884	25.857	-	-	-	-	-	-
Immigrants	1669.453	41.990	41.030	12.148	22.882	3.096	16.462	10.567	9.052	6.419	20.351

Females

	Net monthly wage	Weekly hours worked	Age	Years schooling	Years work experience	Immigrants: Years schooling in Italy	Immigrants: Years of work exp. in Italy	Immigrants: Years schooling in Italy (if >0)	Immigrants: Years schooling in country of origin	Immigrants: Years work exp. in country of origin	Immigrants: Years since migration
QUARTILE I											
Natives	632.316	26.861	38.928	11.237	21.692	-	-	-	-	-	-
Immigrants	626.862	29.491	39.953	11.616	22.337	0.873	10.633	8.027	10.743	11.704	11.751
QUARTILE II											
Natives	1021.558	35.757	40.354	12.155	22.200	-	-	-	-	-	-
Immigrants	1000.171	38.817	39.516	12.139	21.377	1.749	12.591	9.123	10.391	8.785	14.800
QUARTILE III											
Natives	1250.659	35.168	42.999	13.499	23.500	-	-	-	-	-	-
Immigrants	1238.666	38.179	40.347	13.194	21.153	3.663	15.769	10.367	9.531	5.384	20.334
QUARTILE IV											
Natives	1666.039	35.003	45.927	14.914	25.013	-	-	-	-	-	-
Immigrants	1668.771	37.736	42.550	15.026	21.524	5.653	17.928	12.064	9.373	3.596	24.869

See end of Table 3.1 for the definition of the variables.

3.5 Empirical analysis

In order to investigate immigrant and native earnings profiles and estimate returns to education over time we proceed in five steps. We start with a standard Mincer wage equation (Mincer 1974) and run a very parsimonious specification in which we regress the logarithm of the net monthly (real) wage of individual i observed in cross section year t ($Log(wage_{it})$) on immigration status ($Immigrant_{it}$), years of education ($Education_{it}$), years of work experience ($Workexp_{it}$) and its square ($Workexp^2_{it}$), and immigrant's years since migration (YSM_{it}) and its square (YSM^2_{it}), and we control for year dummies identifying the cross-section in which the individual is surveyed (μ_t). [68]

$$\begin{aligned} Log(wage_{it}) = \alpha_0 + \alpha_1 Immigrant_{it} + \alpha_2 Education_{it} + \alpha_3 Workexp_{it} + \alpha_4 Workexp^2_{it} + \alpha_5 YSM_{it} + \\ + \alpha_6 YSM^2_{it} + \mu_t + \varepsilon_{it} \end{aligned} \tag{3.1}$$

In a subsequent more comprehensive specification, we draw on Chiswick's (1978) extension of the Mincer earnings equation and split the years of work experience variable ($Workexp_{it}$) into the number of years foreign born individuals have worked in their country of origin ($WorkexpOrigin_{it}$) and in Italy ($WorkexpItaly_{it}$). We also allow for immigrant-native differences in returns to education and work experience by interacting our human capital indicators ($Education_{it}$ and $Workexp_{it}$) with the immigrant dummy ($Immigrant_{it}$) and add a set of control variables for individual characteristics such as gender ($Female_{it}$), civil status ($Married_{it}$), number of weekly hours worked ($WeeklyHoursWorked_{it}$) and type of job (i.e. whether full- or part time, $Full-timeJob_{it}$ and whether permanent or temporary, $PermanentJob_{it}$).[69]

$$\begin{aligned} Log(wage_{it}) = \beta_0 + \beta_1 Immigrant_{it} + \beta_2 Education_{it} + \beta_3 (Immigrant_{it} * Education_{it}) + \\ + \beta_4 Workexp.Origin_{it} + \beta_5 Workexp.Origin^2_{it} + \beta_6 Workexp.Italy_{it} + \\ + \beta_7 (Immigrant_{it} * Workexp.Italy_{it}) + \beta_8 Workexp.Italy^2_{it} + \\ + \beta_9 (Immigrant_{it} * Workexp.Italy^2_{it}) + \beta_{10} X_{it} + \mu_t + \varepsilon_{it} \end{aligned} \tag{3.2}$$

Using specification (3.2) we are able to assess whether immigrants suffer a penalty in returns from schooling and work experience in the Italian labor market. In particular, immigrants' overall returns to schooling are identified by $\beta_2 + \beta_3$, while immigrants' returns to work experience in the country of origin and in Italy are given by $\beta_4 + 2\beta_5 WorkexpOrigin_{it}$ and $\beta_6 + \beta_7 + 2\beta_8 WorkexpItaly_{it} + 2\beta_9 WorkexpItaly_{it}$ respectively.

Evidence of an earnings penalty in education for immigrants is represented by a negative sign of the interaction coefficient β_3, and for years of work experience attained in Italy by a negative sign of $\beta_7 + 2\beta_9 WorkexpItaly_{it}$.

In order to investigate immigrants' assimilation into the Italian labor market over time spent in Italy, we then look at how immigrants' returns to education vary with years of work experience in Italy and run a specification which involves a triple interaction of the nativity status ($Immigrant_{it}$), the years of education ($Education_{it}$) and the years of work experience in Italy ($WorkexpItaly_{it}$) :

[68] Years since migration equal 0 for the native born.

[69] In this second and in further specifications we omit the years since migration variable from the analyses since it is highly correlated with the years of work experience in Italy.

$$\begin{aligned} Log(wage_{it}) = \gamma_0 &+ \gamma_1 Immigrant_{it} + \gamma_2 Education_{it} + \gamma_3 (Immigrant_{it} * Education_{it}) + \\ &+ \gamma_4 WorkexpOrigin_{it} + \gamma_5 WorkexpOrigin_i^2 + \gamma_6 WorkexpItaly_{it} + \\ &+ \gamma_7 (Immigrant_{it} * WorkexpItaly_{it}) + \gamma_8 (WorkexpItaly_{it} * Education_{it}) + \\ &+ \gamma_9 (Immigrant_{it} * WorkexpItaly_{it} * Education_{it}) + \gamma_{10} WorkexpItaly_{it}^2 + \\ &+ \gamma_{11} (WorkexpItaly_{it}^2 * Education_{it}) + \gamma_{12} (Immigrant_{it} * WorkexpItaly_{it}^2) + \\ &+ \gamma_{13} (Immigrant_{it} * WorkexpItaly_{it}^2 * Education_{it}) + \gamma_{14} X_{it} + \mu_t + \varepsilon_{it} \end{aligned} \tag{3.3}$$

Finally, we focus our attention on where education has been attained and run two additional specifications. In the first one, we split our measure of years of education into the years of education attained by immigrants in their country of origin and in Italy:

$$\begin{aligned} Log(wage_{it}) = \delta_0 &+ \delta_1 Immigrant_{it} + \delta_2 EducationOrigin_{it} + \delta_3 EducationItaly_{it} + \\ &+ \delta_4 (Immigrant_{it} * EducationItaly_{it}) + \delta_5 WorkexpOrigin_{it} + \delta_6 WorkexpOrigin_{it}^2 + \\ &+ \delta_7 WorkexpItaly_{it} + \delta_8 (Immigrant_{it} * WorkexpItaly_{it}) + \delta_9 WorkexpItaly_{it}^2 + \\ &+ \delta_{10} (Immigrant_{it} * WorkexpItaly_{it}^2) + \delta_{11} X_{it} + \mu_t + \varepsilon_{it} \end{aligned} \tag{3.4}$$

In specification (3.4) we allow returns to education acquired in Italy to vary by immigration status and evidence of a penalty suffered by immigrants is captured by a negative sign of the coefficient δ_4. In the second specification ((3.5)), we interact our human capital variables (i.e. $Education_{it}$ and $WorkexpItaly_{it}$) with nativity dummies which separately identify natives, immigrants with some years of education in their country of origin and immigrants who attained all of their education in Italy. With this latter specification, we want to assess whether differences in earnings and in returns to human capital persist for the foreign born who have attained all of their education in Italy and are thus likely to be close to natives in the "quality" of the human capital acquired. This last specification is as follows:

$$\begin{aligned} Log(wage_{it}) = \lambda_0 &+ \lambda_1 ImmigrantSomeEducOrigin_{it} + \lambda_2 ImmigrantAllEducItaly_{it} + \lambda_3 Education_{it} + \\ &+ \lambda_4 (ImmigrantSomeEducOrigin_{it} * Education_{it}) + \\ &+ \lambda_5 (ImmigrantAllEducItaly_{it} * Education_{it}) + \lambda_6 WorkexpOrigin_{it} + \\ &+ \lambda_7 WorkexpOrigin_{it}^2 + \lambda_8 WorkexpItaly_{it} + \\ &+ \lambda_9 (ImmigrantSomeEducOrigin_{it} * WorkexpItaly_{it}) + \\ &+ \lambda_{10} (ImmigrantAllEducItaly_{it} * WorkexpItaly_{it}) + \lambda_{11} WorkexpItaly_{it}^2 + \\ &+ \lambda_{12} (ImmigrantSomeEducOrigin_{it} * WorkexpItaly_{it}^2) + \\ &+ \lambda_{13} (ImmigrantAllEducItaly_{it} * WorkexpItaly_{it}^2) + \lambda_{14} X_{it} + \mu_{it} + \varepsilon_{it} \end{aligned} \tag{3.5}$$

Table 3.3 reports the results from specifications (3.1) to (3.5).

The negative coefficient of the immigrant status in column (1) suggests that, when returns to education and experience are not allowed to vary by migration status and by where human capital has been attained,

immigrants earn on average 25.6% less than their native counterpart when they arrive and the gap reduces with time spent in Italy (the coefficients associated to YSM_{it} and YSM_{it}^2 are both positive and significant[70]). Overall, marginal returns to schooling are positive and significant: one additional year of education increases earnings by approximately 3.4%. Years of work experience also have a positive effect on earnings, although positive marginal returns decrease with years of work experience.

When returns to human capital are allowed to vary by nativity status and we distinguish between work experience acquired in the country of origin or in the country of destination (see columns (2) to (5) in Table 3.3), some interesting patterns emerge. Results in column (3) reveal that immigrants suffer a penalty, on average, in returns to both education and work experience. In particular, the interaction coefficient of $Immigrant_{it} * Education_{it}$ is negative and highly significant, revealing that immigrants suffer a penalty in the marginal returns to education of 2.4 percentage points. One additional year of education increases workers' wage, on average, by about 3.8 per cent for the native born and by 1.4 per cent for the foreign born.

[70] For the sake of presentation the variables YSM_{it}, $Workexp_{it}$, $WorkexpOrigin_{it}$ and $WorkexpItaly_{it}$ have been rescaled by dividing by a factor of 10.

Table 3.3: Baseline OLS regression

	(1) Log ($wage_{it}$)	(2) Log ($wage_{it}$)	(3) Log ($wage_{it}$)	(4) Log ($wage_{it}$)	(5) Log ($wage_{it}$)	(6) Log ($wage_{it}$)
Immigrant $_{it}$	-0.256**	0.410**	0.339**	0.289**	0.325**	
	(0.004)	(0.008)	(0.006)	(0.014)	(0.006)	
Immigrant some educ. in Origin $_{it}$						0.368**
						(0.007)
Immigrant all educ. in Italy $_{it}$						0.006
						(0.021)
Education $_{it}$	0.034**	0.038**	0.038**	0.034**		0.038**
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)
Immigrant $_{it}$ **Education* $_{it}$		-0.029**	-0.024**	-0.020**		
		(0.000)	(0.000)	(0.001)		
Education in Origin $_{it}$					0.013**	
					(0.000)	
Education in Italy $_{it}$					0.038**	
					(0.000)	
Immigrant $_{it}$ **Education in Italy* $_{it}$					-0.017**	
					(0.000)	
Immigrant some educ. in Origin $_{it}$ **Education* $_{it}$						-0.026**
						(0.000)
Immigrant all educ. in Italy $_{it}$ **Education* $_{it}$						-0.000
						(0.001)
Work exp. $_{it}$ *(divided by 10)*	0.257**					
	(0.002)					
Work exp. $_{it}$ *(square)*	-0.035**					
	(0.000)					
Work exp. in Origin $_{it}$ *(divided by 10)*		-0.045**	-0.048**	-0.047**	-0.008*	-0.034**
		(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ *(square)*		0.003	0.006**	0.005**	-0.005**	0.002
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ *(divided by 10)*		0.277**	0.204**	0.169**	0.204**	0.204**
		(0.002)	(0.002)	(0.005)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ *(square)*		-0.037**	-0.026**	-0.022**	-0.026**	-0.026**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$		-0.116**	-0.108**	-0.019	-0.106**	
		(0.006)	(0.005)	(0.017)	(0.005)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*		0.019**	0.020**	-0.016**	0.017**	
		(0.002)	(0.001)	(0.004)	(0.001)	
Education $_{it}$ **Work exp. in Italy* $_{it}$				0.002**		
				(0.000)		
Education $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*				-0.000*		
				(0.000)		
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$				-0.008**		
				(0.001)		
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*				0.004**		
				(0.000)		
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$						-0.122**
						(0.006)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*						0.023**
						(0.002)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$						-0.026
						(0.015)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*						0.006
						(0.003)
YSM $_{it}$ *(divided by 10)*	0.036**					
	(0.005)					
YSM $_{it}$ *(square)*	0.004**					
	(0.001)					
Female $_{it}$			-0.103**	-0.103**	-0.103**	-0.103**
			(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$			0.047**	0.048**	0.047**	0.047**
			(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$			0.010**	0.010**	0.010**	0.010**
			(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$			0.334**	0.332**	0.333**	0.333**
			(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$			0.147**	0.147**	0.147**	0.147**
			(0.001)	(0.001)	(0.001)	(0.001)
Observations	818,100	818,100	818,100	818,100	818,100	818,100
R-squared	0.162	0.174	0.486	0.487	0.487	0.487
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *YSM* $_{it}$, *Work exp.* $_{it}$, *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

In column (4), the interaction effect of $Education_{it} * WorkexpItaly_{it}$, allows us to capture the change in the marginal return to years of education according to time spent by immigrants working in Italy. Figure 3.5 plots the average marginal return to years of schooling over years of work experience in Italy. The native profile is almost flat, although slightly increasing over time. Immigrants' average marginal returns from education are instead actually decreasing until 9 years of work experience in Italy and begin to rise only immediately after, although they remain significantly lower than natives' well after 30 years.

As previously mentioned, the declining trend in immigrants' returns to education during the first 9 years working in Italy may be driven by return migration of the best immigrant earners in the labor market, which we cannot control for in our analysis given that we lack longitudinal data.[71] To further investigate differences in returns to education by nativity status, in Figure 3.6 we plot immigrants' and natives' average marginal effect on earnings of having attained a college degree compared to having at most a high school certificate. The return for natives increases over years of work experience and already reaches 30% after 14 years. Immigrants' return to college is instead systematically lower than natives' and declines over time until 11 years of work in Italy. Immigrants' average marginal return on having a college degree reaches 30% only after 31 years.

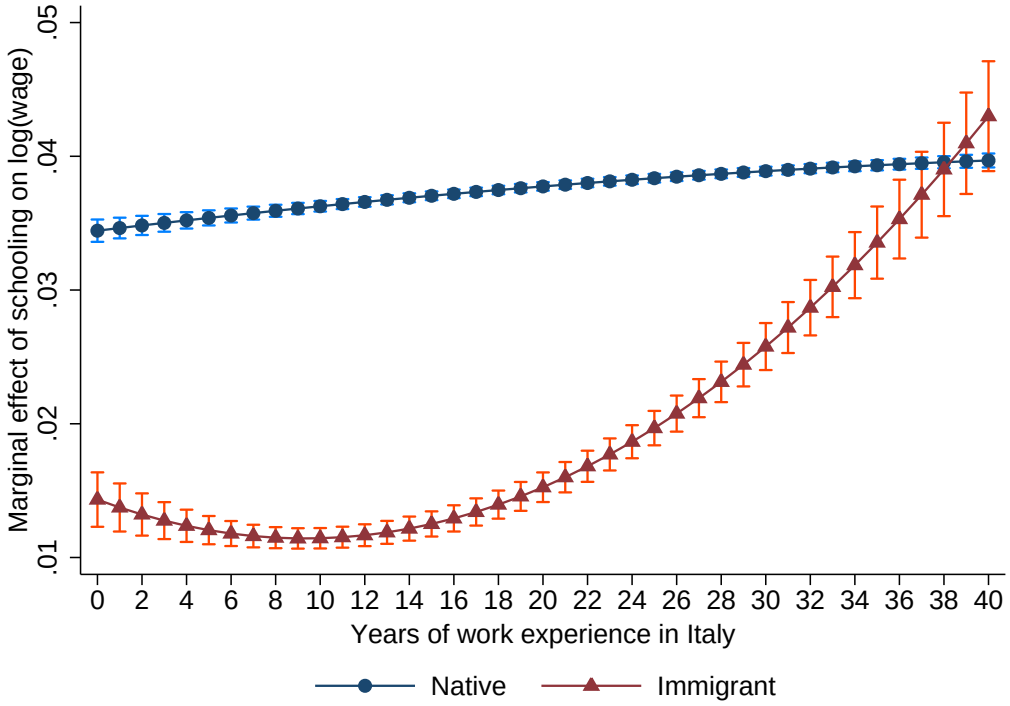

Figure 3.5: Immigrants' assimilation of returns to education

[71] In order to check the robustness of our results to the choice of the functional form, we have run the same specification as specification (3.3) allowing for different polynomials in the years of work experience in Italy variable and we find that the pattern persists.

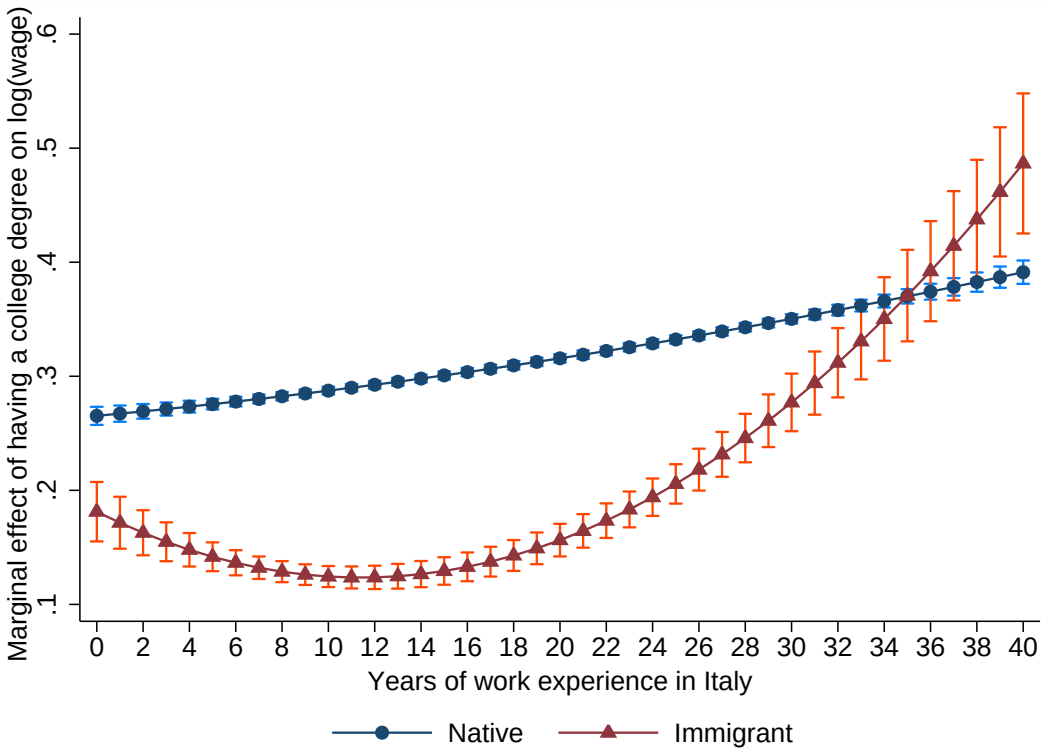

Figure 3.6: Immigrants' and natives' returns from college education over years of work experience in Italy

In column (5) of Table 3.3, we account for the origin of education and split immigrants' years of education acquired before and after migration. Although only less than 20% of the immigrant population acquired part of its education in Italy, some interesting patterns emerge: even when human capital is attained in the country of destination, native born education is valued more than immigrants'. One additional year of education in Italy increases workers' wage, on average, by about 3.8% for natives and by only 2.1% for immigrants. Immigrants' penalty in returns to education thus persists when considering years of education attained in Italy and equals about 1.7 percentage points. At the same time, immigrants' marginal return to education attained in the country of origin is almost 1/3 of natives' (one more year of education in the country of origin increases immigrants' wage by only 1.3%). These results should be interpreted with caution, however, given that in our analysis we cannot control for other important factors which may have a direct effect on immigrants' wages while also affecting the "quality" of education attained by immigrants in Italy. An example could be the role played by fluency of the host country language: one additional year of schooling in Italy for immigrants may be worth less on the labor market due to poor knowledge of the Italian language rather than education per se.

Given these findings, in the last specification (column (6)), we divide our foreign born sample into a sub-sample of individuals who have acquired all of their education in Italy and those who have attained all or at least part of their years of schooling before migration and we let our human capital measures vary according to whether immigrants attained their whole education in Italy or not (the share of immigrants who received all of their education in Italy is about 9% of the immigrant population and 1.2% of the overall sample population).

Our results show that the coefficient associated to immigrants' education penalty becomes close to zero

and not significant when the sub-sample of foreign born educated in Italy is considered, while it is sizable and significant for the foreign born with at least one year of education in the country of origin.[72] This evidence suggests that child immigrants with all education attained in Italy are very close to natives in terms of returns to human capital and labor market outcomes, this is likely due to their higher "quality" of education, the fluency in Italian language acquired in school, the better networks they may have with the host country labor market and possibly to the fact that they suffer less from discrimination.

Figure 3.7 plots the predicted earnings over years of work experience in Italy by foreign born status and origin of education for high school and college graduates or workers with post high school specialization (left and right hand panel of Figure 3.7 respectively).

The Figure shows that the earnings profile of immigrants who received all of their education in Italy is close to that of natives, although a small (at most 3%) but negative wage differential exists and is significant over almost all years of work experience in Italy for both high school and college graduates.

Immigrants with foreign education instead show during their first years a relatively small negative earnings differential compared to natives and Italian educated immigrants, which is even slightly positive for the high school graduates. The initial advantage however almost immediately turns into a negative gap. The negative wage differential between immigrants with foreign education and natives widens significantly over time and reaches 14% among high school graduates and almost 30% among college graduates and starts to decline only after 27 years of work in Italy.

The effects of the control variables in the analysis are generally as expected and similar across all specifications. In particular, females earn about 10% less than males ceteris paribus (a careful analysis of the immigrant-native wage gap by gender will be carried out in Subsection 3.6.2), being married increases earnings, and so does working longer hours weekly, working full-time and holding a permanent contract.

[72] About 76% of the foreign born sample who received all its education in Italy is made up of Western immigrants. Given that the latter represents a peculiar sub-sample of the foreign born population, with socio demographic characteristics which are closer to the native born rather than the rest of the foreign born population, we check the robustness of our results and drop the Western born population from the immigrant sample. We run the same specification as specification (3.5) and reestimate the wage profiles of foreign born and natives by origin of education and find that the main patterns reported in column (6) of Table 3.3 persist even when Western immigrants are excluded from the analysis.

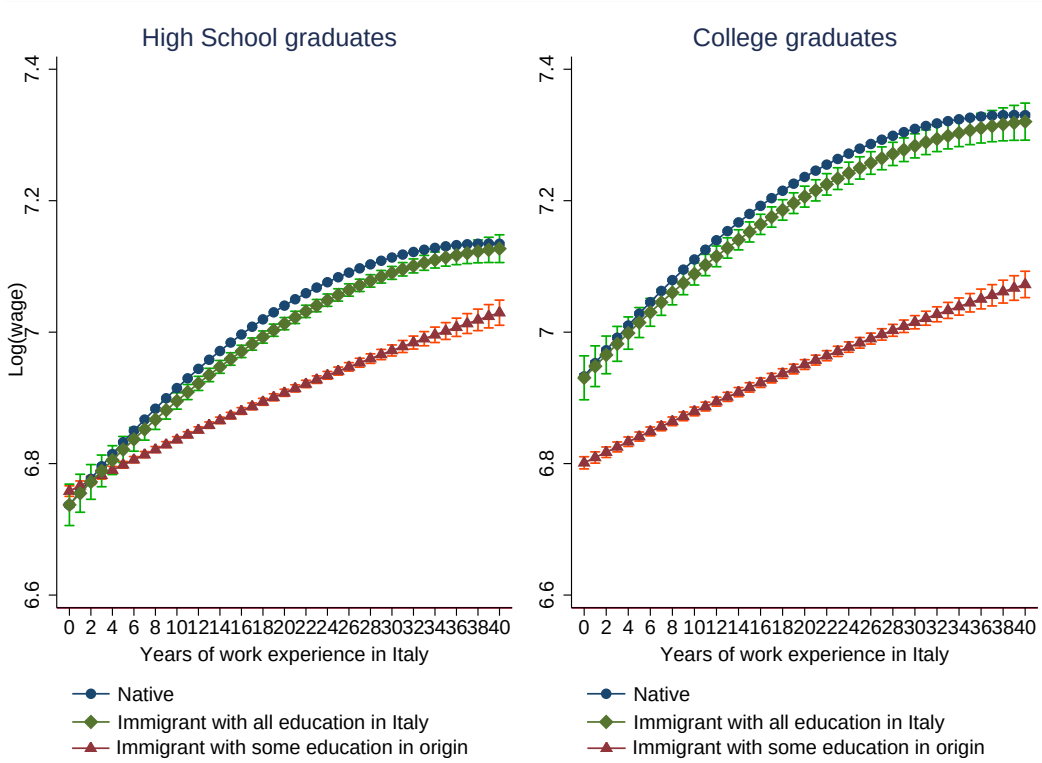

Figure 3.7: Earnings profiles over years of work experience in Italy by nativity

Overall, our results confirm previous findings in the literature of large immigrant-native differences in returns to human capital, especially to education (see e.g. Accetturo and Infante 2010, Dell'Aringa et al. 2015), but also bring about new evidence of heterogeneity in immigrants' returns to education depending on where human capital is acquired and of a very slow pattern of assimilation of immigrants' returns with time spent in Italy, which starts only after 9 years. Immigrants' returns to education remain persistently lower than those of natives even after 30 years and the earnings differential persists and even widens over time.

Our findings should be interpreted with caution given that we pool multiple cross sections together to estimate the wage equations and do not follow the same individuals over time. In particular, migrants may at some point return to their country of origin, an event which we cannot observe in the data. If return migration is not random and the best performing migrants are the most likely to leave Italy, our estimates of returns on education and of wage profiles over years of work experience may be biased downward. Using Italian administrative social security data, Venturini and Villosio (2008) take return migration into consideration in their study of labor market assimilation of foreign workers in Italy. They model the probability of staying in the destination country as a function of variables which are both determinants of the assimilation equation and the choice of return, and of exclusion restriction variables affecting only the return decision. In particular, the migration decision is modelled as a function of the wage differential between immigrant's origin and destination country, while also taking into account the migrant's preference for consumption in the country origin, and the instruments used for identification are the annual GNP growth rate and level in origin countries. The authors find that a negative selection is actually in place, meaning that migrants who earn more are the most likely to leave their employment in Italy. Most importantly, however, they find that taking return migration

into account does not significantly change their estimates of an increasing immigrant-native wage differential over years of on the job experience.

3.6 Robustness analysis

In order to deepen our analysis, we depart from our baseline specification and address various aspects related to immigrants' human capital transferability and earnings differential which shed further light on our findings. In Subsection 3.6.1 we allow the returns to schooling and experience to vary across individuals' area of birth and - as expected - uncover profound differences in returns to human capital, especially between Western and non-Western immigrants. We then run our analysis separately by gender (Subsection 3.6.2) and highlight male-female differences in returns to schooling and wage profiles over time. Subsection 3.6.3 focuses on immigrant and native sorting into different occupations and reveals the persistence of an immigrant-native gap in returns to education within occupational categories. Next, we address the issue of potential endogeneity in workers' sorting across local employment areas by adding region-year fixed effects in the analysis (Subsection 3.6.4). Subsection 3.6.5 instead assesses the robustness of our findings to a different measure of education which identifies the highest educational qualification attained rather than the number of years of schooling. Finally, Subsection 3.6.6 takes into account the possibility of women selection into labor market participation by relying on a Heckman selection model.

3.6.1 Country of birth

In the previous section, we have uncovered immigrant-native differences in the returns to both years of education and experience and we have found these differences to persist even when part but not all of immigrants' human capital is acquired in Italy. A very slow pattern of assimilation in returns to education, however, seems to be in place, while no significant immigrant-native difference is found in the estimated average marginal effect of schooling on earnings when immigrants have acquired all of their human capital in Italy.

We now allow immigrant labor market performance to vary across area of birth. By controlling for immigrants' area of origin we - at least partly - control for potential heterogeneity across different arrival cohorts.[73]

Figure 3.8 below reports the sample of foreign born divided by area of birth: almost 50% of immigrants in the sample come from Eastern European countries, while the rest of them is almost equally split across Africa, Asia and the Middle East, Latin America and Western Countries.

[73] The migration literature has often emphasized that the "quality" of arrival cohorts is largely captured by immigrants' heterogeneity across countries of birth (see e.g. LaLonde and Topel 1992, Borjas 2000).

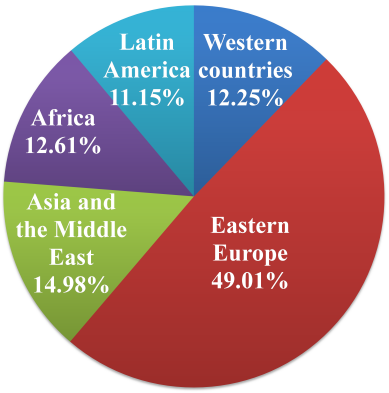

Figure 3.8: Distribution of immigrants across area of birth

In order to account for the different behavior of immigrants by area of birth, we run our wage specifications (3.1) to (3.5) splitting the nativity variable ($Immigrant_{it}$) into a set of dummies identifying the five areas of origin (i.e. Africa, Asia and the Middle East, Eastern Europe, Latin America and Western Countries).

Figure 3.9 plots the marginal returns of education on log earnings by area of birth over years of work experience in Italy, revealing important differences in returns to education and in assimilation profiles across geographic regions. As expected, immigrants from relatively developed countries display returns to education which are very close to natives' and vary little over time. This result suggests that Westerners may have received higher educational quality than the rest of foreign born or at least a type of education closer to that of the native population.

Immigrants from less developed countries, instead, display significantly lower returns to education compared to natives'. Marginal returns to schooling actually slightly decrease over time until at least 10 years of work experience in Italy for all the areas of origin considered except for African immigrants, whose returns are always increasing over time but extremely low. Only after a considerable time in the Italian labor market the marginal return to schooling starts to rise and a very slow path of assimilation begins. Latin Americans are those whose human capital is valued relatively more among immigrants from less developed countries. Eastern Europeans report a similar profile but lower returns than Latin Americans, while African and Asian immigrants perform relatively bad and do not catch up with natives even after 30 years.

Starting from equation (3.5), which distinguishes immigrants by origin of education and does not allow for heterogeneity of returns by years of work experience, Figure 3.10 plots the average marginal return to one more year of schooling by area of birth separately for natives, foreign born who attained all of their education in Italy and immigrants with at least some years of education in the country of origin. Results confirm previous findings and show that the average return to education for Western immigrants is not significantly different from natives' independently on whether they have been educated in Italy or abroad. The difference in returns between those who have received all of their education in Italy and those who have not is sizable and significant for immigrants from relatively less developed countries: the average marginal return to one year of schooling of Eastern European and Asian immigrants is less than 1% for the foreign educated, while it is higher and no more significantly different from natives' for Eastern Europeans and Latin Americans - and even becomes slightly larger than natives' for Asians - when they had an Italian education. A positive

significant difference in returns also exists among Africans with an Italian education compared to those with a foreign education, although the penalty with respect to natives persists even when they have acquired their education in Italy.

These latter findings suggest that even for non Western immigrants having received all of their education in Italy leads to a better assimilation to the host society.

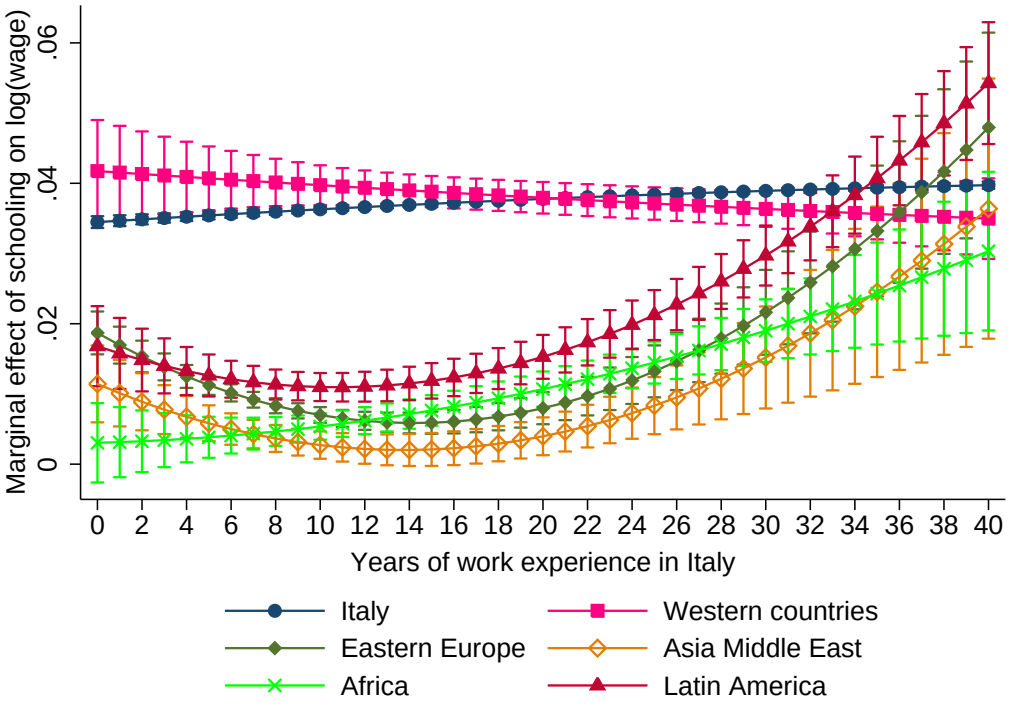

Figure 3.9: Immigrants' assimilation of returns to education by region of birth

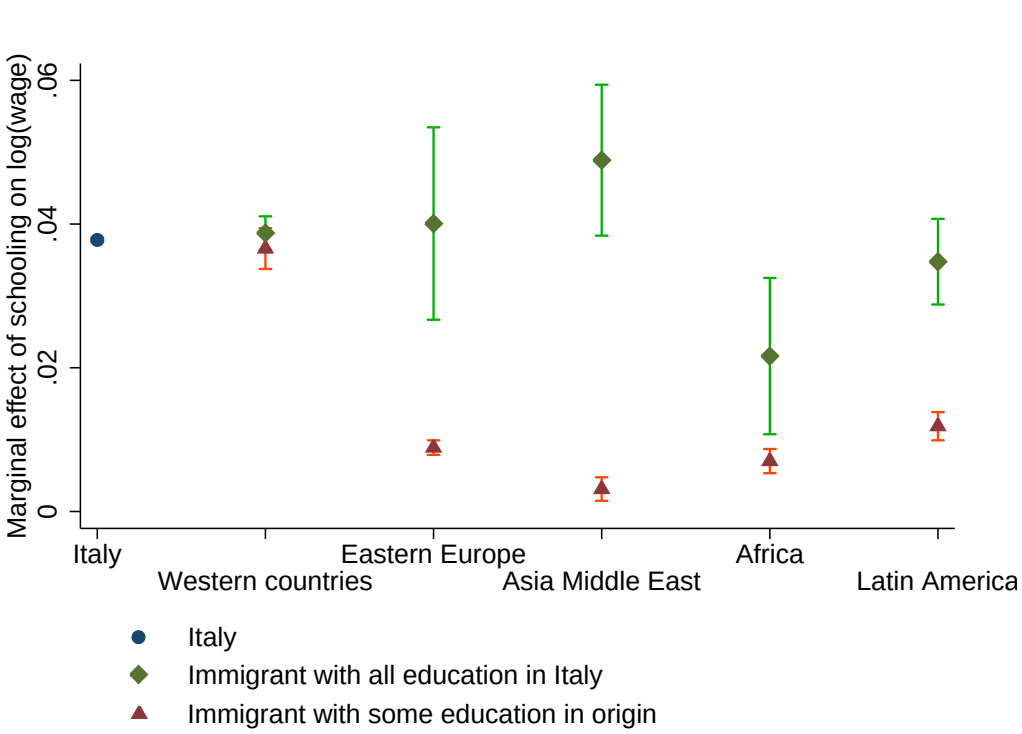

Figure 3.10: Average marginal returns from education by region of birth

3.6.2 Gender

The existence of a gender pay gap is well-known (see e.g. Blau and Kahn 1992, 1995, 1996, Arulampalam et al. 2007) and evidence from Italy confirms significant gender wage differentials, women facing barriers to entry in the labor market and segregation into highly feminized and often relatively low-paid occupations (see e.g. Bettio and Villa 1992, Rosti 2006, Bettio 2010, Addabbo and Favaro 2011, Del Bono and Vuri 2011, Mussida and Picchio 2014). Given these marked gender differences, in this subsection we study immigrant-native earnings separately by gender, while in Subsection 3.6.6 we control for selection into labor market participation of women using a Heckman selection model.

In what follows, we study whether returns to human capital differ between immigrants and natives and across gender and run specifications (3.2) to (3.5) separately for males and females.

Table 3.4 shows that the returns to education are higher for females than males[74] for both natives and immigrants and that the average immigrant penalty in returns is similar between males and females (the immigrant-native percentage difference in returns for males is of about 62% and about 60% for females): when considering overall years of education, as in column (1), native females' average marginal return is estimated at about 4.3% (3.4% for native males), while it is 1.7% for immigrant females (1.3% for males).

[74] In column (2) of Table 3.4 the years of education variable is interacted both with the nativity status dummy and with the years of work experience and work experience squared making the estimated marginal effect of one more year of education on wages not directly interpretable from the Table. A clearer interpretation of the estimates of the returns to education shown in column (2) is provided in Figure 3.11, which plots the marginal return to schooling over years of work experience in Italy.

When we separately consider the years of education attained in Italy and in the origin country (column (3)), immigrants' one unit increase in years of education in the country of origin raises female (male) wages of about 1.6% (1.2%), while immigrants' average marginal return to education in Italy is estimated at 2.6% for females and 1.9% for males. Column (4) confirms previous findings of no significant differences in the returns to years of education between natives and foreign born when the latter have been educated in Italy (the coefficient associated to the interaction term between immigrants educated in Italy and years of schooling is close to zero and not significant in both the male and female regressions).

Figure 3.11 plots the marginal return to education over years of work experience in Italy for immigrants and natives by gender. Both immigrant and native females have a steeper profile compared to their male counterparts, and immigrants never catch up with natives irrespective of gender. Figure 3.12 plots immigrant and native earnings profiles over years of work experience separately by gender and whether immigrants received all of their education in Italy. The left hand panel plots the predicted log(wage) for high school graduates, while the right hand panel considers college graduates and individuals with a comparable post high school qualification. Results confirm that both immigrant and native females earn less than their male counterpart, on average, and that for both genders a large part of the immigrant-native gap in earnings is driven by immigrants who have attained at least one year of education before migration, while those who received their education in Italy display an earnings profile which is closer to natives'. The Figure also reveals that the immigrant-native earnings gap for immigrants with foreign education is similar between genders and is larger among college graduates than high school graduates. The gap is initially increasing with time spent working in the Italian labor market and it starts to decline earlier for females, although immigrants never catch up with natives.

Table 3.4: Gender

	(1)		(2)		(3)		(4)	
	Males	Females	Males	Females	Males	Females	Males	Females
Immigrant $_{it}$	0.298**	0.376**	0.318**	0.224**	0.283**	0.364**		
	(0.009)	(0.010)	(0.019)	(0.021)	(0.009)	(0.010)		
Immigrant some educ. in Origin $_{it}$							0.320**	0.409**
							(0.009)	(0.010)
Immigrant all educ. in Italy $_{it}$							0.004	0.023
							(0.027)	(0.034)
Education $_{it}$	0.034**	0.043**	0.035**	0.032**			0.034**	0.043**
	(0.000)	(0.000)	(0.001)	(0.001)			(0.000)	(0.000)
Immigrant $_{it}$ **Education* $_{it}$	-0.021**	-0.026**	-0.022**	-0.016**				
	(0.001)	(0.001)	(0.002)	(0.002)				
Education in Origin $_{it}$					0.012**	0.016**		
					(0.001)	(0.001)		
Education in Italy $_{it}$					0.034**	0.043**		
					(0.000)	(0.000)		
Immigrant $_{it}$ **Education in Italy* $_{it}$					-0.015**	-0.017**		
					(0.001)	(0.001)		
Immigrant some educ. in Origin $_{it}$ **Education* $_{it}$							-0.023**	-0.028**
							(0.001)	(0.001)
Immigrant all educ. in Italy $_{it}$ **Education* $_{it}$							-0.001	-0.001
							(0.001)	(0.002)
Work exp. in Origin $_{it}$ *(divided by 10)*	-0.026**	-0.087**	-0.025**	-0.085**	0.009	-0.040**	-0.015**	-0.068**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.005)
Work exp. in Origin $_{it}$ *(square)*	0.004*	0.015**	0.004	0.014**	-0.006**	0.003*	0.000	0.010**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ *(divided by 10)*	0.196**	0.216**	0.207**	0.102**	0.195**	0.215**	0.196**	0.216**
	(0.002)	(0.002)	(0.006)	(0.008)	(0.002)	(0.002)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ *(square)*	-0.026**	-0.027**	-0.026**	-0.015**	-0.026**	-0.027**	-0.026**	-0.027**
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$	-0.096**	-0.131**	-0.059**	0.010	-0.093**	-0.133**		
	(0.007)	(0.007)	(0.022)	(0.025)	(0.007)	(0.007)		
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*	0.017**	0.027**	-0.008	-0.017**	0.014**	0.024**		
	(0.002)	(0.002)	(0.006)	(0.006)	(0.002)	(0.002)		
Education $_{it}$ **Work exp. in Italy* $_{it}$			-0.000	0.006**				
			(0.000)	(0.001)				
Education $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*			-0.000*	-0.000				
			(0.000)	(0.000)				
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$			-0.005**	-0.010**				
			(0.002)	(0.002)				
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*			0.003**	0.004**				
			(0.001)	(0.001)				
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$							-0.106**	-0.152**
							(0.008)	(0.008)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*							0.018**	0.031**
							(0.002)	(0.002)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$							-0.020	-0.028
							(0.018)	(0.024)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*							0.004	0.007
							(0.004)	(0.005)
Married $_{it}$	0.068**	0.019**	0.067**	0.023**	0.068**	0.019**	0.068**	0.019**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$	0.009**	0.011**	0.008**	0.011**	0.009**	0.011**	0.009**	0.011**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$	0.375**	0.303**	0.376**	0.296**	0.375**	0.302**	0.374**	0.301**
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)
Permanent job $_{it}$	0.157**	0.136**	0.156**	0.137**	0.157**	0.137**	0.157**	0.136**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	439,144	378,956	439,144	378,956	439,144	378,956	439,144	378,956
R-squared	0.380	0.508	0.380	0.510	0.380	0.509	0.381	0.509
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

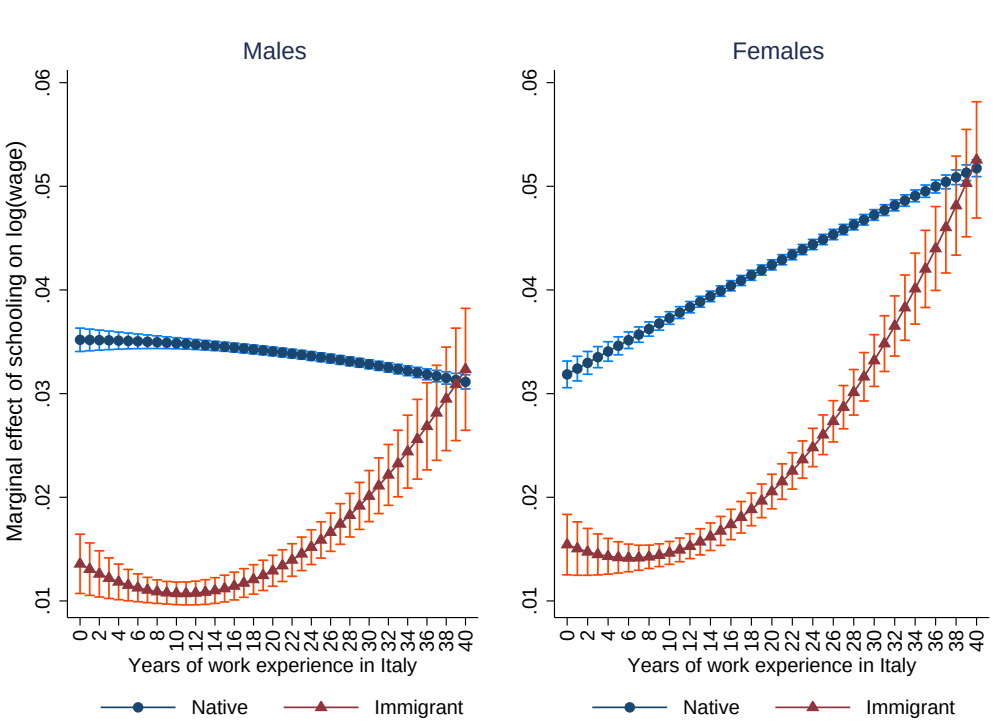

Figure 3.11: Immigrants' assimilation of returns to education by gender

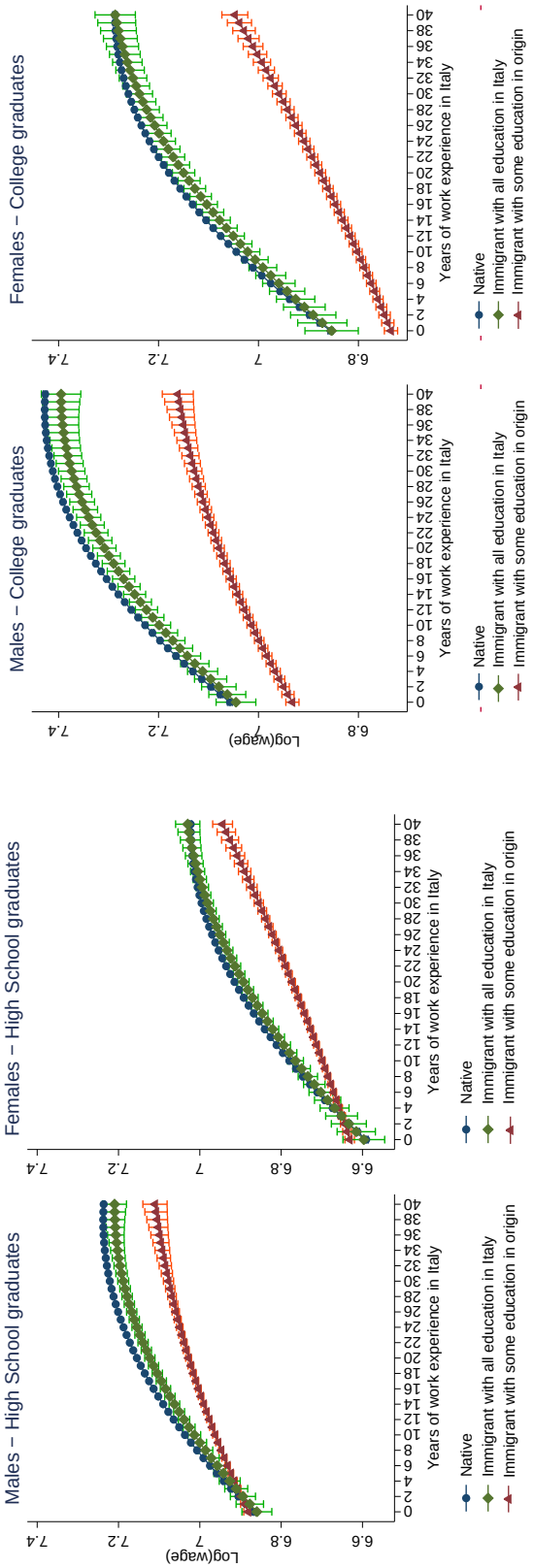

Figure 3.12: Earnings profiles over years of work experience by nativity and gender

3.6.3 The gap within occupations

Another aspect that needs to be addressed in the study of immigrant-native earnings differential is about how much of the gap is due to variation between or within occupations. In particular, it is interesting to know how much of the returns to education for immigrants and natives can be explained by being employed in relatively high skilled occupations or rather by career progression within occupations.

Figure 3.13 plots the distribution of immigrants and natives across eight macro groups of occupations[75] showing that immigrants are over represented into relatively low-skilled - low-paying professions compared to natives. More than 60% of the foreign-born employed population in the sample works as a blue collar, farmer or in unskilled professions in general, compared to approximately 34% of the native born.

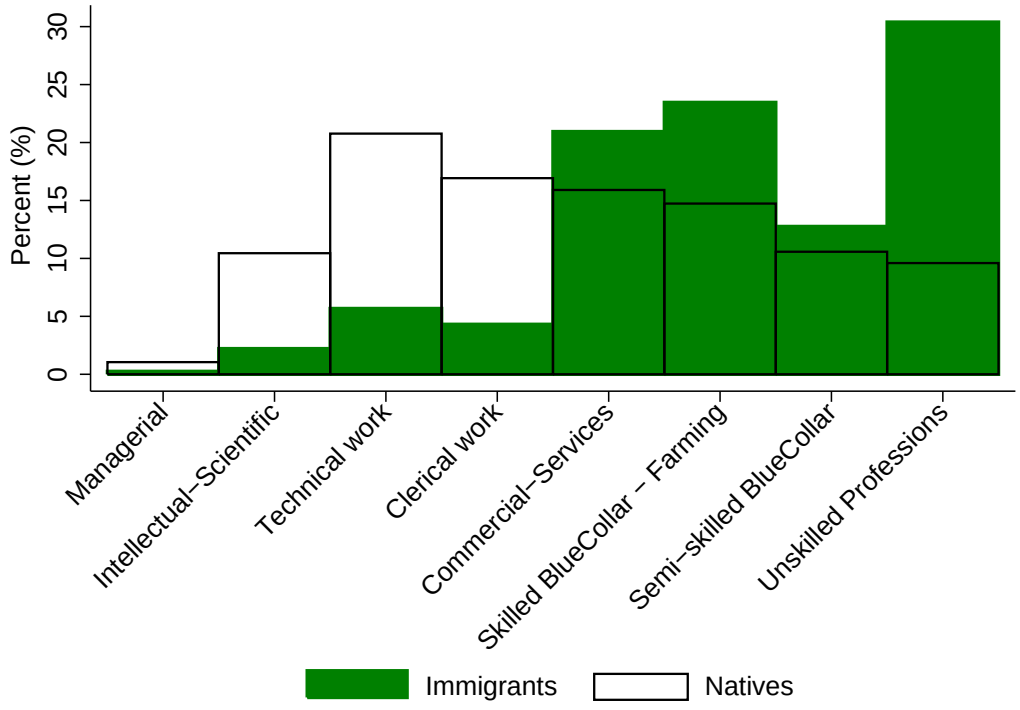

Figure 3.13: Distribution of immigrants and natives across main occupational groups
Source: own elaboration using Italian LFS data, years 2009 - 2014.

In order to take into account the possibility of immigrant and native sorting into different occupations, we add occupation fixed effects to our baseline specifications (3.2) to (3.5) and control for 30 occupational groups.[76] In this way we are able to distinguish how much of the immigrant-native gap is due to variation between or within occupations. In particular, the percentage change in the estimate of returns to schooling before and after the inclusion of occupation fixed effects in the analysis can be interpreted as the share of

[75] The classification of occupations in eight macro groups refers to the 1 digit classification adopted by ISTAT in the Italian LFS. The original classification includes an additional category, "Armed forces", which we drop from our analysis.

[76] The classification of occupations into 30 occupational groups refers to the 2 digit classification adopted by ISTAT in the Italian LFS. The original classification includes categories related to the "Armed forces", which we drop from our analysis.

returns captured by occupational mobility in contrast with returns to schooling related to career progression within occupations.

Table 3.5 shows that the returns to schooling for both immigrants and natives almost halves when occupation fixed effects are included in the analysis, suggesting that a relatively large part of earnings progression can be explained by workers' accessing high-paying positions. Unlike Dell'Aringa et al. (2015), we find that an important share (about 50%) of immigrants' returns to education is explained by them accessing relatively well-paid positions (see columns (1) and (2) of Table 3.5). This in turn suggests that even within occupations there are sizeable differences in returns to education between immigrants and natives and that sorting into different occupations alone is not sufficient to explain the immigrant-native earnings differential found in the baseline analysis.

Starting from specification (3.3), which interacts years of schooling with years of work experience in Italy by nativity status, Figure 3.14 plots the marginal effect of schooling over years of work experience in Italy and focuses on assimilation of immigrants' returns to education. When we control for occupational categories (right hand panel of Figure 3.14), the natives' profile of average marginal returns to education shifts downward, reducing the immigrant-native gap in returns. The immigrants' profile, however, flattens significantly over years of work experience in Italy, such that the immigrant-native gap in returns persists within occupational categories and the assimilation pattern remains slow. Figure 3.15 plots the ratio of immigrants' returns to education over natives' showing that - after controlling for occupations - the ratio of the returns remains almost the same.

When we allow for different returns according to where education has been attained (in columns (5) and (6) of Table 3.5), we find that a significantly larger share of the returns to education attained in Italy is responsible for immigrants' access to high-paying occupations (about 57%) compared to the returns to education attained by immigrants in their country of origin (about 46%). These latter findings are confirmed by results in columns (7) and (8), which report estimates from specification (3.5): the interaction coefficients of the dummy variables identifying the foreign born educated in Italy and immigrants with some years of education in their country of origin with our measure of years of education reveal that the percentage change in returns to education driven by the inclusion of occupation fixed effects is the same for immigrants educated in Italy and the native born (approximately 47%), while it is smaller for immigrants with some years of education in the country of origin (about 42%), suggesting that education acquired before migration contributes less to immigrants' occupational mobility than education attained in Italy.

Table 3.5: Occupation Fixed Effects

	(1) Log (wage$_{it}$)	(2) Log (wage$_{it}$)	(3) Log (wage$_{it}$)	(4) Log (wage$_{it}$)	(5) Log (wage$_{it}$)	(6) Log (wage$_{it}$)	(7) Log (wage$_{it}$)	(8) Log (wage$_{it}$)
Immigrant $_{it}$	0.339**	0.224**	0.289**	0.218**	0.325**	0.221**		
	(0.006)	(0.006)	(0.014)	(0.013)	(0.006)	(0.006)		
Immigrant some educ. in Origin $_{it}$							0.368**	0.240**
							(0.007)	(0.006)
Immigrant all educ. in Italy $_{it}$							0.006	0.013
							(0.021)	(0.021)
Education $_{it}$	0.038**	0.019**	0.034**	0.019**			0.038**	0.020**
	(0.000)	(0.000)	(0.000)	(0.000)			(0.000)	(0.000)
Immigrant $_{it}$ **Education* $_{it}$	-0.024**	-0.012**	-0.020**	-0.011**				
	(0.000)	(0.000)	(0.001)	(0.001)				
Education in Origin $_{it}$					0.013**	0.007**		
					(0.000)	(0.000)		
Education in Italy $_{it}$					0.038**	0.019**		
					(0.000)	(0.000)		
Immigrant $_{it}$ **Education in Italy* $_{it}$					-0.017**	-0.010**		
					(0.000)	(0.000)		
Immigrant some educ. in Origin $_{it}$ **Education* $_{it}$							-0.026**	-0.013**
							(0.000)	(0.000)
Immigrant all educ. in Italy $_{it}$ **Education* $_{it}$							-0.000	-0.000
							(0.001)	(0.001)
Work exp. in Origin $_{it}$ *(divided by 10)*	-0.048**	0.002	-0.047**	0.002	-0.008*	0.013**	-0.034**	0.004
	(0.004)	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ *(square)*	0.006**	-0.005**	0.005**	-0.005**	-0.005**	-0.008**	0.002	-0.006**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ *(divided by 10)*	0.204**	0.177**	0.169**	0.166**	0.204**	0.177**	0.204**	0.177**
	(0.002)	(0.002)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ *(square)*	-0.026**	-0.023**	-0.022**	-0.021**	-0.026**	-0.023**	-0.026**	-0.023**
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$	-0.108**	-0.086**	-0.019	-0.052**	-0.106**	-0.085**		
	(0.005)	(0.005)	(0.017)	(0.016)	(0.005)	(0.005)		
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*	0.020**	0.014**	-0.016**	-0.002	0.017**	0.013**		
	(0.001)	(0.001)	(0.004)	(0.004)	(0.001)	(0.001)		
Education $_{it}$ **Work exp. in Italy* $_{it}$			0.002**	0.001**				
			(0.000)	(0.000)				
Education $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*			-0.000*	-0.000**				
			(0.000)	(0.000)				
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$			-0.008**	-0.004**				
			(0.001)	(0.001)				
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*			0.004**	0.002**				
			(0.000)	(0.000)				
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$							-0.122**	-0.089**
							(0.006)	(0.005)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*							0.023**	0.013**
							(0.002)	(0.002)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$							-0.026	-0.024
							(0.015)	(0.015)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*							0.006	0.005
							(0.003)	(0.003)
Female $_{it}$	-0.103**	-0.115**	-0.103**	-0.115**	-0.103**	-0.115**	-0.103**	-0.115**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$	0.047**	0.042**	0.048**	0.042**	0.047**	0.042**	0.047**	0.042**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$	0.010**	0.011**	0.010**	0.011**	0.010**	0.011**	0.010**	0.011**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$	0.334**	0.279**	0.332**	0.279**	0.333**	0.279**	0.333**	0.279**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$	0.147**	0.124**	0.147**	0.124**	0.147**	0.124**	0.147**	0.124**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	818,100	818,100	818,100	818,100	818,100	818,100	818,100	818,100
R-squared	0.486	0.536	0.487	0.536	0.487	0.536	0.487	0.536
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Occupation * Year fixed effects	N	Y	N	Y	N	Y	N	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

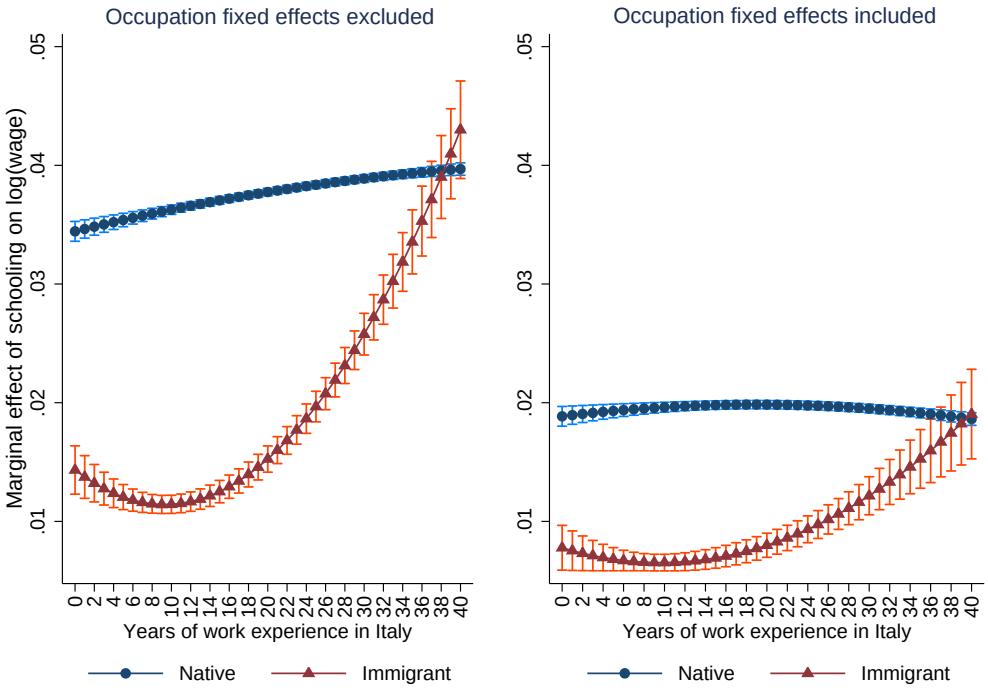

Figure 3.14: Immigrants' assimilation of returns to education

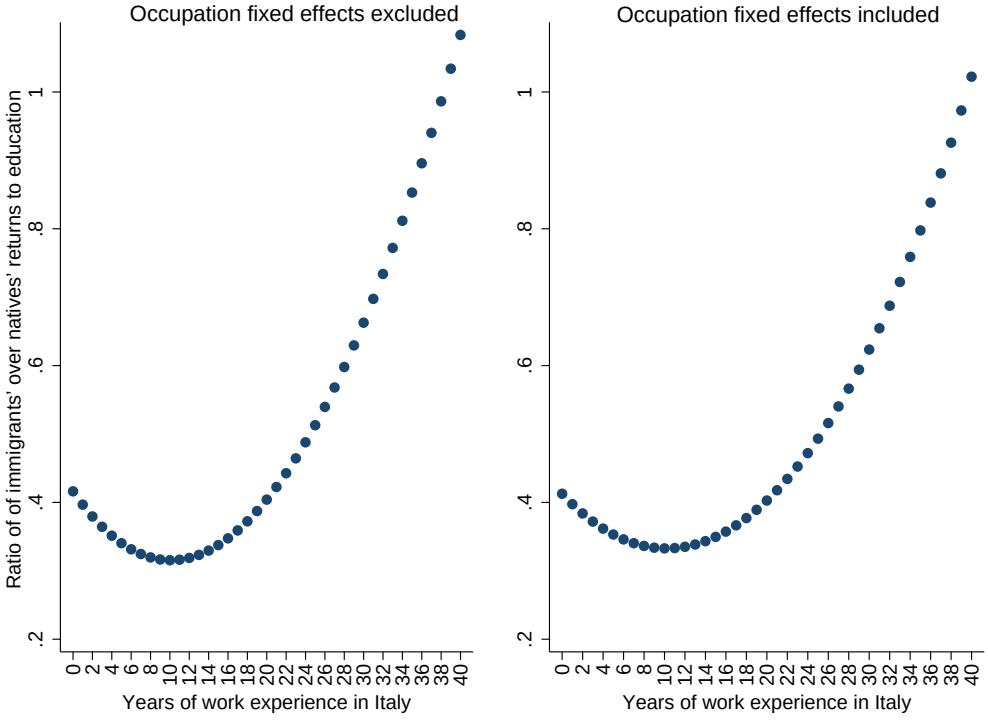

Figure 3.15: Ratio of immigrants' over natives' returns to education

3.6.4 Spatial sorting

Italy has historically been characterized by strong economic and labor market differences across regions. Northern regions are characterized by a dynamic labor market whereas Southern regions suffer from low employment rates and very high unemployment and inactivity rates. Given this North-South economic divide and the immigrants' tendency to settle in the North, we assess the robustness of our findings by including region-year fixed effects in the analysis in order to control for time-varying local area characteristics. In this way, we - at least partly - control for spatial sorting of workers into more productive areas in Italy and for unobserved heterogeneity across Italian regions over time.

Table 3.6 reports the results from our baseline specifications (3.2) to (3.5) and compares estimates with and without region-year fixed effects in the analysis. Results are mostly unchanged with respect to our baseline analysis in both the size and significance of the coefficients of interest, which suggest that the immigrant-native earnings differential and the gap in returns to education are unlikely to be affected by potential unobserved differences across Italian regions.

Table 3.6: Region Fixed Effects

	(1) Log (wage$_{it}$)	(2) Log (wage$_{it}$)	(3) Log (wage$_{it}$)	(4) Log (wage$_{it}$)	(5) Log (wage$_{it}$)	(6) Log (wage$_{it}$)	(7) Log (wage$_{it}$)	(8) Log (wage$_{it}$)
Immigrant $_{it}$	0.339**	0.335**	0.289**	0.267**	0.325**	0.318**		
	(0.006)	(0.006)	(0.014)	(0.014)	(0.006)	(0.006)		
Immigrant some educ. in Origin $_{it}$							0.368**	0.364**
							(0.007)	(0.007)
Immigrant all educ. in Italy $_{it}$							0.006	0.001
							(0.021)	(0.021)
Education $_{it}$	0.038**	0.038**	0.034**	0.032**			0.038**	0.038**
	(0.000)	(0.000)	(0.000)	(0.000)			(0.000)	(0.000)
*Immigrant $_{it}$*Education $_{it}$*	-0.024**	-0.024**	-0.020**	-0.019**				
	(0.000)	(0.000)	(0.001)	(0.001)				
Education in Origin $_{it}$					0.013**	0.012**		
					(0.000)	(0.000)		
Education in Italy $_{it}$					0.038**	0.038**		
					(0.000)	(0.000)		
*Immigrant $_{it}$*Education in Italy $_{it}$*					-0.017**	-0.015**		
					(0.000)	(0.000)		
*Immigrant some educ. in Origin $_{it}$*Education $_{it}$*							-0.026**	-0.027**
							(0.000)	(0.000)
*Immigrant all educ. in Italy $_{it}$*Education $_{it}$*							-0.000	-0.001
							(0.001)	(0.001)
Work exp. in Origin $_{it}$ (divided by 10)	-0.048**	-0.056**	-0.047**	-0.055**	-0.008*	-0.006	-0.034**	-0.035**
	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ (square)	0.006**	0.010**	0.005**	0.009**	-0.005**	-0.004**	0.002	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ (divided by 10)	0.204**	0.201**	0.169**	0.142**	0.204**	0.200**	0.204**	0.201**
	(0.002)	(0.002)	(0.005)	(0.005)	(0.002)	(0.002)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ (square)	-0.026**	-0.025**	-0.022**	-0.018**	-0.026**	-0.025**	-0.026**	-0.025**
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
*Immigrant $_{it}$ *Work exp. in Italy $_{it}$*	-0.108**	-0.112**	-0.019	-0.016	-0.106**	-0.110**		
	(0.005)	(0.005)	(0.017)	(0.016)	(0.005)	(0.005)		
*Immigrant $_{it}$ *Work exp. in Italy $_{it}$ (square)*	0.020**	0.022**	-0.016**	-0.015**	0.017**	0.018**		
	(0.001)	(0.001)	(0.004)	(0.004)	(0.001)	(0.001)		
*Education $_{it}$ *Work exp. in Italy $_{it}$*			0.002**	0.003**				
			(0.000)	(0.000)				
*Education $_{it}$ *Work exp. in Italy $_{it}$ (square)*			-0.000*	-0.000**				
			(0.000)	(0.000)				
*Immigrant $_{it}$*Education $_{it}$ *Work exp. in Italy $_{it}$*			-0.008**	-0.008**				
			(0.001)	(0.001)				
*Immigrant $_{it}$*Education $_{it}$ *Work exp. in Italy $_{it}$ (square)*			0.004**	0.004**				
			(0.000)	(0.000)				
*Immigrant some educ. in Origin $_{it}$ *Work exp. in Italy $_{it}$*							-0.122**	-0.134**
							(0.006)	(0.005)
*Immigrant some educ. in Origin $_{it}$ *Work exp. in Italy $_{it}$ (square)*							0.023**	0.026**
							(0.002)	(0.002)
*Immigrant all educ. in Italy $_{it}$ *Work exp. in Italy $_{it}$*							-0.026	0.002
							(0.015)	(0.015)
*Immigrant all educ. in Italy $_{it}$ *Work exp. in Italy $_{it}$ (square)*							0.006	-0.002
							(0.003)	(0.003)
Female $_{it}$	-0.103**	-0.113**	-0.103**	-0.112**	-0.103**	-0.113**	-0.103**	-0.113**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$	0.047**	0.056**	0.048**	0.058**	0.047**	0.057**	0.047**	0.056**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$	0.010**	0.009**	0.010**	0.009**	0.010**	0.009**	0.010**	0.009**
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$	0.334**	0.345**	0.332**	0.343**	0.333**	0.344**	0.333**	0.344**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$	0.147**	0.133**	0.147**	0.133**	0.147**	0.133**	0.147**	0.133**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Observations	818,100	818,100	818,100	818,100	818,100	818,100	818,100	818,100
R-squared	0.486	0.505	0.487	0.506	0.487	0.506	0.487	0.506
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Region * Year fixed effects	N	Y	N	Y	N	Y	N	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *Work exp. in Origin $_{it}$* and *Work exp. in Italy $_{it}$* variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin $_{it}$* is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy $_{it}$* is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

3.6.5 Highest educational attainment

In this section we assess the robustness of our findings by treating education as a categorical variable identifying the highest level of qualification attained by individuals and separately considering immigrants with some education acquired outside Italy from those who received all of their education in Italy. In this way we study whether differences exist in returns to educational qualifications by nativity status and by where qualifications have been obtained (i.e. in or outside Italy).

Table 3.7 reports the results from specification (3.5) and substitutes the continuous measure of years of education with a set of dummy variables identifying the highest educational qualification obtained. Consistent with the results in previous sections, we find significant differences according to whether immigrants have been educated in Italy or not.

Focusing on the sample of foreign born who did not acquire all of their education in Italy, the coefficient estimates of the immigrants' penalty in marginal return to qualifications increase with the level of qualification attained. Having some high school education compared to primary education gives a positive return on wages which is on average 9.2 percentage points less for immigrants than natives. Compared to individuals with elementary education, higher qualifications increase earnings for both immigrants and natives. Immigrants who completed high school and college, however, suffer a penalty in returns of about 24 and 38 percentage points respectively, compared to natives with the same qualifications. Note however that in relative terms the immigrant-native gap in returns is smaller for college graduates and high school dropouts (approximately 66%) than for high school graduates (about 76%).

Our results differ when we focus on the sub-sample of immigrants whose schooling has taken place exclusively in Italy: the "penalty" coefficient estimates (i.e. given by the interaction term of the education level dummies and the nativity variable) drop and are no more significant for all the educational categories, except for immigrants who are high school educated and who suffer a penalty in returns - compared to natives with a similar qualification - of about 4.8 percentage points.

We now focus on the overall gap in earnings and plot the marginal effect of being immigrant across different levels of qualification and separately for immigrants who attained some education in their country of origin and those who received all of their qualifications in Italy.

The left and the right hand panel in Figure 3.16 show the average earnings gap excluding and then controlling for occupation fixed effects in the analysis.

The left hand panel shows that despite the penalty in returns to schooling suffered by immigrants with some high school education (see Table 3.7), the latter earn on average slightly more (about 2.7%) than their native born counterpart when they have received some education in the country of origin. A significant positive immigrant-native wage gap is also found among those with primary education (of about 11.8%). This trend reverses and the earnings differential becomes negative and sizeable for those with at least high school education. In particular, immigrants with high school education earn on average about 12% less than natives with the same level of education, ceteris paribus; while the wage gap for those with a post high school qualification is about 26%.

The earnings differential almost disappears and becomes not significant for immigrants educated in Italy, although the immigrant-native wage gap is still negative and significant (slightly above 3%) for those with high school education.

Evidence of a positive wage gap for the relatively low skilled, becoming negative for the better educated is consistent with the idea that the imperfect international transferability of human capital affects mostly the relatively well educated (see Chiswick and Miller 2008). Furthermore, the positive wage differential for the less educated may suggest low-skilled immigrants being positively "self-selected" in immigration on ability and being more productive than their native counterpart or being employed in relatively high-paying occupations than natives with the same low-level of education (see Chiswick and Miller 2008).

The right hand panel of Figure 3.16 plots the immigrant-native earnings gap when occupation fixed effects are controlled for in the analysis. The results confirm that barriers to access high-paying occupations are partly but not fully responsible for the gap in earnings suffered by immigrants: in particular, while for immigrants educated in Italy estimates mostly remain not significantly different from zero, the wage gap for immigrants with foreign education more than halves for those with high school and halves for those with a college degree. Although reduced, the immigrant-native wage gap persists for both high school and college graduates even within occupations. This suggests that the differentials found in the left hand panel of Figure 3.16 can be only partially explained by immigrants and natives sorting into different occupations.

Table 3.7: Highest educational attainment

	(1) Log ($wage_{it}$)
Immigrant some educ. in Origin $_{it}$	0.250**
	(0.008)
Immigrant all educ. in Italy $_{it}$	0.042
	(0.027)
Some High School $_{it}$	0.138**
	(0.003)
High School $_{it}$	0.316**
	(0.003)
College $_{it}$	0.568**
	(0.003)
Immigrant some educ. in Origin $_{it}$ **Some High School* $_{it}$	-0.092**
	(0.006)
Immigrant all educ. in Italy $_{it}$ **Some High School* $_{it}$	-0.019
	(0.023)
Immigrant some educ. in Origin $_{it}$ **High School* $_{it}$	-0.239**
	(0.006)
Immigrant all educ. in Italy $_{it}$ **High School* $_{it}$	-0.048*
	(0.023)
Immigrant some educ. in Origin $_{it}$ **College* $_{it}$	-0.376**
	(0.008)
Immigrant all educ. in Italy $_{it}$ **College* $_{it}$	-0.004
	(0.025)
Work exp. in Origin $_{it}$ *(divided by 10)*	-0.035**
	(0.004)
Work exp. in Origin $_{it}$ *(square)*	0.002
	(0.001)
Work exp. in Italy $_{it}$ *(divided by 10)*	0.209**
	(0.002)
Work exp. in Italy $_{it}$ *(square)*	-0.027**
	(0.000)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$	-0.128**
	(0.006)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*	0.024**
	(0.002)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$	-0.031*
	(0.015)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*	0.006
	(0.003)
Female $_{it}$	-0.112**
	(0.001)
Married $_{it}$	0.047**
	(0.001)
Weekly hours worked $_{it}$	0.010**
	(0.000)
Full time job $_{it}$	0.321**
	(0.002)
Permanent job $_{it}$	0.149**
	(0.001)
Observations	818,100
R-squared	0.491
Year fixed effects	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). *Some High School* $_{it}$ is coded as 1 if individual i observed in cross section year t is a high school dropout, 0 otherwise; *High School* $_{it}$ is coded as 1 if individual i observed in cross section year t has completed high school, 0 otherwise; *College* $_{it}$ is coded as 1 if individual i observed in cross section year t has a college degree or a comparable post high school qualification, 0 otherwise (the reference category is primary education as highest educational level). See end of Table 3.1 for the definition of the rest of the variables.

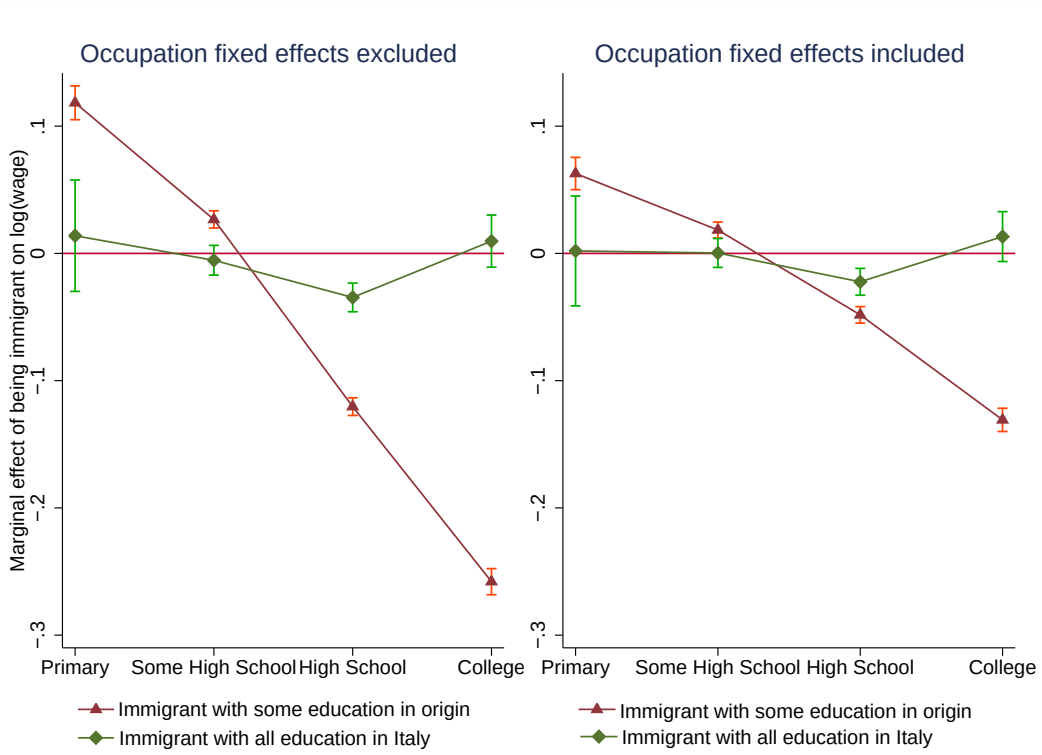

Figure 3.16: Immigrant-native wage gap by highest educational attainment

3.6.6 Selection into labor market participation

Since we observe wages only of those working, our results may suffer from selection bias if individuals' employment condition is not random. Labor market participation might be a particularly relevant issue for women and if we want to account for this possibility we need to model females' wage equation jointly with selection into labor market participation.

We thus estimate a Heckman sample selection model using maximum likelihood estimation. Women participation into the labor market is defined as a function of years of education ($Education_{it}$), nativity status ($Immigrant_{it}$), civil status ($Married_{it}$), age (Age_{it}) and the presence of children ($Children_{it}$), which is identified with a dummy for whether there is any dependent children under 12 years old living in the woman's family unit. The $Children_{it}$ dummy should affect wages only via its effect on the likelihood of participating in the labor market and is the instrument which provides the exclusion restriction in our analysis.[77][78]

Table 3.8 presents the results of the Heckman selection model applied to female earnings specifications (3.2) and (3.4).[79] Looking at the inverse Mills ratio in the wage regression, we find that a process of self-

[77] In a further check, we use the interaction between the presence of children under 12 in the woman's family unit and her marital status ($Children_{it} * Married_{it}$) as the exclusion restriction in the analysis (see Appendix C).

[78] Our choice of the instrument is quite common in the literature, think e.g. of Heckman (1974) who is the first to introduce the issue of female selection in labor market participation and to adopt the number of children as exclusion restriction in his analysis of female wages and labor supply, Mulligan and Rubinstein (2008) who use instead the number of children under 6 interacted with marital status in their study of wage inequality within gender and Mussida and Picchio (2014) who use the presence of children younger than 12 and the number of household components as instruments in their study of the gender wage gap by educational attainment in Italy.

[79] Self-employed workers and non employed students, i.e. students with zero wage, are dropped from the sample.

selection in the labor market is at work (the coefficient of the inverse Mills ratio is significant) but it does not affect our estimates of interest in a relevant way. Although the coefficient estimates from OLS and Heckman analysis look very similar, in order to properly compare our Heckman results with OLS estimates we need to consider the conditional marginal effects in the Heckman estimation (i.e. conditional on participation into the labor market) rather than the unconditional estimated effects reported in Table 3.8.[80] Looking at conditional marginal effects, we still find little difference between our baseline OLS and Heckman estimation results: native females' estimate of the marginal effect of schooling stays the same and equal to 4.3%. The estimate of the return to one more year of education for female immigrants also remains the same both in the specification including the total years of schooling (estimated as about 1.7%) and in the specification with years of schooling attained in Italy (estimated as 2.6%). Estimates of the returns to the years of work experience variables are also only marginally changed.

[80] See Greene's *Econometric Analysis* for details on how to interpret and compare Heckman selection model estimates with OLS results.

Table 3.8: Heckman selection

	(1a) Baseline Wage eq.	(1b) Heckman Wage eq.	(1c) Selection eq.	(2a) Baseline Wage eq.	(2b) Heckman Wage eq.	(2c) Selection eq.
Immigrant $_{it}$	0.376**	0.394**	0.726**	0.364**	0.383**	0.726**
	(0.010)	(0.010)	(0.018)	(0.010)	(0.010)	(0.018)
Education $_{it}$	0.043**	0.045**	0.106**			
	(0.000)	(0.000)	(0.001)			
Immigrant $_{it}$ **Education* $_{it}$	-0.026**	-0.027**	-0.067**			
	(0.001)	(0.001)	(0.002)			
Education in Origin $_{it}$				0.016**	0.017**	0.040**
				(0.001)	(0.001)	(0.001)
Education in Italy $_{it}$				0.043**	0.045**	0.106**
				(0.000)	(0.000)	(0.001)
Immigrant $_{it}$ **Education in Italy* $_{it}$				-0.017**	-0.018**	-0.067**
				(0.001)	(0.001)	(0.002)
Work exp. in Origin $_{it}$ *(divided by 10)*	-0.087**	-0.078**		-0.040**	-0.029**	
	(0.005)	(0.005)		(0.006)	(0.006)	
Work exp. in Origin $_{it}$ *(square)*	0.015**	0.012**		0.003*	-0.001	
	(0.002)	(0.002)		(0.002)	(0.002)	
Work exp. in Italy $_{it}$ *(divided by 10)*	0.216**	0.232**		0.215**	0.233**	
	(0.002)	(0.003)		(0.002)	(0.003)	
Work exp. in Italy $_{it}$ *(square)*	-0.027**	-0.031**		-0.027**	-0.031**	
	(0.000)	(0.001)		(0.000)	(0.001)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$	-0.131**	-0.140**		-0.133**	-0.143**	
	(0.007)	(0.007)		(0.007)	(0.007)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*	0.027**	0.029**		0.024**	0.026**	
	(0.002)	(0.002)		(0.002)	(0.002)	
Married $_{it}$	0.019**	0.010**	-0.373**	0.019**	0.010**	-0.373**
	(0.001)	(0.001)	(0.004)	(0.001)	(0.001)	(0.004)
Weekly hours worked $_{it}$	0.011**	0.011**		0.011**	0.011**	
	(0.000)	(0.000)		(0.000)	(0.000)	
Full time job $_{it}$	0.303**	0.302**		0.302**	0.301**	
	(0.002)	(0.002)		(0.002)	(0.002)	
Permanent job $_{it}$	0.136**	0.136**		0.137**	0.137**	
	(0.002)	(0.002)		(0.002)	(0.002)	
Age $_{it}$			0.221**			0.221**
			(0.001)			(0.001)
Age $_{it}$ *(square)*			-0.003**			-0.003**
			(0.000)			(0.000)
Children $_{it}$			-0.258**			-0.258**
			(0.005)			(0.005)
Inverse Mill's Ratio		0.038**			0.040**	
		(0.002)			(0.002)	
Observations	378,956	838,808	838,808	378,956	838,808	838,808
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports OLS (columns (1a) and (2a)) and Heckman selection (columns (1b), (1c), (2b) and (2c)) results. Students with zero wage (non employed students) are dropped from the sample. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Children* $_{it}$ is coded as 1 if woman i observed in cross section year t has at least one children under 12 years old living in her family unit, 0 otherwise. See end of Table 3.1 for the definition of the rest of the variables.

3.7 Conclusions

This study considers human capital transferability of international migrants. It analyses, for the first time in Italy, immigrants' returns to education over time and the immigrant-native earnings differential by distinguishing between human capital acquired before and after migration. In particular, we investigate whether a path of assimilation to natives' returns to education is in place, analyse the heterogeneity in returns to education by different areas of birth and by gender, and control for occupation in order to assess whether the immigrant-native differences in returns to education and earnings are due to variation between or within occupations.

Our analysis shows that the human capital attained by immigrants before migration is valued significantly less than that acquired in Italy and the penalty in returns disappears completely only for the foreign born who received all of their education in Italy. The overall profile of immigrants' returns to education decreases during the first 9 years spent working in Italy and reverses only afterwards, when a slow pattern of assimilation begins and immigrants' returns to education start to rise over time.

The gap in returns to education and earnings, however, remains sizeable and persists over time spent in Italy.

As expected, important differences exist by area of origin. Estimates of Western immigrants' returns to education are very close to those of the native population, while returns to education of immigrants from relatively less developed countries are persistently lower than native ones even after 30 years. Immigrants from Africa, Asia, Eastern Europe and Latin America are, however, those who get the most out of education in Italy compared to immigrants from Western countries.

When we separately consider the female and male population, women's education is valued relatively more in the labor market compared to men's. Although marginal returns to education are higher for females, the latter are paid less on average than their male counterparts, both immigrants and natives. Moreover, the size of the immigrant-native gap in returns to education is similar for the male and female population and persists over time spent working in Italy.

As for immigrant and native sorting into different occupations, our analysis shows that it can only partially explain the gap in earnings and returns to education which persists within occupations.

To conclude, our results show that immigrants' human capital is valued significantly less in the Italian labor market compared to natives'. This penalty in returns is largely related to where human capital has been attained, given that differences in returns to education compared to the native population disappear for those who have received all of their education in Italy and for those who were born in Western countries. Our analysis thus uncovers some positive outcomes in terms of returns to education and earnings of child immigrants and second generations who have acquired all of their education in Italy.

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Appendix A

The measure of years of education is computed as follows: we consider the year in which individuals report to have ended their studies and subtract the year of birth plus 6 (6 being the year at which children start their education in Italy). We then compare the resulting years of education to the years of education associated to the reported highest level of qualification attained (i.e. 0 years for "Less than primary education", 5 for "Primary education", 8 for "Lower secondary education", 11 for "Less than High School education", 13 for "High School education", 16 for "Fine Arts diploma", "Post High School specialization" or "Bachelor degree", 17 for "Long first university degree or old 4-year university programme", 18 for "Master degree" or "Postgraduate degree" and 22 for "PhD degree") and we drop those observations in which our measure of years of education is "too far" from years of education associated to the highest level of qualification attained (i.e. we drop observations with a measure of years of education being 60% lower or higher than the years of education associated to the highest level of education).

In order to compute our measure of immigrant's years of education before and after migration, we assume that individuals start their education at 6 and exploit information on immigrant's age and year of arrival in Italy to split the overall years of education into the number of years acquired before and after migration.

Of course our measure of years of education is subject to measurement error, especially when the education system in migrants' countries of origin is different from the Italian one. To control for the robustness of our results, we repeat our analysis splitting the education variable into a set of dummies identifying the highest level of education attained (see Table 3.7 in Subsection 3.6.5), we also try a measure of years of education which drops observations with years of education being 25% lower or higher than the years of education associated to the highest level of education (see Table 3.A1 below) and, finally, we use the years attached to the highest level of qualification as a continuous measure of education (see Table 3.A2 below). Our main findings are robust to the measure of education adopted.

Table 3.A1: Alternative measure of years of education (1)

	(1) Log ($wage_{it}$)	(2) Log ($wage_{it}$)	(3) Log ($wage_{it}$)	(4) Log ($wage_{it}$)	(5) Log ($wage_{it}$)	(6) Log ($wage_{it}$)
Immigrant $_{it}$	-0.255**	0.423**	0.346**	0.316**	0.331**	
	(0.004)	(0.009)	(0.007)	(0.015)	(0.007)	
Immigrant some educ. in Origin $_{it}$						0.374**
						(0.007)
Immigrant all educ. in Italy $_{it}$						0.021
						(0.021)
Education $_{it}$ *(alternative definition)*	0.036**	0.040**	0.040**	0.037**		0.040**
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)
Immigrant $_{it}$ **Education* $_{it}$		-0.030**	-0.025**	-0.022**		
		(0.001)	(0.000)	(0.001)		
Education in Origin $_{it}$					0.014**	
					(0.000)	
Education in Italy $_{it}$					0.040**	
					(0.000)	
Immigrant $_{it}$ **Education in Italy* $_{it}$					-0.018**	
					(0.001)	
Immigrant some educ. in Origin $_{it}$ **Education* $_{it}$						-0.027**
						(0.000)
Immigrant all educ. in Italy $_{it}$ **Education* $_{it}$						-0.001
						(0.001)
Work exp. $_{it}$ *(divided by 10)*	0.260**					
	(0.002)					
Work exp. $_{it}$ *(square)*	-0.036**					
	(0.000)					
Work exp. in Origin $_{it}$ *(divided by 10)*		-0.041**	-0.042**	-0.041**	-0.003	-0.028**
		(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ *(square)*		0.001	0.004**	0.004**	-0.006**	0.000
		(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ *(divided by 10)*		0.278**	0.206**	0.175**	0.205**	0.206**
		(0.002)	(0.002)	(0.005)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ *(square)*		-0.037**	-0.026**	-0.022**	-0.026**	-0.026**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$		-0.112**	-0.105**	-0.034	-0.104**	
		(0.007)	(0.005)	(0.017)	(0.005)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*		0.018**	0.019**	-0.013**	0.016**	
		(0.002)	(0.001)	(0.005)	(0.001)	
Education $_{it}$ **Work exp. in Italy* $_{it}$				0.002**		
				(0.000)		
Education $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*				-0.000**		
				(0.000)		
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$				-0.007**		
				(0.002)		
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*				0.003**		
				(0.000)		
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$						-0.118**
						(0.006)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*						0.021**
						(0.002)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$						-0.034*
						(0.015)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*						0.007*
						(0.003)
YSM $_{it}$ *(divided by 10)*	0.042**					
	(0.005)					
YSM $_{it}$ *(square)*	0.002*					
	(0.001)					
Female $_{it}$			-0.106**	-0.106**	-0.106**	-0.106**
			(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$			0.047**	0.047**	0.047**	0.047**
			(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$			0.010**	0.010**	0.010**	0.010**
			(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$			0.330**	0.329**	0.329**	0.329**
			(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$			0.147**	0.147**	0.147**	0.147**
			(0.001)	(0.001)	(0.001)	(0.001)
Observations	786,493	786,493	786,493	786,493	786,493	786,493
R-squared	0.163	0.174	0.489	0.489	0.489	0.489
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *YSM* $_{it}$, *Work exp.* $_{it}$, *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

Table 3.A2: Alternative measure of years of education (2)

	(1) Log (wage$_{it}$)	(2) Log (wage$_{it}$)	(3) Log (wage$_{it}$)	(4) Log (wage$_{it}$)	(5) Log (wage$_{it}$)	(6) Log (wage$_{it}$)
Immigrant $_{it}$	-0.244**	0.490**	0.429**	0.422**	0.411**	
	(0.004)	(0.008)	(0.006)	(0.013)	(0.006)	
Immigrant some educ. in Origin $_{it}$						0.419**
						(0.007)
Immigrant all educ. in Italy $_{it}$						0.006
						(0.021)
Education $_{it}$ (alternative definition)	0.038**	0.044**	0.045**	0.042**		0.046**
	(0.000)	(0.000)	(0.000)	(0.001)		(0.000)
*Immigrant $_{it}$ *Education $_{it}$*		-0.036**	-0.032**	-0.030**		
		(0.000)	(0.000)	(0.001)		
Education in Origin $_{it}$					0.013**	
					(0.000)	
Education in Italy $_{it}$					0.045**	
					(0.000)	
*Immigrant $_{it}$ *Education in Italy $_{it}$*					-0.023**	
					(0.000)	
*Immigrant some educ. in Origin $_{it}$ *Education $_{it}$*						-0.031**
						(0.000)
*Immigrant all educ. in Italy $_{it}$ *Education $_{it}$*						-0.001
						(0.001)
Work exp. $_{it}$ (divided by 10)	0.260**					
	(0.002)					
Work exp. $_{it}$ (square)	-0.035**					
	(0.000)					
Work exp. in Origin $_{it}$ (divided by 10)		-0.048**	-0.052**	-0.047**	-0.011**	-0.031**
		(0.004)	(0.003)	(0.003)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ (square)		0.005**	0.008**	0.006**	-0.002	0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ (divided by 10)		0.279**	0.203**	0.161**	0.202**	0.203**
		(0.002)	(0.002)	(0.006)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ (square)		-0.036**	-0.025**	-0.016**	-0.025**	-0.025**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
*Immigrant $_{it}$ *Work exp. in Italy $_{it}$*		-0.111**	-0.099**	-0.026	-0.101**	
		(0.006)	(0.005)	(0.015)	(0.005)	
*Immigrant $_{it}$ *Work exp. in Italy $_{it}$ (square)*		0.017**	0.018**	-0.023**	0.015**	
		(0.002)	(0.001)	(0.004)	(0.001)	
*Education $_{it}$ *Work exp. in Italy $_{it}$*				0.004**		
				(0.000)		
*Education $_{it}$ *Work exp. in Italy $_{it}$ (square)*				-0.001**		
				(0.000)		
*Immigrant $_{it}$ *Education $_{it}$ *Work exp. in Italy $_{it}$*				-0.008**		
				(0.001)		
*Immigrant $_{it}$ *Education $_{it}$ *Work exp. in Italy $_{it}$ (square)*				0.004**		
				(0.000)		
*Immigrant some educ. in Origin $_{it}$ *Work exp. in Italy $_{it}$*						-0.119**
						(0.006)
*Immigrant some educ. in Origin $_{it}$ *Work exp. in Italy $_{it}$ (square)*						0.022**
						(0.002)
*Immigrant all educ. in Italy $_{it}$ *Work exp. in Italy $_{it}$*						-0.019
						(0.015)
*Immigrant all educ. in Italy $_{it}$ *Work exp. in Italy $_{it}$ (square)*						0.005
						(0.003)
YSM $_{it}$ (divided by 10)	0.043**					
	(0.005)					
YSM $_{it}$ (square)	0.002					
	(0.001)					
Female $_{it}$			-0.112**	-0.112**	-0.112**	-0.112**
			(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$			0.047**	0.047**	0.047**	0.047**
			(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$			0.010**	0.010**	0.010**	0.010**
			(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$			0.331**	0.330**	0.330**	0.329**
			(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$			0.143**	0.143**	0.144**	0.144**
			(0.001)	(0.001)	(0.001)	(0.001)
Observations	884,786	884,786	884,786	884,786	884,786	879,602
R-squared	0.172	0.186	0.495	0.496	0.496	0.496
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%.

The *YSM $_{it}$*, *Work exp. $_{it}$*, *Work exp. in Origin $_{it}$* and *Work exp. in Italy $_{it}$* variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin $_{it}$* is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy $_{it}$* is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

Appendix B

Throughout the analysis we use respondents' answers to the Italian LFS question: "In what year did you come to live in Italy the first time?" to define immigrant's year of arrival in Italy and construct the measure of years since migration and of years of work experience and education acquired before and after migration.

However, a subset of individuals in the immigrant sample has not always been living in Italy since arrival and has moved away for periods longer than one year (they are about 1.7% of the immigrant sample). For this subsample of immigrants, the Italian LFS asks since when they have been living in Italy without leaving the country for one year or more. We thus check the robustness of our findings to alternative definitions of year of arrival in Italy, firstly by keeping only immigrants who have never left Italy for more than one year after their first arrival (see Table 3.B1) and secondly by using the last year of entry reported to identify the arrival year for those who have left Italy at some point after the first arrival (see Table 3.B2). As you can see from Tables 3.B1 and 3.B2, the results are mainly unaffected by the different definitions used.

Table 3.B1: Alternative definition of year of arrival (1)

	(1) Log (wage$_{it}$)	(2) Log (wage$_{it}$)	(3) Log (wage$_{it}$)	(4) Log (wage$_{it}$)	(5) Log (wage$_{it}$)	(6) Log (wage$_{it}$)
Immigrant $_{it}$	-0.256**	0.412**	0.340**	0.287**	0.326**	
	(0.004)	(0.008)	(0.007)	(0.014)	(0.007)	
Immigrant some educ. in Origin $_{it}$						0.369**
						(0.007)
Immigrant all educ. in Italy $_{it}$						0.006
						(0.022)
Education $_{it}$	0.034**	0.038**	0.038**	0.034**		0.038**
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)
*Immigrant $_{it}$*Education $_{it}$*		-0.029**	-0.024**	-0.020**		
		(0.000)	(0.000)	(0.001)		
Education in Origin $_{it}$					0.012**	
					(0.000)	
Education in Italy $_{it}$					0.038**	
					(0.000)	
*Immigrant $_{it}$*Education in Italy $_{it}$*					-0.017**	
					(0.000)	
*Immigrant some educ. in Origin $_{it}$*Education $_{it}$*						-0.027**
						(0.000)
*Immigrant all educ. in Italy $_{it}$*Education $_{it}$*						-0.001
						(0.001)
Work exp. $_{it}$ (divided by 10)	0.257**					
	(0.002)					
Work exp. $_{it}$ (square)	-0.035**					
	(0.000)					
Work exp. in Origin $_{it}$ (divided by 10)		-0.044**	-0.046**	-0.045**	-0.007	-0.033**
		(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ (square)		0.002	0.005**	0.005**	-0.005**	0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ (divided by 10)		0.277**	0.204**	0.169**	0.204**	0.204**
		(0.002)	(0.002)	(0.005)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ (square)		-0.037**	-0.026**	-0.022**	-0.026**	-0.026**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
*Immigrant $_{it}$ *Work exp. in Italy $_{it}$*		-0.118**	-0.108**	-0.015	-0.106**	
		(0.007)	(0.005)	(0.017)	(0.005)	
*Immigrant $_{it}$ *Work exp. in Italy $_{it}$ (square)*		0.019**	0.020**	-0.017**	0.017**	
		(0.002)	(0.001)	(0.004)	(0.001)	
*Education $_{it}$ *Work exp. in Italy $_{it}$*				0.002**		
				(0.000)		
*Education $_{it}$ *Work exp. in Italy $_{it}$ (square)*				-0.000*		
				(0.000)		
*Immigrant $_{it}$*Education $_{it}$ *Work exp. in Italy $_{it}$*				-0.009**		
				(0.001)		
*Immigrant $_{it}$*Education $_{it}$ *Work exp. in Italy $_{it}$ (square)*				0.004**		
				(0.000)		
*Immigrant some educ. in Origin $_{it}$ *Work exp. in Italy $_{it}$*						-0.123**
						(0.006)
*Immigrant some educ. in Origin $_{it}$ *Work exp. in Italy $_{it}$ (square)*						0.023**
						(0.002)
*Immigrant all educ. in Italy $_{it}$ *Work exp. in Italy $_{it}$*						-0.021
						(0.015)
*Immigrant all educ. in Italy $_{it}$ *Work exp. in Italy $_{it}$ (square)*						0.005
						(0.003)
YSM $_{it}$ (divided by 10)	0.036**					
	(0.005)					
YSM $_{it}$ (square)	0.003**					
	(0.001)					
Female $_{it}$			-0.103**	-0.103**	-0.103**	-0.103**
			(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$			0.047**	0.048**	0.047**	0.047**
			(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$			0.010**	0.010**	0.010**	0.010**
			(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$			0.334**	0.332**	0.333**	0.333**
			(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$			0.147**	0.148**	0.148**	0.147**
			(0.001)	(0.001)	(0.001)	(0.001)
Observations	816,432	816,432	816,432	816,432	816,432	816,432
R-squared	0.162	0.174	0.486	0.487	0.487	0.487
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *YSM $_{it}$*, *Work exp. $_{it}$*, *Work exp. in Origin $_{it}$* and *Work exp. in Italy $_{it}$* variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin $_{it}$* is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy $_{it}$* is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

Table 3.B2: Alternative definition of year of arrival (2)

	(1) Log ($wage_{it}$)	(2) Log ($wage_{it}$)	(3) Log ($wage_{it}$)	(4) Log ($wage_{it}$)	(5) Log ($wage_{it}$)	(6) Log ($wage_{it}$)
Immigrant $_{it}$	-0.255**	0.410**	0.339**	0.286**	0.325**	
	(0.004)	(0.008)	(0.006)	(0.014)	(0.006)	
Immigrant some educ. in Origin $_{it}$						0.367**
						(0.007)
Immigrant all educ. in Italy $_{it}$						0.007
						(0.022)
Education $_{it}$	0.034**	0.038**	0.038**	0.034**		0.038**
	(0.000)	(0.000)	(0.000)	(0.000)		(0.000)
Immigrant $_{it}$ **Education* $_{it}$		-0.029**	-0.024**	-0.020**		
		(0.000)	(0.000)	(0.001)		
Education in Origin $_{it}$					0.013**	
					(0.000)	
Education in Italy $_{it}$					0.038**	
					(0.000)	
Immigrant $_{it}$ **Education in Italy* $_{it}$					-0.017**	
					(0.000)	
Immigrant some educ. in Origin $_{it}$ **Education* $_{it}$						-0.026**
						(0.000)
Immigrant all educ. in Italy $_{it}$ **Education* $_{it}$						-0.001
						(0.001)
Work exp. $_{it}$ *(divided by 10)*	0.257**					
	(0.002)					
Work exp. $_{it}$ *(square)*	-0.035**					
	(0.000)					
Work exp. in Origin $_{it}$ *(divided by 10)*		-0.043**	-0.046**	-0.045**	-0.008*	-0.033**
		(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Work exp. in Origin $_{it}$ *(square)*		0.002	0.005**	0.005**	-0.005**	0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Work exp. in Italy $_{it}$ *(divided by 10)*		0.277**	0.204**	0.169**	0.204**	0.204**
		(0.002)	(0.002)	(0.005)	(0.002)	(0.002)
Work exp. in Italy $_{it}$ *(square)*		-0.037**	-0.026**	-0.022**	-0.026**	-0.026**
		(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$		-0.120**	-0.110**	-0.017	-0.108**	
		(0.006)	(0.005)	(0.017)	(0.005)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*		0.020**	0.021**	-0.016**	0.018**	
		(0.002)	(0.001)	(0.004)	(0.001)	
Education $_{it}$ **Work exp. in Italy* $_{it}$				0.002**		
				(0.000)		
Education $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*				-0.000*		
				(0.000)		
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$				-0.008**		
				(0.001)		
Immigrant $_{it}$ **Education* $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*				0.004**		
				(0.000)		
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$						-0.125**
						(0.006)
Immigrant some educ. in Origin $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*						0.024**
						(0.002)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$						-0.021
						(0.015)
Immigrant all educ. in Italy $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*						0.005
						(0.003)
YSM $_{it}$ *(divided by 10)*	0.036**					
	(0.005)					
YSM $_{it}$ *(square)*	0.004**					
	(0.001)					
Female $_{it}$			-0.103**	-0.103**	-0.103**	-0.103**
			(0.001)	(0.001)	(0.001)	(0.001)
Married $_{it}$			0.047**	0.048**	0.047**	0.047**
			(0.001)	(0.001)	(0.001)	(0.001)
Weekly hours worked $_{it}$			0.010**	0.010**	0.010**	0.010**
			(0.000)	(0.000)	(0.000)	(0.000)
Full time job $_{it}$			0.334**	0.332**	0.333**	0.333**
			(0.002)	(0.002)	(0.002)	(0.002)
Permanent job $_{it}$			0.147**	0.147**	0.147**	0.147**
			(0.001)	(0.001)	(0.001)	(0.001)
Observations	818,083	818,083	818,083	818,083	818,083	818,083
R-squared	0.162	0.174	0.486	0.487	0.487	0.487
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports coefficients from OLS regression. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *YSM* $_{it}$, *Work exp.* $_{it}$, *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Immigrant some educ. in Origin* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained at least 1 year of education before migration, 0 otherwise; *Immigrant all educ. in Italy* $_{it}$ is coded as 1 if individual i observed in cross section year t is foreign born and has attained all the years of education in Italy, 0 otherwise (the reference category is the native born population). See end of Table 3.1 for the definition of the rest of the variables.

Appendix C

In Table 3.C1 we use the interaction between marital status and the presence of children under 12 ($Children_{it} * Married_{it}$) as the exclusion restriction in the analysis of female wages and labor market participation. Results are mostly unchanged compared to those reported in Table 3.8 of Subsection 3.6.6, where we use the presence of children as an instrument. Moreover, the conditional marginal effects of our main variables of interest remain almost identical in our baseline OLS and in the Heckman selection specification.

Table 3.C1: Alternative instrument in the Heckman selection specification

	(1a) Baseline Wage eq.	(1b) Heckman Wage eq.	(1c) Selection eq.	(2a) Baseline Wage eq.	(2b) Heckman Wage eq.	(2c) Selection eq.
Immigrant $_{it}$	0.376**	0.394**	0.731**	0.364**	0.382**	0.731**
	(0.010)	(0.010)	(0.018)	(0.010)	(0.010)	(0.018)
Education $_{it}$	0.043**	0.045**	0.107**			
	(0.000)	(0.000)	(0.001)			
Immigrant $_{it}$ **Education* $_{it}$	-0.026**	-0.027**	-0.067**			
	(0.001)	(0.001)	(0.002)			
Education in Origin $_{it}$				0.016**	0.017**	0.040**
				(0.001)	(0.001)	(0.001)
Education in Italy $_{it}$				0.043**	0.045**	0.107**
				(0.000)	(0.000)	(0.001)
Immigrant $_{it}$ **Education in Italy* $_{it}$				-0.017**	-0.018**	-0.067**
				(0.001)	(0.001)	(0.002)
Work exp. in Origin $_{it}$ *(divided by 10)*	-0.087**	-0.078**		-0.040**	-0.029**	
	(0.005)	(0.005)		(0.006)	(0.006)	
Work exp. in Origin $_{it}$ *(square)*	0.015**	0.012**		0.003*	-0.000	
	(0.002)	(0.002)		(0.002)	(0.002)	
Work exp. in Italy $_{it}$ *(divided by 10)*	0.216**	0.232**		0.215**	0.233**	
	(0.002)	(0.003)		(0.002)	(0.003)	
Work exp. in Italy $_{it}$ *(square)*	-0.027**	-0.030**		-0.027**	-0.031**	
	(0.000)	(0.001)		(0.000)	(0.001)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$	-0.131**	-0.140**		-0.133**	-0.142**	
	(0.007)	(0.007)		(0.007)	(0.007)	
Immigrant $_{it}$ **Work exp. in Italy* $_{it}$ *(square)*	0.027**	0.029**		0.024**	0.026**	
	(0.002)	(0.002)		(0.002)	(0.002)	
Married $_{it}$	0.019**	0.011**	-0.335**	0.019**	0.010**	-0.335**
	(0.001)	(0.001)	(0.005)	(0.001)	(0.001)	(0.005)
Weekly hours worked $_{it}$	0.011**	0.011**		0.011**	0.011**	
	(0.000)	(0.000)		(0.000)	(0.000)	
Full time job $_{it}$	0.303**	0.302**		0.302**	0.301**	
	(0.002)	(0.002)		(0.002)	(0.002)	
Permanent job $_{it}$	0.136**	0.136**		0.137**	0.137**	
	(0.002)	(0.002)		(0.002)	(0.002)	
Age $_{it}$			0.222**			0.222**
			(0.001)			(0.001)
Age $_{it}$ *(square)*			-0.003**			-0.003**
			(0.000)			(0.000)
Children $_{it}$			-0.164**			-0.165**
			(0.008)			(0.008)
Children $_{it}$ **Married* $_{it}$			-0.134**			-0.134**
			(0.009)			(0.009)
Inverse Mill's Ratio		0.036**			0.038**	
		(0.002)			(0.002)	
Observations	378,956	838,808	838,808	378,956	838,808	838,808
Year fixed effects	Y	Y	Y	Y	Y	Y

The table reports OLS (columns (1a) and (2a)) and Heckman selection (columns (1b), (1c), (2b) and (2c)) results. Students with zero wage (non employed students) are dropped from the sample. Robust standard errors are reported in parentheses. **Significant at 1%, * significant at 5%. The *Work exp. in Origin* $_{it}$ and *Work exp. in Italy* $_{it}$ variables have been rescaled by dividing by a factor of 10. *Children* $_{it}$ is coded as 1 if woman i observed in cross section year t has at least one children under 12 years old living in her family unit, 0 otherwise. See end of Table 3.1 for the definition of the rest of the variables.