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Essays on the Economics of Migration

by

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ABSTRACT

FACULTY OF SOCIAL, HUMAN AND MATHEMATICAL SCIENCES

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THREE ESSAYS ON THE ECONOMICS OF MIGRATION

by Michele Tuccio

Does international migration act as a driver of political and social change? Do migrants catalyze the diffusion of new values? This Thesis explores the migration-induced transfer of political and social norms and its linkages with development outcomes. In particular, it examines whether international migrants contribute to a change in preferences and behaviours by channelling modern political and social norms from destination to origin countries. It also investigates the role of destinations in the adoption of different values, since newly-incorporated norms vary according to the level of democracy and equality in host countries. Focusing on Jordan, the first chapter exploits unique data on female empowerment to understand whether return migrants transfer gender norms. The second chapter, instead, studies the impact of both return and current migration on the transfer of political norms. It looks at the interesting case of Morocco, a North-African country that has become a major emigration hub to Europe and where there have been insistent calls for political change over the last few years. Overall, findings suggest that international migration can be a driver of political and social change. However, the impact of host countries matters, as newly acquired norms and attitudes are not always "superior" to the norms at origin. The last chapter is distinct and studies whether documented and undocumented immigrants have been affected differently by the Great Recession. Adopting a difference-in-differences strategy on 2001-2013 data for Italy, the study shows that before the crisis wages moved in parallel (with a 15 percent premium for documented immigrants). During the recession, however, formal wages did not adjust down while wages of undocumented migrants fell so that by 2013 the gap had grown to 32 percent. Findings are consistent with the view that labour market regulation prevents downward wage adjustment during recessions.

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Declaration of Authorship

I, Michele Tuccio, declare that this thesis titled 'Essays on the Economics of Migration' and the work presented in it are my own and has been generated by me as the result of my own original research. I confirm that:

- This work was done wholly or mainly while in candidature for a research degree at this University;
- Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
- Where I have consulted the published work of others, this is always clearly attributed;
- Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
- I have acknowledged all main sources of help;
- Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself;
- Parts of this work have been published as:
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Signed: _____

Date: _____

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Chapter 1

Introduction

The present Thesis advances the literature on the economics of migration by sheding light on three novel aspects of migration research. The first paper tests whether international migrants adopt host countries' gender norms, and bring them back home upon return in Jordan transferring them to their female family members. The second paper, instead, exploits individual level data on Morocco to demonstrate that both returnees and current emigrants abroad affect stayers' preference for political change, albeit destinations play a key role in fostering different political norms. Finally, the third paper looks at the understudied issue of undocumented migration, and assesses the impact of the Great Recession on the labour market outcomes of immigrants in Italy.

The aim of this Introduction is to provide the reader with the general context where these three papers fit in, as well as stressing their contributions to the literature. In particular, a brief history of the economics of migration research is initially sketched in order to highlight the rapid advancements that this strand of the literature has seen in the past few years. Then, an overview of the migration-induced transfer of norms literature is proposed, with a specific attention to the contribution of this Thesis to the debate. Finally, the literature on the labour market impacts of the recent crisis is surveyed and the position of the third chapter of this Thesis in respect to previous research is specified.

1.1 A Brief History of the Economics of Migration

Human migration is as old as mankind. People have always been moving in search of better socio-economic conditions, kinder climate, more secure environment, greater amenities. But the consequences of such movements go well beyond the personal improvement of the migrants: migration bears indeed substantial impacts also on left-behind families, countries of origin and destinations. Clearly, the policy implications of this massive phenomenon are countless and have pushed researchers, academics, and policymakers to deepen our knowledge of what has been called "the third leg of globalization" (Özden *et al.* (2011a)).

Contrarily to other branches of economics, however, which are often obscure to non-experts, the interest on migration is not limited to the academic and political circles, but it reaches the whole population, often worried about the socio-economic consequences that large flows of individuals may bear on their countries. For instance, in order to show the overall great attention on migration, we exploit the 5th wave of the *World Value Survey*, a nationally-representative survey of opinions and attitudes across the globe, which contains a question on the suggested immigration policy the governement should put in place.[1]

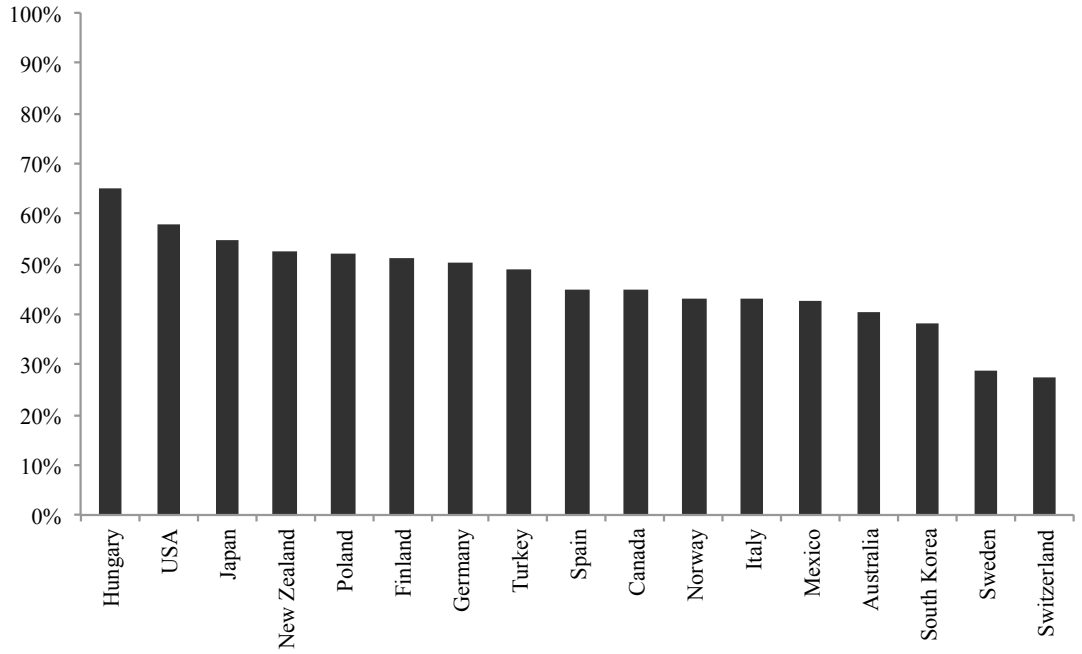
Figure 1.1 presents information for all available OECD countries over the period 2005-2009. Remarkably, over half of the population is in favour of restrictive immigration policies in numerous countries, including in the United States, where almost 6 people out of 10 would place restrictions on immigration.[2]

However, contrarily to the other two legs of globalization — trade and capital flows, on which we have monthly or even daily information from both importing and exporting

[1] The specific question is: "How about people from other countries coming here to work. Which one of the following do you think the government should do?". The variable can get a value of 1 if the individual suggests a restrictive immigration policy (i.e. "place strict limits on the number of foreigners who can come here" or "prohibit people coming here from other countries"), or 0 otherwise (i.e. "let anyone come who wants to" or "let people come as long as there are jobs available"). Data and questionnaires are freely available at: `www.worldvaluessurvey.org`.

[2] People's attitudes towards immigration have attracted great attention over the last decade, and they became centre of an important strand of the migration literature. For a better understanding of the matter, please refer to Mayda (2006), Dustmann & Preston (2007), and Facchini & Steinhardt (2011) among others.

FIGURE 1.1: Share of respondents in favour of a restrictive immigration policy across OECD countries



Source: World Values Survey.

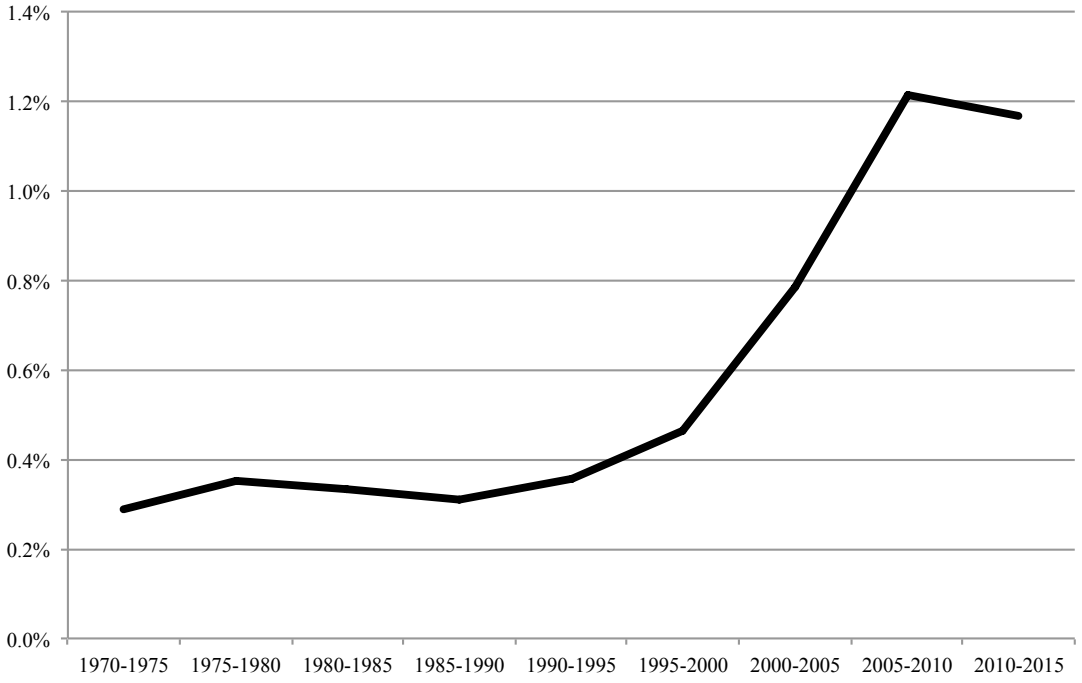
countries — migration data have been so far very scarce. As a consequence, the history of the economics of migration research is very recent, and can be summarized in three (often overlapping) segments, mainly defined by data availability: (i) a theoretical one, starting in the 1970s when virtually no data on migration were collected yet; (ii) an empirical one based on new macro data released in the 2000s; and (iii) the recent micro-based phase, which relies on the inclusion of migration information in household and labour force surveys.

This rising amount of migration data over the last few years have led to a growing attention of economists on related issues. As a simple exercise, we exploit information on research published in the widely-used *Google Scholar* database.[3] We calculate the share of research pieces containing the words "migration" and "economics" (and their derivatives) in their title or abstract out of all the studies published in each year, and compute sexennial averages to smooth out outlier years.

[3] All information are publicly available at: www.scholar.google.com.

Figure 1.2 shows the advancement of migration economics research over time: from a first phase where lack of data limited the analysis to fewer theoretical contributions, to the rise in publications from the 2000s when new bilateral migration data were released. The figure also suggests that the availability of migration information from micro surveys seems to have stabilized migration economics research to around 1.2 percent of the total research production in the last five years or so.

FIGURE 1.2: Share of research containing migration-related and economics-related terms out of all studies



Source: Google Scholar.

In what follows, we will go more into details through the several historical phases of migration economics research. It is worth stressing that the present analysis is not intended to be a complete review of the whole literature on the topic, but its designed goal is to provide the reader of the present Thesis with a general overview of the gradual steps that researchers in the field had undertaken in order to build the current stock of knowledge on migration. Conversely, a more meticulous review will be undertaken in sections 1.2 and 1.3 for what concerns the topics at the core of this Thesis. Moreover, a

detailed survey of the relevant literature will also be included at the beginning of each chapter of the Thesis.

1.1.1 The First Theoretical Contributions

Immediately after obtaining independence in 1963, Kenya faced extremely high and growing urban unemployment rates. Agreements between labour unions, the public and private sectors were established to increase employment while holding salaries at the current level. However, albeit the hopes, unemployment kept on rising instead of curbing. To explain this puzzle, Harris & Todaro (1970) sketched the two-sector model that soon became one of the best-known seminal contribution in the field of migration economics. In their model, internal migration continues existing as long as there are differences in rural and urban expected wages, providing an explanation to the presence of unemployment in equilibrium.

In the years afterwards, several extensions and critics of the Harris-Todaro (H-T) model have been put forward. For instance, Bhagwati & Srinivasan (1974) argue against the policy implications stemming from the Harris & Todaro (1970) paper, that is the necessity of the simultaneous presence of a manufacturing wage subsidy policy and a labour mobility restriction policy. The authors show that a first-best solution can be reached without migration restrictions, but through a mix of subsidies and taxes. On the other side, Fields (1975) criticizes the high unemployment rate predicted by the H-T model, which is distant to actual observations. He hence introduces four extensions to their model (including an urban traditional sector, and preferential hiring by education attainment) to accomodate lower unemployment.

Although the vast majority of research at that time had a pure domestic focus, theoretical analysis of migration managed to expand also to international flows. In particular, the issue of brain drain and the emigration of skilled labour received vivid interest during the 1970s and 1980s. The most commonly supported view was that brain drain has negative economic consequences at origin as the most skilled and educated workers leave their countries eroding their human capital, and it often suggested the introduction of an emigration tax (Grubel & Scott (1966); Bhagwati & Hamada (1974)). Other

researchers, instead, focused on identifying the economic determinants of brain drain and the failure of attracting back the "best and brightest" (Kwok & Leland (1982); Lien (1987)).

The brain drain received renewed attention in the second half of the 1990s, when Mountford (1997) and Stark *et al.* (1997) showed how high skilled labour migration may actually be beneficial for the origin country's growth since the possibility of migrating and improving their own economic situation increases the return to education at home and hence human capital formation. Moreover, a brain drain may modify the dynamics of class formation, leading to failure in the development of an "under-educated" class. The theoretical model by Vidal (1998) emphasizes how the possibility of a "brain drain with a brain gain" is more salient for neighbouring countries, where barriers to labour mobility are lower.

One of the most notable exceptions to this initial theoretical phase of the economics of migration research is the analysis of remittances. Albeit the difficulties of collecting data on the cash and inkind flows that emigrants abroad send to left-behind communities, few important empirical contributions became well-known for sheding a preliminary light to the importance of remittances for the global economy. For example, Stark *et al.* (1986) collected data on 425 adults in two Mexican villages to show the welfare implications of remittances on income distribution.

On the other hand, Lucas & Stark (1985) and Stark & Lucas (1988) exploited the 1978 National Migration Survey of Botswana to put forward a new perspective of migration that soon establishes itself as the new economics of migration. This approach sees labour mobility as a family strategy to cope with risks and diversify household income sources, rather than a pure individual choice (see also Stark & Bloom (1985) for a first proposition of such thesis, and Taylor (1999) for a more detailed explanation).

1.1.2 The Onset of Bilateral Migration Data

Soon after the fall of the Iron Curtain, policymakers' attention has been shifting more and more towards international migration, also encouraged by the growing globalisation of economic activities. Furthermore, at the turn of the new millennium several OECD countries found themselves at shortage of young workers, due to demographic imbalances, and especially of a highly-skilled workforce to sustain the rapid-growing knowledge-intensive economy, and hence they attempted to attract foreigners in their labour markets. In order to feed the global interest on migration, governments and international organizations started compiling bilateral migration databases from decennial census.

The first example of internationally comparable dataset with information on the foreign-born population for almost all OECD countries comes from Dumont & Lemaître (2005), followed by Docquier & Marfouk (2006) who build a bilateral database of migration stocks by skill level from 165 developing countries to 30 OECD countries and between OECD countries for 1990 and 2000. Beine *et al.* (2007) extend the latter work by including a disaggregation of skilled migrants by age of entry at destination, whilst Docquier *et al.* (2009) distinguish stocks by gender. From 2011 the research community has been able to exploit a 226x226 matrix of bilateral migrant stocks by gender for all country pairs in the world for 1960 to 2000, made available by the work of Özden *et al.* (2011b).

These newly released macro data have opened up countless opportunities for research in the economics of migration, including the attempt to answer old questions, such as the impact of brain drain on human capital formation in developing countries of origin (Beine *et al.* (2008)). One important strand of the literature has looked at the determinants and push/pull factors of migration. The pioneering article of Mayda (2010), which examines a large set of drivers of migration inflows into 14 OECD countries between 1980 and 1995, opened up the way to numerous works focusing on specific determinants, such as social networks (Beine *et al.* (2011), Beine & Salomone (2013)), passport costs (McKenzie (2007)), trade openness (Ortega & Peri (2014)), gender discrimination (Baudassé &

Bazillier (2014), Ferrant & Tuccio (2015)), cultural barriers (Belot & Ederveen (2012)), and climate shocks (Beine & Parsons (2015), Maurel & Tuccio (2016)).

A whole new literature relying on bilateral migration data developed an innovative econometric strategy adapting the gravity models of trade to migration flows. The gravity theory expects migration to be negatively driven by distance, and positively affected by population of origin and destination, and it has been widely used in the recent economic literature (see Lewer & Van den Berg (2008) and Beine *et al.* (2015) for more information).

Global bilateral migration datasets have also been exploited to better understand migrant selection (Grogger & Hanson (2011)) and to revisit the social magnet hypothesis in international migration (Razin & Wahba (2015)), as well as to analyse the consequences of migration on both origin and destination countries, including the labour market effects of immigration (Docquier *et al.* (2014)), and the impact of the diversity of skilled immigration on economic prosperity (Alesina *et al.* (2016)).

The turn of the millennium also saw the rise of macro data on international remittances, which allowed to tackle several questions left unanswered by the previous lack of data. For instance, the well-known article by Adams & Page (2005) examines the impact of remittances on poverty in the South of the world, whilst Giuliano & Ruiz-Arranz (2009) construct a new dataset on 100 developing countries to demonstrate that remittances are particularly pro-growth in those countries with scarce financial systems, as they provide an alternative tool of investment to overcome liquidity constraints. This finding is confirmed by Aggarwal *et al.* (2011), who also estimate a positive and significant relationship between remittances and financial sector development in a panel of 109 countries over the period 1975-2007.[4]

[4]For a thorough analysis of the economics of migrants' remittances, refer to Rapoport & Docquier (2006).

1.1.3 The Inclusion of Migration Questions in Micro Surveys

Up to recent years, the scarcity of micro data on migration has constrained a detailed and more rigorous analysis of how to reap off the benefits and curb the downsides of migration, which, consequently, has hindered the global understanding and political debate on such a relevant policy matter. Indeed, several critical issues were mostly unexplored by the previous theoretical and macro literature, including those at the core of the present Thesis: return migration and undocumented migrants.

Efforts by the international community have recently advocated for the systematic inclusion of migration questions in census, household and labour force surveys, and administrative data sources (Clemens *et al.* (2009)). Remarkably, the advent of new micro data on migration has led to an important shift in country coverage and topics under scrutiny. In fact, most of older economic literature is concentrated on the Mexico-US migration corridor, also thanks to the "Mexican Migration Project" by Princeton University and the University of Guadalajara, which was one of the few microdata sources on international migration existing already in the 1980s.[5] Another large strand of the literature, instead, used the US census to study migrants' self-selection (see for example Borjas (1987) and Chiquiar & Hanson (2005)).

On the contrary, new micro data allowed the international community to focus on previously overlooked regions and migration corridors. For instance, the "Migrations between Africa and Europe" (MAFE) project by the French National Institute of Demographic Studies provided researchers with survey data on about 2,500 migrants from Democratic Republic of Congo, Ghana, and Senegal in both Africa and Europe.

Similarly, the "Push and Pull Factors of International Migration" by the Netherlands Interdisciplinary Demographic Institute (NIDI) and Eurostat collected microdata on 11,000 migrants from Egypt, Ghana, Morocco, Turkey, and Senegal. Since the last decade, there has been an explosion of micro studies focusing on migration all over the

[5] Pioneering countributions to the economics of migration literature have indeed exploited these data to shed new light on migrants' social networks, including Munshi (2003) and McKenzie & Rapoport (2007).

world, from foreign domestic workers in Hong Kong (Cortes & Pan (2013)), to high-skilled Israeli migrants (Gould & Moav (2014)), to emigration from Eastern Europe (Dustmann *et al.* (2015)).

In addition to the focus on different regions, the last few years have also seen an important shift from the traditional topics — such as brain drain or remittances — towards a variety of other areas. For instance, particular attention has been paid to the consequences of migration policies (Moraga & Rapoport (2014), Docquier *et al.* (2015)), as well as to the relationship between migration and enterpreneurship (Démurger & Xu (2011), Wahba & Zenou (2012)), and the nexus immigration-crime (Bell *et al.* (2013), Mastrobuoni & Pinotti (2015)), among the numerous new areas of research in the economics of migration.

The linkages between social norms and migration, and the labour market outcomes of migrants have also received particular attention, and, as they lie at the core of this Thesis, they deserve a more detailed analysis in the sections that follow.

1.2 The Transfer of Norms Literature

While the analysis of the impacts of international migration on destinations has received great attention over the last years, a growing strand of the economic literature is now focusing on the possible externalities that migration may bear on sending areas. The so-called "transfer of norms" literature assumes that international migration drives institutional changes in origin countries. Essentially, migrants living in a foreign country and returnees stream new ideas and narratives to their community members, which consequently shift the social norms and institutions in place at home.

As suggested in the seminal contribution of Levitt (1998), social remittance exchanges occur when migrants return to live in or visit their communities of origin, when non-migrants visit migrants abroad, or through the exchange of e-mails, blog posts and telephone calls. In this way, migrants carry new ideas, practices and narratives which influence the social norms of their origin countries. For example, Levitt (1998) records

testimonies of Dominican Republic women who migrated to Boston and modified their ideas about gender roles in response to their more active engagement in the workplace. They then transmitted these new norms to their home community and non-migrant women used them to create new versions of womanhood.

Economic studies on the "transfer of norms"-migration nexus have started to grow after the work of Spilimbergo (2009) on democracy and foreign education. Specifically, he tests whether foreign-educated individuals play a role in fostering democracy in their home countries. Using dynamic panel regressions with data from 183 countries over the period 1960 to 2005, he finds robust results that the lagged total number of students abroad has no impact on democracy at home, but in contrast quality of democracy in host countries has a strong and significant impact on domestic democracy, which increases with the number of students abroad.

After Spilimbergo (2009) pioneering article, a new and exciting strand of the economics of migration flourished. For the sake of exposition, the subsequent contributions to this literature can be divided according to their country coverage in macro and micro studies, as well as according to their focus on social or political norms.

1.2.1 Social Norms

Macro Studies

One of the first studies looking at the linkages between international migration and "transfer of social norms" is Beine *et al.* (2013). Starting from the finding of the literature that migrants' behavioural norms with respect to fertility tend to converge to those of their host countries, the authors assume that migrants might serve as channels for the transmissions of such norms to the natives in their origin countries. An overlapping-generations model is developed to further test 4 hypotheses.

First, by raising the expected return to education, migration may affect home country fertility through its impact on parents' incentive to invest in it. In fact, the higher

opportunity cost of time raises the relative cost of time-intensive activities, including raising children. Second, migration also raises parents' incentive to invest in their children's education, resulting in a negative impact on fertility. Third, with children being a normal "good", remittances may have a positive impact on the fertility rate, although part of the remittances should reduce parents' need for having a large number of children to provide for them when they are old. Hence, remittance may affect fertility, although ambiguously. Fourth, the technology for the diffusion of fertility norms is likely to be a function of the geographic distribution of the migrant population and of fertility rates in the various countries.

The latter channel of "transfer of norms" can work through several mechanisms: (i) migrants directly communicate with their community members; (ii) migration triggers a growing interest towards the general situation in host countries; (iii) media attention is likely to focus on the socio-economic situation of return migrants; (iv) migrant networks result in increased trade between host and source countries, which in turn may constitute another channel of norm transmission; (v) behavioural norms are likely to be further spread through word-of-mouth.

The recent attention that gender equality has received in the public debate resulted in few studies looking at migration as a developmental resource to reduce female discrimination. In particular, Lodigiani & Salomone (2012) investigate the effect of international migration on the parliamentary participation of left-behind women. The underlying idea is that migrants can act as informational channels able to transfer foreign values, create favorable opportunities, reshape attitudes and create new norms about women in the origin country. Specifically, diaspora contributes to the propagation of gender equality values when migrants become aware of the fact that female political conditions at origin countries and their consequences on governance are worse than those experienced at destination.

Controlling for endogeneity and reflection issues through GMM estimations, and addressing selectivity due to female political eligibility through a two-step Heckman estimation, the authors show that total international migration to countries where the share of female parliamentary seats is higher increased source country female political voice between 1960 and 2000.

A broader concept of gender inequality is adopted by Ferrant & Tuccio (2015), who focus on discriminatory social norms in developing countries using the Social Institutions and Gender Index of the OECD Development Centre. Migration may either entrench gender inequality in social institutions or challenge them, according to the level of discriminatory social institutions in the host country. Results show that while larger shares of migrants towards low or moderate discriminatory countries are linked to greater gender equality in social institutions in home communities, migration towards high discriminatory destinations has the reverse impact. Moreover, both men and women are agent of change, although the effect of female migrants is significantly higher.

Micro Studies

Micro studies on the transfer of social norms through migration are rather scarce. Fertility choices are again at the centre of a micro study on returnees in Egypt by Bertoli & Marchetta (2015). Its objective is to understand whether married couples where the husband is a returnee from a high-fertility destination (such as several Arab countries) have a larger number of children than the stayers. In order to remove the bias due to the non-random selection into migration, they adopt a two-stage residual inclusion strategy (2SRI), where migration is instrumented by the real oil price measured when the husband was 20 years old. This variable, in fact, can have a substantial influence on the scale of migration towards oil-producing countries that adopt employer-driven immigration systems responding to fluctuations in local economic conditions.

Estimates suggest that Egyptian migrants are, on average, endowed with unobservable characteristics that would have led them to have a lower number of children, had they not migrated. Anyhow, Egyptian returnees have a number of children that is closer to the level that prevails at destination than to the Egyptian one.

A recent manuscript by Diabate & Mesplé-Somps (2015) exploits household and census data from Mali in 2009 to study whether girls in villages with greater concentration of returnees are less prone to female genital mutilation. Adopting an instrumental variable approach to address endogeneity of migration, they find that girls living close to return migrants are less circumcised than their counterparts in villages with no returnees.

This appears to be driven by returnees from Cote d'Ivoire, whilst migrants to other destinations (including Western countries) do not seem to matter.

1.2.2 Political Norms

Macro Studies

The cross-country migration-induced transfer of political norms is at the centre of Beine & Sekkat (2013). For instance, the authors attempt to see whether international migration bears an impact on the quality of institutions in the sending country, and if this is due to a transfer of norms. Three mechanisms are considered. First, higher emigration rates due to individuals no longer tolerating bad institutions at home reduce the tax base, so that governments may find profitable to reduce rent-seeking. Second, individuals abroad may put pressure on international organizations and foreign states to push their local government to change. Third, diasporas can reinforce its influence on host country leaders through, for instance investments in national projects or political contributions.

Bilateral migration data from Docquier & Marfouk (2006) are exploited in order to show evidence of positive and significant effects of international migration on three indicators of institutional quality ("Government effectiveness", "Regulatory quality" and "Control of corruption"). Econometric results suggest that emigration reduces the voicing capacity at home. Moreover, the impact appears greater for skilled migrants.

In an attempt to better understand the transfer of political norms, the recent contribution by Docquier *et al.* (2016) exploits panel data for a large set of developing countries to estimate the relationship between openness to emigration and democracy in origin countries. Based on different international indicators of institutional quality (such as the Freedom House's indices), findings suggest that higher emigration rates are associated with greater democracy. Remarkably, this effect seems to be driven completely by emigration to OECD destinations, whilst non-OECD countries do not have any influence on institutions at origins.

Micro Studies

One of the first work attempting to deepen our knowledge on the "transfer of political norms" at micro level is Batista & Vicente (2011). Their underlying hypothesis is that international migration experiences promote better institutions at home by boosting demand for political accountability. A simple voting experiment was used to capture a behavioural measure of demand for better governance in Cape Verde. Following a survey of perceived corruption in public services, respondents were asked to mail a prestamped postcard if they wanted the anonymous results of this survey to be made publicly available in the media. They were told that at least 50 percent of respondents would have to return postcards for the information to be released publicly.

The results show that international emigration positively affects demand for improved political accountability, with stronger effects for migrants to countries with better governance and for return migrants than for current migrants. Findings are robust to several checks, including instrumental variable estimation to overcome potential endogeneity.

Motivated by the fact that the Mexican diaspora in the United States seems to have an important impact on the political landscape at home, Pfutze (2012) exploits data from the Mexican electoral cycle 2000-2002 to provide evidence that municipalities with a greater proportion of migrant households are more likely to vote for the opposition political party. He also suggests two mechanisms for such a relationship: on one side migrant networks may transfer knowledge spillovers from destination to origin country, while on the other side remittances might raise voters' income and hence limit the clientelistic links between the governments and its constituents. Data limitation, however, cannot allow to disentangle the two channels.

The recent work of Chauvet & Mercier (2014)) explores the relationship between return migration and electoral outcomes in Mali. First estimates show a positive impact of returnees from non-African countries on participation to local elections. However, this positive correlation may derive from the fact that returnees have acquired political norms from their migration experience, without involving any spillover to their home communities. Hence, to test for the existence of a diffusion effect, the authors identify

several localities in their sample that had no returnees at all, and show that their participation rates are positively correlated with the share of returnee from non-African countries of their neighboring localities.

The panel dimension of the data, covering the years 1998 and 2009, allows to control for time-invariant heterogeneity across Malian localities. Moreover, to verify that results are not biased by endogeneity, in particular if return migrants decide to settle down in function of the political characteristics of the localities, the paper studies the impact of returnees who came back to the district where they were born. It also implements an IV procedure as a further robustness check, relying on distance variables as proxies for the access to the migration routes.

Another recent work exploiting electoral data is Omar Mahmoud *et al.* (2014), which explores the impact of labour migration on political norms in the former Soviet Republic of Moldova through a quasi-experiment. In fact, very little emigration took place in Moldova before the Russian financial crisis of 1998, whilst in the aftermath of the shock thousands of people left the country. It is therefore possible to control for before the crisis (and thus before migration) voting patterns to take into account time-constant political norms. Results suggest that communities with a one percentage point increase in migration rate to Western countries are less likely to vote for the Communist party by around 0.6 percentage points.

In order to provide evidence of a transfer of political norms from destination to origin countries, the authors show that this effect is stronger in communities where Western attitudes and preferences would have had a greater informational value, that is in communities with general low level of education and with large share of individuals grown up during the Soviet era. Futhermore, as a more direct test for the transfer of norms, they exploit individual-level survey information from the Moldovan Political Barometer to show that migration does not affect only electoral preferences, but also political views in general (such as trust in the government and media).

1.2.3 Contribution of This Thesis to the Transfer of Norms Literature

The aforementioned literature on the migration-induced transfer of norms clearly shows several gaps that the present Thesis attempts to fill. On one side, there is still a lack of research on the transfer of norms other than fertility and democracy. In particular, given the growing attention that gender equality received over the last few decades, it is worthwhile studying whether migrants may act as a catalyst for reduction of gender gaps.

In fact, outcomes differentials between men and women build upon a set of gender norms that deem what is acceptable for women to be and do in the society. If such social institutions discriminate women, that is reduce women's opportunities to engage in the economic, political and social landscapes compared to men, then female outcomes will necessarily be worsened. Modifying discriminatory social norms, however, is not an easy task, and governments have not managed to successfully eradicate gender inequalities.

A recent economic literature has found that exposure to female empowerment practices within a country can potentially shift underlying gender norms. For instance, exploiting the random assignment of gender quotas for leadership positions in village councils in India, Beaman *et al.* (2009) find that, a decade after the entrance of the quota policy, women are more likely to win a seat in those localities required to have a female councilor in the previous two elections. Using experimental and survey data, the authors link such results to the fact that prior exposure to female leadership weakens stereotypical assumptions about the traditional role of women in India.

Building on this evidence, the first paper of this Thesis tests whether, through exposure to different attitudes towards women, international migration may also act as a powerful tool to modify gender norms. We analyse the case of Jordan, a middle-income economy where both emigration and gender inequalities are on the rise. We find that women with a returnee in the family have internalized more discriminatory gender norms than women with no migration experience. Such result is driven by returnees from conservative Arab countries, which indeed bear great levels of discrimination against women. Moreover,

estimates also suggest that this negative effect goes beyond perceptions, affecting also women's outcomes, such as labour force participation, education, and fertility choices.

Besides being the first micro study on the migration-induced transfer of gender norms, this paper brings along also another important contribution to the literature, namely it stresses the importance of the double selectivity of return migration. In fact, emigrants are not randomly distributed among the Jordanian population, but are self-selected on the basis of both observable and unobservable characteristics. At the same time, among Jordanian migrants currently abroad also those deciding to return home self-select themselves. Our results show that controlling for such a double selectivity is not only important for a correct estimation of the true causal effect of international return migration on gender norms, but it is actually essential to obtain statistically significant results, as simple regression models carry along large selection bias.

On the other side, even the existing literature on transfer of political norms through migration is affected by several caveats. Remarkably, most of the empirical studies on the impact of international migration on political norms do not observe directly how migration affects the political views of the migrants or their households (see for example Spilimbergo (2009), Batista & Vicente (2011), Chauvet & Mercier (2014), Omar Mahmoud *et al.* (2014) among others).

My second paper instead exploits individual-level survey data on Morocco in 2013 to test whether international migration is a driver of political and social change. Its contribution to the current literature is straightforward. It is the first study directly looking at the effect of international migration on political attitudes and preferences, and being able to identify the underlying mechanisms behind the potential impact of migration. In fact, whilst all previous works used cross-country data of aggregate migration flows or the share of migrants in a given community, we are able to exploit information at the individual and household level.

Moreover, former literature adopted proxies of political beliefs, such as institutional quality and democracy, which do not capture entirely individuals' preferences nor measure the likelihood of migrants to act as a catalyst of political change. On the contrary, we exploit unique information on migration experiences and political and social norms at

individual level, allowing a direct estimation of the impact of migration on the preference for change.

The paper also contributes to the literature by comparing the different impacts of returnees and diaspora on political and social change. While most previous studies have focused on a single category of migrants (exceptions are Batista & Vicente (2011) and Omar Mahmoud *et al.* (2014)), only an overall analysis of all types of international migration can give a clear picture of the mechanisms behind the migration-induced transfer of norms. We hence compare the attitudes of returnees to the ones of non-migrants, as well as the norms of the left-behind household members of current migrants to those of non-migrants.

In doing so, we again address the double selection into emigration and into return migration. We tackle endogeneity and selectivity issues by adopting a multi-equation mixed system, where both emigration selectivity and selection into return migration are taken into account. Importantly, we also show robustness of our results to addressing an additional source of selectivity, that is self-sorting into destination countries. Indeed, this may be a remarkable source of bias in previous literature on the migration-induced transfer of norms. Up to our knowledge, we are the first study simultaneously tackling selection into emigration, selection into return migration, and selection into destination.

In addition, we also make use of the heterogeneity of Moroccan emigrants' destinations in order to corroborate the findings on the importance of host countries. Variability in destinations of Moroccans to Western and Arab countries allows us to estimate opposite preferences for political and social change according to the institutions in place abroad. In particular, estimates suggest that households with a returnee member that lived in the West are more likely to ask for political change than non-migrant households, whilst families with a current emigrant in an Arab country are less likely to prefer change. Finally, we examine whether the impact of migration on norms affects outcomes and not only attitudes. Hence, we show how a greater exposure to return migration is correlated with higher turnout rates to the 2011 parliamentary elections.

The first paper on the migration-induced transfer of gender norms in Jordan has been jointly co-authored with Jackline Wahba (University of Southampton), with whom I

equally share the contribution to the study. The second paper on political change in Morocco, instead, has been developed together with Jackline Wahba (University of Southampton) and Bachir Hamdouch (University Mohammed V Agdal). My contribution consists in the cleaning and preparation of the multiple sources of data for the analysis. I also came up with the initial idea, as well as the contribution in respect to the existing literature. I undertook the econometric analysis, and wrote the main body of the manuscript. Bachir Hamdouch supplied the Moroccan data.

1.3 The Labour Market Outcomes of Immigrants

Since its inception, the economics of migration research has always paid particular attention to the impact of immigration on natives' labour market outcomes (from the early work of Card (1990) and Hunt (1992) in the 1990s to the most recent contibutions by Dustmann *et al.* (2013) and Åslund *et al.* (2014) among many others). Similarly, also the question of how immigrants themselves fare in the foreign labour market has been an important policy issue.

The seminal work by Chiswick (1978) opened the debate on the earning patterns of immigrants, and pointed to two important conclusions: on one side, the longer immigrants live at destination, the higher are their salaries; on the other side, the fast growth of earnings of immigrants over time explains why at later stages of life immigrants seem to earn more than natives. However, exploiting information from the 1970 and 1980 US Censuses, Borjas (1985) rejects this latter finding arguing that Chiswick's cross-section analysis is not able to disentangle the true assimilation effect of immigrants from the different "quality" of migrants cohorts. Indeed Borjas' cohort study suggests that the great assimilation rate found by Chiswick (1978) is at least in part due to a drop in the "quality" of immigrants to the US over time.

More information on the decline in migrant "quality" in the US are provided by LaLonde & Topel (1991), who find it to be due to a change in source countries rather than a skill drop within immigrant ethnic groups. The authors also find that immigrants need approximately 10 years of experience in the US before neutralizing the wage gap with

natives. Importantly, researchers have shown that the earnings differential is also due to the fact that immigrants are likely to take up any available job at the beginning of their stay abroad, albeit over time they might find a better match in the labour market and improve their earnings (Eckstein & Weiss (2004)).

Lam & Liu (2002) stress a third factor causing earnings divergence: technology changes might improve the productivity of natives' skills more than immigrants' ones. In fact, not only the skills imported by the migrants are overall less productive upon arrival at destination, but also they loose productivity over time compared to local skills as the production technology changes.

Another of the factors behind the immigrants wage gap that has been extensively studied is language proficiency (McManus *et al.* (1983), Bleakley & Chin (2004)). From an economic perspective, weak linguistic abilities decrease immigrants' productivity and hence earnings, as well as reduce the range and quality of jobs available to foreigners. From a social side, instead, poor destination language proficiency fosters discrimination and isolation. Similar considerations can be extended to literacy rather than language proficiency (Ferrer *et al.* (2006)). Nonetheless, as shown by Toomet (2011), even the command of the official destination language is not enough to elimate the wage differential: as for the case of African Americans in the US or Latin American immigrants in Spain, the members of a minority still suffer from the glass-ceiling effect.

A recent strand of the economic literature has analysed the impact of ethnic enclaves on the labour market outcomes of migrants. In fact, as most immigrants tend to be spatially concentrated, it is worthwhile trying to estimate the role played by enclaves. Theoretically, such effect is ambiguous: while on one side enclaves may foster social networks, referrals, and the diffusion of information for potential job opportunities, they may also ghettoize immigrants and reduce their acquisition of host country skills.

Exploiting the natural experiment of the Swedish reallocation policy of refugees in 1985-1991, Edin *et al.* (2003) find that living in enclaves increases immigrants' earnings by around 13 percent. Moreover, results indicate that gains are greater for members of high-income ethnic groups. In a similar natural experiment in Denmark, Damm (2009) argues that the rise in immigrants' wages in enclaves is mainly caused by an increase in

the hourly wage rate rather than in the total hours worked. This suggests that living in an ethnic enclave reduces the asymmetry of information and improves the worker-job match quality.

The important role of social contacts for the likelihood of finding a job is confirmed by Patacchini & Zenou (2012), who however find this effect to be localized and to decay quickly with distance. Moreover, a recent contribution by Boeri *et al.* (2015) show that residential segregation can actually harm immigrants' employment if the share of foreign population is over 15-20 percent of the total local population, especially in presence of high rates of illegal migrants.

1.3.1 Undocumented Migrants and the Labour Market

In spite of its economic, social and political importance, how undocumented migrants fare in the labour market has been scarcely examined. A clear lack of data on undocumented (frequently labelled also as "irregular" or "illegal") migration has often limited researchers to the use of non-random samples of unauthorized migrants, such as detainees in US prisons or Mexican return migrants (Chiswick (1984)).[6]

However the existence of an illegality effect is ultimately an empirical question, since it is not possible to drawn unique predictions from the economic theory. In fact, undocumented migrants may have lower bargaining power, as well as lower reservation wages than legal migrants. Moreover, they may be unable to freely move within the destination country due to lack of information, movement costs, and fear to be caught, thereby reducing their likelihood to maximize returns to human capital. There may also be segmented labour markets in which documented and undocumented migrants compete. Conversely, observable characteristics, such as education, may explain most of the labour market differences.

In an attempt to give a first estimate of the illegality effect, Borjas & Tienda (1993) use information that recently legalized immigrants submitted to apply for amnesty in

[6] A relatively recent strand of the economic literature attempts to estimate the extent of undocument migration, mostly using data on the United States-Mexican border, see Hanson & Spilimbergo (1999), Dávila *et al.* (2002), and Angelucci (2012).

the United States in 1987 to study the labour market characteristics of undocumented migrants. Similar data are also exploited by Rivera-Batiz (1999), who finds that legal male Mexican immigrants in the US have a 42 percent hourly wage premium compared to their illegal counterparts. Moreover, they also find that undocumented immigrants differ along observable individual characteristics, such as language proficiency and years of residence in the United States.

Kossoudji & Cobb-Clark (2002) use the amnesty data to compare earnings of irregular immigrants before and after legalization. Findings suggest that the hourly wage rate for newly legalized immigrant men increased by only 6 log points. As argued by Hanson (2006), such effect is so small that is should be interpreted as a lower bound. By contrast, Schluter & Wahba (2009) use information from the Mexican Migration Project (MMP) to estimate an illegality penalty on earnings of approximately 12 percent in the 1980s and 22 percent in the 1990s.

In addition to Mexican undocumented immigration, the literature on the United States also looks at the 1992 Chinese Student Protection Act, which made around 80,000 Chinese residing in the US either illegally or under a student visa eligible for lawful permanent resident status (Orrenius *et al.* (2012)). Results indicate that getting legal work status positively affects both wages and employment rates of high skilled immigrants. Similar findings are reached by Kaushal (2006), who investigate the impact of the 1997 Nicaraguan Adjustment and Central American Relief Act on employment and earnings of undocumented immigrants from Nicaragua, Cuba, Guatemala, and El Salvador who were eligible for amnesty under the Act.

Albeit its constant presence in the political debate of the recent years, undocumented migration in Europe has received very little attention in the economic literature. An exception is the work by Accetturo & Infante (2010), which, without looking directly at illegal migration, shows that the returns on education for undocumented immigrants in Italy are around half of those of legal workers, as undocumented migrants are less able to exploit their skills on the labour market. A recent study by Devillanova *et al.* (2014), instead, finds that even the prospects of being eligible for amnesty increases the employment probability of undocumented immigrants in Italy. However, as the extensive survey of the literature on undocumented migration by Fasani (2015) shows, there is a

clear lack of knowledge on the labour market performance of illegal aliens in Europe, which the present Thesis aims to partially fill.

1.3.2 Immigrants in the Great Recession

A recent and still relatively small strand of the literature has specifically looked the labour markets' reaction of immigrants to the recent financial and economic crisis and the respective channels of adjustment. Indeed, since its outbreak in 2008, the Great Recession has deeply affected the world economy, and, similarly to previous downturns, it has greatly worsen the labour market performance of minority workers, including immigrants. Nonetheless, research on this topic is still scarce.

Theoretically, contractions of the economy would push firms to get rid of their least productive employees, which, in several countries, would include immigrant workers, typically poorly educated, often undocumented, and with low levels of host language proficiency. Moreover, as employers spend less in the training of low skilled workers during crisis, they would be less incentived to retain them. Importantly, due to the lack of job opportunities, the high skilled native workforce may also move down the skill chain and displace low skilled foreigners.

On the other side, however, immigrants may be less affected by economic shocks as they are more mobile than natives, across both regions, occupations, and industries. If immigrants are faster in the replacement of job positions, they may face shorter unemployment spells than natives. Moreover, migrants are often concentrated in less cyclical industries, such as health and elder care, domestic work and agriculture, with less negative consequences than natives. Finally, as migrant labour cost is typically lower than local one, firms may find more profitable to hire them during economic downturns.

Using data on the Mexico-US corridor, Orrenius & Zavodny (2010) find that the employment performance of Mexican immigrants is more reactive to macroeconomic conditions than the natives' one, both overall and within educational groups. Similarly, Dustmann *et al.* (2010) study the employment and wage patterns of natives and immigrants in Germany and the United Kingdom, and find that economic shocks affect immigrants'

unemployment rate to a larger extent than natives, especially for those foreign workers from non-OECD countries. Again similar results are reached by Cerveny & Van Ours (2013) for the case of Netherlands, although additional evidence suggests that in relative terms there is not much difference between unemployment levels of natives and non-western immigrants.

A very recent contribution by Cadena & Kovak (2016) demonstrates that, compared to low skilled natives, the location choices of Mexican workers in the United States responded greatly to the spatial variation in labour demand during the Great Recession. Also looking at Mexican immigrants in the US, Lessem & Nakajima (2015) show that undocumented Mexicans' wages decrease with the US unemployment rate, unlike salaries of natives and legal migrants. A possible explanation for such an effect is linked to the fact that illegal immigrants' salaries are negotiated frequently due to the short-term nature of employment contracts. Moreover, results also suggest that undocumented Mexican migrants are also more likely to shift to agricultural jobs during recessions, stressing the important role of occupational spillovers.

1.3.3 Contribution of This Thesis to the Literature on the Labour Market Performance of Immigrants

The third paper of this Thesis brings new evidence on both the literature on the differential labour market performance of documented and undocumented immigrants, and the literature on the impact of negative economic shocks on the employment outcomes of foreign workers. In particular, the study exploits a unique dataset including individual characteristics and labour market information on both documented and undocumented immigrants in Italy for the period 2001-2013. We adopt a difference-in-differences approach to estimate whether the recent Great Recession had a differential impact on wages and employment of immigrants depending on their legal status at destination.

Importantly, this special setting can be considered a proxy for the regulation of labour markets. In fact, in order to be legally residing in Italy, an immigrant must be formally employed by a firm, and thus be subject to the Italian employment law. On the contrary, undocumented migrants cannot enter the formal economy and they are hence confined

to the informal labour market, which is unregulated by definition. We can thus considered legal migrants working in the formal economy as a proxy for a regulated labour market, and undocumented migrants working in the informal economy as a proxy for the unregulated counterfactual.

In such a way, this paper circumvents the traditional issue that has affected previous studies attempting to estimate the effect of a crisis on rigid and flexible labour markets: that is, comparing two countries with different magnitude of regulation, or comparing different regulated and unregulated industries within the same country raise significant comparability concerns. Conversely, this Thesis constructs a convincing counterfactual by comparing a regulated and an unregulated labour market in the same sector within the same country.

Our results show that, before the Great Recession, wages of documented and undocumented migrants (and hence in the regulated and unregulated labour market, respectively) moved in parallel. However, while documented migrants' wages almost did not decrease during the crisis, wages in the unregulated sector fell by approximately a fifth. This increasing wage gap was stronger in simple occupations, where there is greater substitutability between workers. Findings are therefore in line with the view that labour market regulation is responsible for the lack of wage adjustment and rises of unemployment rates during crises.

This third paper has been co-written with Sergei Guriev (Sciences Po) and Biagio Speciale (Paris School of Economics — University of Paris 1 Pantheon-Sorbonne). The contribution to the study has been equally shared among the authors.

Chapter 2

Can I Have Permission to Leave the House? Return Migration and the Transfer of Gender Norms

2.1 Introduction

The past few decades have witnessed an increasing awareness of the need to achieve gender equality as a necessary step for greater economic development (see for example Duflo (2012) for a survey on the relationship between female empowerment and economic development). Social institutions and norms frame the gender roles at the roots of a society and the distribution of power between men and women in the household and in the economic and political landscapes (Alesina *et al.* (2013)). If these social norms deprive women of their autonomy and capabilities, then a gender gap is created between men's and women's opportunities, and consequently between their respective outcomes (Field *et al.* (2010)).

Exposure to different practices within a country has been proved to be a powerful tool to modify underlying gender norms (Beaman *et al.* (2009); Meyersson (2014)). This paper demonstrates that, through exposure, international migration may also act as a channel of norms transmission. In fact, ideas and behaviors in destination countries influence the set of norms that migrants have acquired at home, assimilating their beliefs to those of the natives. When migrants visit or return to their origin countries, they bring back the newly acquired norms and those may spread around their communities.

This paper presents a three-fold contribution to the economic literature. While political accountability and fertility norms have been found to be promoted in origin countries by international migrants (Spilimbergo (2009); Batista & Vicente (2011); Beine *et al.* (2013); Bertoli & Marchetta (2015)), whether migration modifies gender norms is still an unanswered question. This paper therefore fills the existing gap by studying whether return migration acts as a channel of norms transmission and reduces gender discrimination in social norms at home.

Secondly, this paper is among the first ones to construct a composite index of discriminatory gender social norms at micro level.[1] Whilst previous works concentrated on outcomes variables, such as education or employment status, we argue that gender gaps in opportunities are indeed at the root of the consequent inequalities in outcomes. Hence, focusing on discriminatory norms and social institutions is key to understanding gender inequality.

A further contribution of the present study is to emphasize the importance of controlling for both selection into emigration and selection into return migration when comparing returnee and non-migrant households, as both emigrants and returnees are self-selected on the basis of unobservable characteristics. Adopting a multi-equation mixed system in a Conditional Mixed Process (CMP) framework, we demonstrate that estimates are biased if double selectivity is not taken into account.

We focus on the case of Jordan, a Middle-Eastern, non-oil middle-income economy where both gender inequality and emigration rates are high. Our analysis is based on

[1] A recent exception is the work by Assaad *et al.* (2014b).

the recently-released "Jordan Labor Market Panel Survey" (JLMPS), a nationally representative household survey of more than 5,100 households and about 25,000 individuals in 2010.

Although women's educational attainment gradually reached the level of their male counterparts, Jordan has still one of the lowest female labour force participation rates in the world at 15 percent in 2010 (Assaad *et al.* (2014b)). The World Bank (2005) gender assessment report confirms that women's economic role in Jordan does not correspond to the pattern seen in similar middle-income countries. *De facto*, societal and familial pressures limit women's greater position in the economy. For example, while entering certain public spaces, such as administrative offices, without male presence is considered unacceptable (OECD (2014)), some women's movements may still be restricted on a day-to-day basis: 14.4 percent of women questioned in the 2007 Demographic and Health Survey (DHS) reported that they needed their husbands' permission to visit their own family or relatives.

In addition, women are still not equal to men before the law. For instance, Kelly (2010) reports that, under the Personal Status Law, all single women (whether divorced, widowed, or never married) under 30 are considered to be legal minors, and are under the guardianship of a male relative. Discriminatory norms are reflected in Jordan's low placement in human rights indices: under the 2011 Human Development Index (HDI), Jordan is ranked in 95th place (out of 187 countries), with a score of 0.698. The Gender Inequality Index value is 0.456 placing it at 83 out of 146 countries, while it is ranked 117th in the 2011 Global Gender Gap Index.

At the same time, Jordan is a labor exporter economy, with a migrant population ratio reaching 11.2 percent in 2005 (Xu & Ratha (2008)). This is much higher than the 3.3 percent emigrant population average share for middle-income countries. More importantly, as pointed out by Wahba (2014), almost every one in 10 households in Jordan had a return migrant in 2010 as the majority of migration is temporary and destined to neighboring Arab countries.

This paper aims to explain the aforementioned stylized facts by examining the role of return migration and its impact on gender norms. Results show that return migrants

transfer discriminatory norms from highly unequal destination countries, which widen already existent gender gaps in Jordan. Our findings confirm that social norms are a key determinant of the failure of convergence in labour market outcomes, perpetuating extremely low female labour force participation in Jordan.

The remainder of the paper is structured as follows: section 2.2 provides a brief review of the current scholarly understanding of the "transfer of norms"-migration nexus. Section 2.3 introduces data, summary statistics, and the construction of the composite indices of gender norms. Section 2.4 discussed the empirical approach and econometric framework, whilst the estimation results are provided in section 2.5. Section 2.6 concludes.

2.2 Migration-Induced Transfer of Norms

While the analysis of the determinants of international migration has received great attention over the last years, a growing strand of the literature is now focusing on the possible externalities that migration may bear on sending areas. The so-called "transfer of norms" literature assumes that international migration drives institutional changes in origin countries. Essentially, migrants living in a foreign country and returnees stream new ideas and narratives to their community members, which consequently shift the social norms and institutions in place at home.

Economic studies on the "transfer of norms"-migration nexus have started to grow after the work of Spilimbergo (2009) on democracy and foreign education. Using data for 183 countries over the period 1960 to 2005, he finds that foreign-educated individuals play a role in fostering democracy in their home countries. Similarly, Batista & Vicente (2011) use a simple voting experiment in Cape Verde to demonstrate that international migration experiences promote better institutions at home by boosting demand for political accountability. Other recent contributions use electoral data from Moldova (Omar Mahmoud *et al.* (2014)) and Mali (Chauvet & Mercier (2014)) to estimate a migration-induced transfer of political norms.

Fertility choices have also attracted much attention over the last few years. In particular, Beine *et al.* (2013) argue that, through the transfer of norms, migration from high-fertility sending countries to low-fertility destination countries reduces fertility in the former. Conversely, Bertoli & Marchetta (2015) demonstrate that Egyptian married couples where the husband has a past migration experience in another Arab country have a significantly larger number of children than stayers.

Much less attention has been given to the relationship between migration and gender inequality in origin countries. At macro level, Lodigiani & Salomone (2012) investigate the effect of international migration on the parliamentary participation of left-behind women. They show that total international migration to countries where the share of female parliamentary seats is higher increased source country female political voice between 1960 and 2000. The authors argue that such results may be linked to the informational role of international migrants, who can transfer foreign values, reshape attitudes and create new norms about women in the origin country. A broader concept of gender inequality is adopted by Ferrant & Tuccio (2015), which focus on overall discrimination against women in developing countries using the Social Institutions and Gender Index of the OECD Development Centre. Their cross-country analysis of bilateral South-South migration flows finds that migration may either entrench or challenge gender inequality according to the level of discriminatory social institutions in the host country.

To our knowledge, micro-economic evidence on the impact of international migration, and in particular return migration, on female empowerment is rather sparse. Although there are a few sociological works analyzing the role of migration on gender equality, most studies look at the position of female stayers when their male partners are currently abroad. Hence, regardless of the sign, the effect can be due to a change in household composition, with left-behind wives taking up the role of the absent husbands. However, the change in responsibilities and decision-making power among women can be temporary in nature, since men may assume their traditional, patriarchal roles as soon as they return (De Haas & Van Rooij (2010)). [2] The present paper is therefore the first

[2]The analysis of current migration in the context of the transfer of gender norms in Jordan poses several issues. On the one hand, from a theoretical point of view the effect of current migration on gender norms is ambiguous. In fact, the absence of a family member (and more likely a husband in the case of married women or a father in case of unmarried women in Jordan) may improve left-behind responsibilities and decision-making power due to a change in household composition. At the same time, the emigrant family member may stream either positive or discriminatory gender norms from destination

economic study to analyze return migrants and their effect on discriminatory gender norms.

2.3 Migration and Gender Norms in Jordan

2.3.1 Data and Descriptive Statistics

International migration has played a key role in shaping Jordan's economic and social landscapes. Since the 1973 increase in international oil prices, large flows of Jordanians emigrated towards the neighboring GCC states. According to the national Ministry of Labor, 140,722 Jordanians were still residing in oil-producing countries in 2009, 39 percent of whom in the United Arab Emirates, 36 percent in Saudi Arabia and 13 percent in Kuwait. Return migration is also an important feature of Jordanian society, with approximately 11 percent of the households having a returnee among their members (Wahba (2014)). Looking at the characteristics of returnees by destination suggests that emigrants to Arab countries have similar education levels to those who went to the West: roughly 40 percent of Jordanian emigrants to both destinations have secondary education or higher (Wahba (2014)).

The analysis of this paper is based on the recently-released "Jordan Labor Market Panel Survey" (JLMPS), which was administered by the Economic Research Forum (ERF), the Department of Statistics in Jordan (DoS) and the National Centre for Human Resources Development (NCHRD) in the period from December 2009 to June 2010. The JLPMS is a nationally representative data covering about 5,100 households and 25,000 individuals and has rich information on demographic characteristics and labour market experiences.

through calls, visits, and in general so-called social remittances. Hence, we cannot expect to find an unambiguous sign of the relationship, and, in presence of a specific positive or negative sign, we are not able to clearly assign such effect to a transfer of norms or a change in household composition. On the other hand, from an empirical point of view, the sample of women with a current emigrant in the 2010 Jordan Labor Market Panel Survey is rather small. Once including all controls variables, the sample shrinks to only 35-93 women with a current migrant and information about their perception of gender equality. Such small samples do not allow a robust estimation of the impact of current migration on the gender norms of left-behind women.

Despite being the initial wave of what is to be a longitudinal survey, the JLMP 2010 contains a number of distinctive features which are key for the present study. Firstly, retrospective questions on labour and residence mobility allow us to identify return migrants. Secondly, a unique characteristic of this survey is that it provides information on current migrants, including education and employment history, year of migration and destination country which allows us to control for selection into emigration.[3] Lastly, and a real peculiarity among labour market surveys, the JLMP includes important information about women's status in the society. Specific questions on the self-perceived role of women, freedom of mobility and the extent to which women can take decisions in their families can be used in order to proxy for the long-lasting codes of conduct, norms, traditions, informal laws that might contribute to gender inequalities in all spheres of life.

Our sample is comprised of 4,098 women aged 15-60 years old, among whom 838 live in households with return migrants and 3,260 have no migrants in their families. Most returnees are males, either husbands (if the woman interviewed is married) or sons (if the woman interviewed is unmarried). Only 5 percent of returnees in our sample went to non-Arab countries, whilst the remaining 95 percent migrated towards Arab countries.[4] For this reason, we restrict our analysis to migrants towards the Arab region.

Table 2.1 compares individual characteristics of women with a returnee among their family members and women from non-migrant households. Data confirms the existence of a paradox in Jordanian society: more than 40 percent of women have a secondary or higher degree, but only 11-14 percent is formally employed. These figures suggest that underlying social norms on what is deemed acceptable for women limit their employment at full capacity. Approximately one in every three women is married to a family member, reflecting the role of norms and informal institutions in Jordan. Interestingly, women with a returnee are on average older and more educated than those in households with non-migrant, and also their mothers have achieved greater educational attainments.

[3] A common caveat of migration data is the lack of information on households which have emigrated in their entirety, and therefore are not interviewed at the time of the survey. However, in the Jordan case the eventual bias may be considered rather small, since migration towards Gulf countries is mostly temporary in nature (David & Marouani (2013)), as also supported by the fact that almost 38 percent of current migrants in our sample has left Jordan in the last two years. At the same time, more than 80 percent of current migrants have visited the left-behind household in the last two years, assuring the reliability of the information provided by the interviewees.

[4] Non-Arab countries are mainly Europe, the US, Canada and Australia.

Moreover, having a returnee is often linked with a much greater probability of living in cities.

TABLE 2.1: Characteristics of women in returnee and non-migrant households

	Without migrant	**With returnee**	**t-Test**
Employment status	0.14	0.11	(2.05)*
Less than basic education	0.24	0.20	(2.69)**
Basic education	0.36	0.30	(2.93)**
Secondary education	0.16	0.21	(-3.57)***
Post-secondary education	0.24	0.29	(-2.74)**
Married	0.92	0.91	(1.83)
Consanguinity	0.36	0.31	(3.12)**
Rural areas	0.33	0.09	(13.78)***
Age	36.5	40.1	(-9.21)***
Age squared	14.3	17.3	(-9.57)***
Children	0.92	0.92	(-0.29)
Mother's education	1.49	1.70	(-5.72)***
N	3260	838	

Source: JLMPS, 2010.

2.3.2 Construction of Composite Indicators

Most previous studies constructed cross-country measures of broad concepts of gender inequality, including outcome variables such as educational and employment status, poverty and political participation (Ferrant (2014)). There is very little literature on the construction of composite indicators of discrimination against women at micro level, and even scarcer literature focusing on discriminatory social norms rather than on outcomes (a recent exception is Assaad *et al.* (2014a)).

However, the use of household and labour market surveys often provides categorical and binary questions that need to be aggregated into composite indices in order to have an overall view of the dimensions under analysis. We exploit three sets of variables included in the JLMPS on gender norms, administered to all females in the age group 15-60.

Our benchmark analysis on the self-perceived role of women (RWI) will be based on 10 questions on what women think *should* be their role in the society. Queries involve whether girls should be treated equally to boys, whether female employment should be encouraged as well as female education, and whether women should get leadership positions in the society. We will also use two additional measures of gender norms. The first set of questions deals with women's freedom of mobility (FMI): variables on whether women need permission to move are exploited to have a sense of the freedom of mobility at household level. Specifically, women are asked if they need prior permission to go to the local market, to the doctor or to visit friends and relatives. Secondly, we make use of 9 variables on female decision-making (DMPI) to understand the extent of women's bargaining power and agency within the family. Questions include who has the final say on making household purchases, getting medical treatment and sending children to school. We argue that overall these three measures, 23 variables, effectively represent the underlying gender norms in Jordanian society.

Several approaches can be adopted to aggregate our variables into composite indicators of gender equality in social norms. Equal weights have been extensively used for their simplicity and apparent objectivity. They are often preferred since there may be no obvious reason for valuing one variable more or less than the others. In our case, although singly the variables had a categorical response, they have been re-coded in order to take binary value. The average mean of the respectively 10, 4 and 9 variables has then been calculated in order to have 3 different measures of gender norms in Jordan. The proposed index is transparent and easy to understand: it can take values from 0, corresponding to discriminatory social norms, to 1, meaning complete gender equality.

On the other hand, average mean implicitly assigns greater weights to the variables with larger variance and higher correlation with each other (Ferrant (2014)). Since the imposition of numeric equality is completely arbitrary, the use of statistical procedures to determine weights should be favoured (Filmer & Pritchett (2001)). Principal Components Analysis (PCA) is one of the most common weighting techniques, which extracts from a group of variables those orthogonal linear combinations that size the common information most accurately. Essentially, gender equality can be seen as complex unobserved phenomenon that we want to estimate using a set of observed proxies. The goal of PCA is to aggregate the variables that we assume can best describe gender equality in

such way that they represent successfully the latent complex index. Weight determined on the basis of PCA represents the relative contribution made by the variables to the variance of the composite index. Greater weights are assigned to variables which contribute to larger shares of variation. The advantage of this methodology is to estimate the set of weights that explains the largest variation in the original variables.

Nonetheless, recent studies have emphasized that Principal Component Analysis (PCA) was originally designed for continuous variables, whilst Multiple Correspondence Analysis (MCA) should be preferred to analyze qualitative, categorical and binary variables (Ferrant (2014)). Conversely to PCA, which estimates the absolute weight of each component, MCA studies their relative frequencies.

Constructing composite indicators using MCA involves building an indicator matrix of 1 and 0 values which describes the various gender norms under analysis. Importantly, every variable is disaggregated into mutually exclusive and exhaustive dummies, one for each category. In other words, each woman (or row) will have 1 in one and only one category (or column), and 0 in all the others. Let's consider a matrix with Q questions, C_q categories for question q, and C total categories. The main difference between PCA and MCA is that in the latter every row has to answer "1" to one category in each question, that is, the categories represent all possible answers for the given question q. Consequently, each row in the matrix must have a total of Q. In the former, instead, the redundant category for each question is omitted (Booysen *et al.* (2008)).

For the aforementioned reasons, we undertake our analysis using MCA, but we test the robustness of our results using both PCA and equal weights. Our composite indices of gender norms are given by:

$$Y_i^j = A_{i1}W_1^j + A_{i2}W_2^j + ... + A_{iq}W_q^j \tag{2.1}$$

where Y_i^j is the value of composite index Y (i.e. Role of Women Index, RWI; Freedom of Mobility Index, FMI; and Decision-Making Power Index, DMPI) for individual i using the weighting technique j (namely, MCA, PCA and equal weights), A_{iq} is the answer

of individual i to question q and W_q^j is the weight obtained using the j methodology applied to question q.[5]

2.4 Empirical Framework

2.4.1 Empirical Methodology

We use the three constructed composite indicators Y_i^j (Role of Women Index, RWI; Freedom of Mobility Index, FMI; and Decision-Making Power Index, DMPI) through the weighting technique j as our dependent variable in order to estimate the causal effect of international return migration on discriminatory social norms in Jordan. The regression specification is:

$$Y_i^j = \alpha_0 + \alpha_1 R_i + \alpha_2 X_i + \epsilon_i \tag{2.2}$$

Y_i^j is the gender norms index: RWI_i is the self-perceived role of women by individual female i, where 0 means high discrimination against women and 1 implies perfect gender equality. FMI_i is the self-perceived freedom of mobility by individual female i, where 0 means no freedom and 1 implies perfect freedom. $DMPI_i$ is the self-perceived decision making power by individual female i, where 0 means no power and 1 implies perfect power. R_i is the return migration variable, a dummy being 1 if the individual has at least an international returnee member from an Arab country within the household. X_i is a vector of individual female's characteristics (including age, age squared, marital and employment status, educational attainment, mother's education, a dummy for having at least one child, a dummy for living in a rural area, a dummy for being married to

[5]Table A.1 in Appendix lists the 10 variables that are used to construct the Role of Women Index (RWI) and the respective weights using PCA, MCA and average mean. Greater weights indicate higher level of female empowerment. Looking at the MCA results, it's worth to note that those components which reflect greater female empowerment contribute positively to the gender equality index, while components that reflect discriminatory social norms contribute negatively. Similarly, Tables A.2 and A.3 present the variables and the correspondent weights for the Freedom of Mobility Index (FMI) and for the Decision-Making Power Index (DMPI).

a relative), household characteristics and governorate dummies. ϵ_i is a zero-mean error term.

Selection of migrants is an important concern, since individuals moving across borders are not randomly drawn from the Jordanian population, but they may be self-selected on the basis of unobservable characteristics. Although we control for an array of observable characteristics related to the migrant's and their household's observable characteristics such as age, education, employment, and rural residence, there are potentially unobservable characteristics that might affect the migration decision. For example, open-minded people may be more likely to engage in international migration as well as bear more gender-equal attitudes towards women. At the same time, return migrants might also be a non-random group amongst migrants (Wahba (2015)). For instance, unsuccessful migration experiences can affect simultaneously the likelihood of returning back home and negative attitudes and behaviors against left-behind women. Therefore, in order to control for this double selectivity and correctly identify our full model, two valid exclusion restrictions for the emigration and return decisions are needed.

2.4.2 Identification

For the selection into emigration, we follow Wahba & Zenou (2012) and Wahba (2015) and use historical real oil prices. This variable has a substantial influence on the scale of emigration towards oil-producing countries which adopt employer-driven immigration systems and respond to fluctuations in local economic conditions. While historical real price of oil could affect migration flows by attracting more migrants towards oil-producing countries, it has no effect on the level of gender inequality in Jordan. Specifically, we adopt average oil prices for when the potential migrant individual was 20 years old, arguing that this is the time in which individuals enter in the labour market. In fact, military conscription at the age of 18 was compulsory for all boys with a minimum term of 2 years, until 1999, when it still became voluntary for 2 years. We confirm our hypothesis by exploiting a variable on the age at first job included in the JLMPS. Indeed, the average age at first job in our sample is exactly 20 years old. Age of current migrants, however, is not provided in the JLMPS. Hence for them we take historical oil prices for the year of first cross-border movement.

Figure 2.1 shows the correlation between historical real oil price and the number of Jordanian emigrants by year. As robustness, we also adopt oil prices for when the potential migrant was 24 years old, which is the normal age of the end of university in Jordan.

FIGURE 2.1: Emigrants by year and historical real oil price

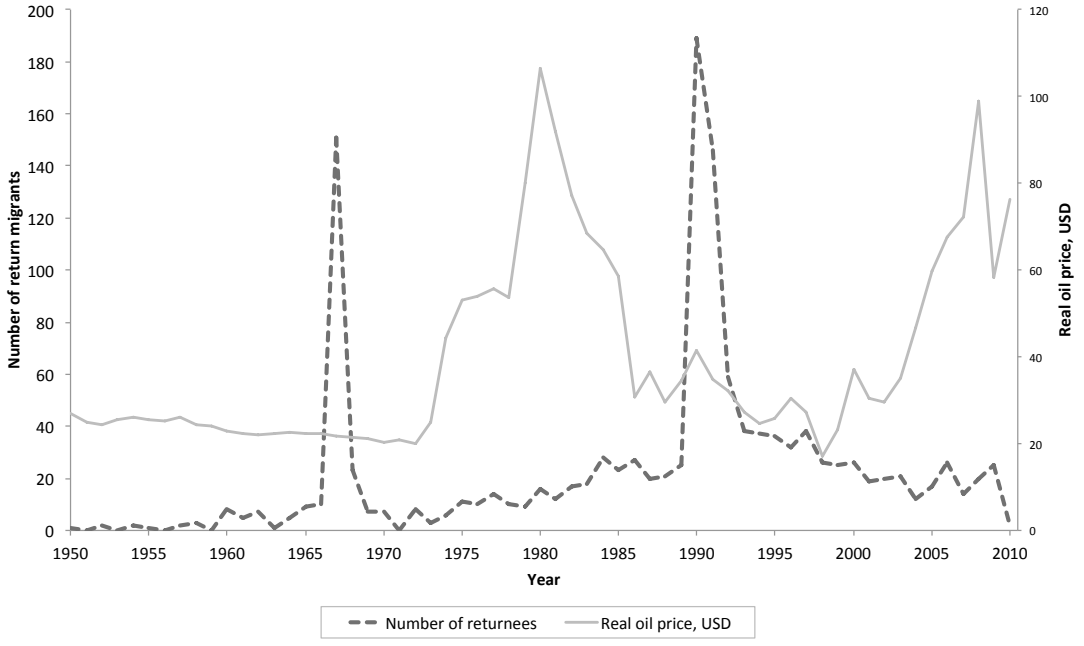
Source: JLMPS, 2010.

It is worth noting that our instrument would be invalid if variations in historical real oil prices affected also the employment of Jordanian women, and consequently female empowerment in the society. However, we can safely reject this hypothesis, since Jordan is a non-oil country. We are examining gender norms in 2010, while migration took place on average more than 20 years ago. Nonetheless, concerns of violation of the exclusion restriction might still remain if there is a strong serial correlation between the evolution of historical real oil prices and gender norms over time. In particular, a potential caveat may be the simultaneous presence of the declining trend in emigrants seen in the 1980s and 1990s and an overall declining trend of discriminatory norms over time due to a general advancement of the society. However, analyzing Figure 2.1, we can reject this

hypothesis, since we do observe an increase in migration flows again in the 2000s, caused by rising real oil prices, and we do not try to explain trends in discriminatory norms but rather differences between return and non-migrants households in 2010.

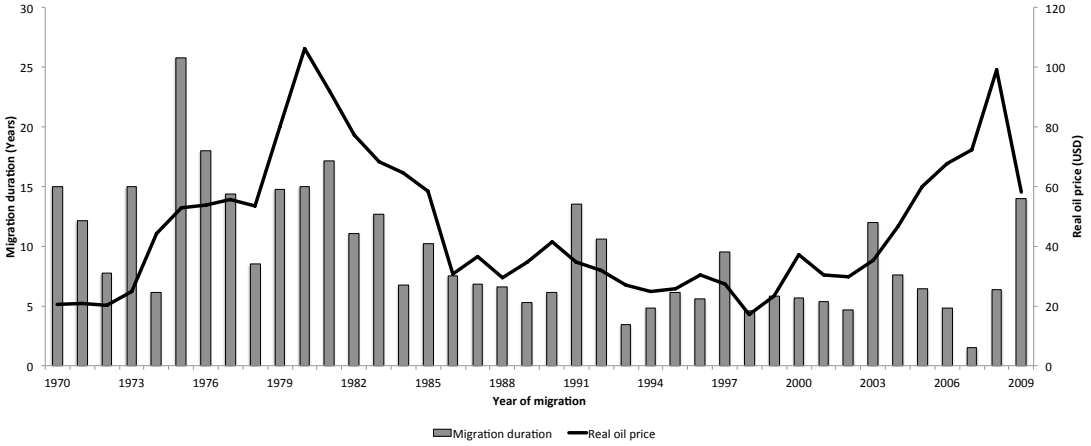
A last potential threat to the validity of this exclusion restriction is if historical real oil prices have a direct impact on return migration. The main concern here is whether higher oil prices would change the nature of migration from temporary to permanent migration i.e. lead to no return migration. However, it is well-documented that Jordanian emigration towards the neighboring Gulf is temporary in nature (David & Marouani (2013)). It is the norm that migrants to the Gulf States would recive short-term contracts for 2 or 3 years but those contracts could be renewable. Moreover, a recent study by McKenzie *et al.* (2014) finds that shocks in destination country GDP have no effect on the duration of the migration experience of Filipino migrants (a large proportion of which works in the Gulf). Figure 2.2 shows that indeed international real oil prices are uncorrelated with the magnitude of return migration from Arab countries to Jordan in the period under analysis and Figure 2.3 also reassures us that there is no correlation between oil prices at the time of migration and overseas migration duration.

FIGURE 2.2: Return migrants by year and historical real oil price



Source: JLMPS, 2010.

FIGURE 2.3: Year of migration and migration duration

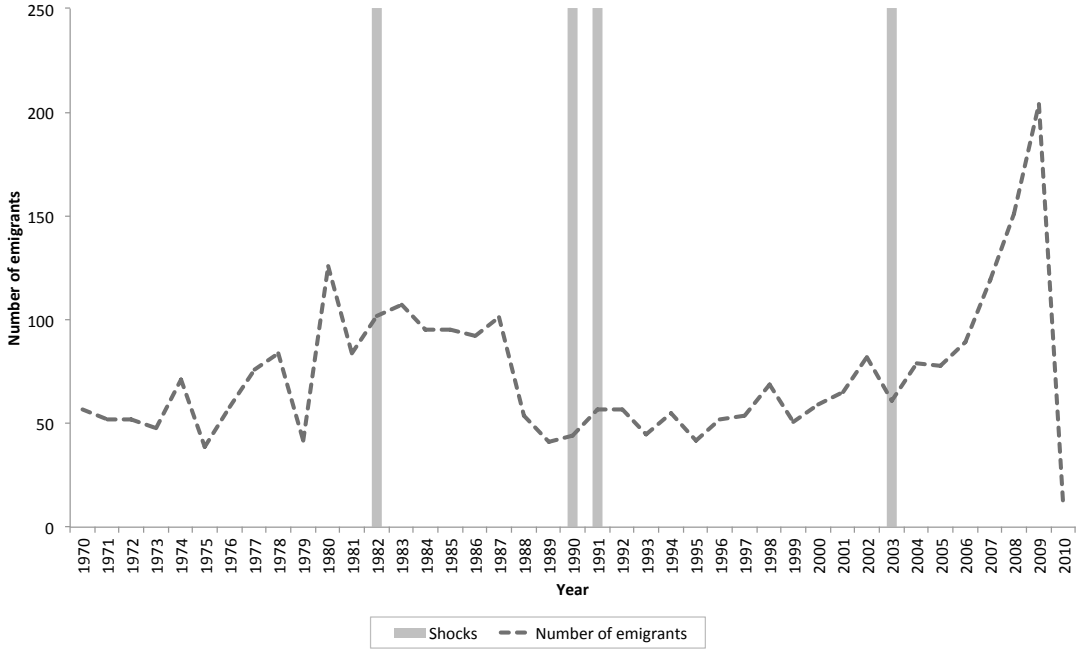


Source: JLMPS, 2010.

For the selection into return migration, we construct a dummy including several exogenous shocks that induced Jordanian emigrants to come back to their homes. Firstly, we consider the 1967 Arab-Israeli war, which was fought in only six days by Israel and its neighboring countries, but led to thousands of displaced individuals from the war zones. Secondly, we take into account the First Lebanon War of 1982, where thousands of both civilians and military forces died, pushing many labour immigrants to return to their origin countries. Iraq's invasion of Kuwait, instead, led to the First Gulf War in 1990-1991, which made inevitable a huge counter-diaspora of migrants towards their home communities. Finally, the Iraq war in 2003 which has lead to the outflows of migrants. We construct a dummy variable that captures migrants' exposure to those shocks in affected countries.

Remarkably, these shocks did not affect the probability of emigration, but only the destination of migration. Figure 2.4 shows graphically that our chosen military shocks are not associated with a decrease in the magnitude of emigration from Jordan. We argue that past shocks abroad do not have any impact on gender norms at origin in 2010. Finally, it is important to remember that our measures of gender norms captures a number of aspects beyond the labor market such as freedom of mobility, and equality of treatment as we document in more detail below.

FIGURE 2.4: Emigrants by year and shocks



Source: JLMPS, 2010.

2.4.3 Econometric Model

Exploiting the unique information on both returnees and current migrants included in the JLMPS, we are able to estimate the following selections equations:

$$M_k = \beta_0 + \beta_1 O_k + \beta_2 Z_k + \mu_k \tag{2.3}$$

$$R_k = \gamma_0 + \gamma_1 S_k + \gamma_2 C_k + n_k, |M_k = 1 \tag{2.4}$$

In equation 2.3, M_k is the probability of individual k being an emigrant, whilst O_k is the international oil price variable. Controls Z_i for the potential migrants and their household include the level of education, the governorate of interview and the employment status before migration. In the return migration equation (2.4), R_k is the probability of being a return migrant, conditional on being an emigrant, and S_k represents the shock

variable, constructed as previously explained. Controls C_i include the migrant's age, age squared, educational attainment, regional characteristics and the destination of the migrants. As Table A.4 in the Appendix shows returnees are different from non-migrants, so we explicity control for those observable differences.

The three equations above (equations 2.2 to 2.4) are estimated simultaneously using Conditional Mixed Process (CMP). Exploiting limited-information maximum likelihood (LIML), CMP allows the estimation of a multi-equation mixed system in a Seemingly Unrelated Regressions (SUR) framework, where regressors seem unrelated, although their errors can be correlated. As underlined by Roodman (2011), in a SUR set-up we can estimate parameters equation-by-equation, but their simultaneous assessment is more efficient since it considers the full covariance structure, and each equation can vary in sample size.

2.5 Econometric Results

2.5.1 Return Migration and Gender Norms

Our benchmark results are provided in Table 2.2. When selection issues are not accounted for, having a returnee in the household seems to have a negative, albeit insignificant, impact on the self-perceived role of women (column 1). However, the negative coefficient of return migration becomes statistically significant once we control for selections into emigration and return migration (column 3). This stresses the importance of taking into consideration not only the fact that emigrants are not a random sample of the population, but also that those migrants who return home are also selected on the basis of unobservables.[6]

Our dependent variable is a composite index which aggregates together several indicators on women's perception of their own status in the society compared to men. A value towards 0 implies that women think their position should be greatly different than the

[6]Table A.5 in Appendix estimate a simple Heckman model with sample selection for emigration. Results suggest the need for correcting for selection, as well as the validity of our exclusion restriction.

TABLE 2.2: Return migration and the Role of Women Index (RWI)

	(1)	(2)	(3)
RWI			
Return migrant	-0.005	-0.051	-0.062
	(0.005)	(0.037)	(0.030)**
Employment status	0.020	0.023	0.022
	(0.004)***	(0.005)***	(0.005)***
Basic education	0.011	0.015	0.017
	(0.006)	(0.007)**	(0.007)**
Secondary education	0.020	0.029	0.029
	(0.008)***	(0.010)***	(0.009)***
Post-secondary education	0.028	0.039	0.050
	(0.006)***	(0.011)***	(0.013)***
Married	-0.008	-0.008	-0.008
	(0.009)	(0.009)	(0.009)
Consanguineous marriage	0.002	0.002	0.002
	(0.004)	(0.004)	(0.004)
Rural area	0.002	0.002	0.003
	(0.004)	(0.004)	(0.004)
Age	0.003	0.003	0.003
	(0.001)**	(0.001)**	(0.002)**
Age squared	-0.003	-0.003	-0.004
	(0.002)	(0.002)	(0.002)*
Children	0.011	0.012	0.012
	(0.008)	(0.008)	(0.008)
Mother's education	0.004	0.004	0.004
	(0.002)**	(0.002)**	(0.002)**
Probability of Emigration			
Oil price		0.002	0.001
		(0.000)***	(0.000)***
Probability of Return Migration			
Shocks			0.148
			(0.009)***
sigma_1		-0.835	-0.874
		(0.005)***	(0.006)***
sigma_2			-1.100
			(0.014)***
rho_12		0.207	0.222
		(0.161)	(0.122)*
rho_13			0.223
			(0.103)**
rho_23			1.388
			(0.037)***
N	4,098	4,098	4,098

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

one of men, whilst a value towards 1 means that women acknowledge the importance of equality across genders. Overall, our findings in column 3 show that women with returnee family members are less likely to believe that men and women should have an equal position in the society. This indeed suggests a transfer of discriminatory norms from destination countries, a possibility that we will examine further below.

It is important to note that historical international real oil price is a good predictor of the probability of having emigrated in that specific year, while our shock dummy efficiently predicts the likelihood of returning home.[7] Moreover, controls have the expected sign. In particular, being employed or educated improves women's chances to carry more equal social norms, as well as mother's education, since it is a proxy for gender equality in the household.[8] Age is also correlated with greater empowerment, as young girls are allowed less freedoms, but until a certain threshold, after which women return confined by traditional patriarchal norms.

In order to test whether our findings are driven by the use of Multiple Correspondence Analysis (MCA), we run the specifications using both Principal Component Analysis (PCA) and assigning equal weights. Table 2.3 shows the robustness of our results to the different weighting techniques.

It may be the case that estimates are valid for the composite index of the self-perceived role of women only for a fortuitous coincidence. To rule out this hypothesis, we test the robustness of our results by adopting a new index of gender norms. Specifically, we look at women's freedom of mobility (FMI) as an additional dimension of female empowerment (Table 2.4). The negative impact of return migration on gender equality at family level in Jordan is confirmed.

[7] As a robustness check, we run a simple Heckman selection, Table 15, where both the historical oil price variable and the shocks variable are found to be significant.

[8] Since women's employment status may be endogenous with our proxies of gender norms, specifications have also been undertaken without the employment variable, confirming the robustness of our findings. In addition, the level of education of the head of the household may also be important in establishing the extent of patriarchal discriminatory norms in place in the family. For this reason, we test the robustness of our results by including the education attainment of the head of the household as well. Finally we also include assets (see next section) to control for houeshold wealth. All the results are robust and are available from the authors.

TABLE 2.3: The Role of Women Index using different weighting techniques

	(1)	(2)	(3)
RWI	***mca***	***pca***	***equal***
Return migrant	-0.062	-0.085	-0.089
	(0.030)**	(0.033)**	(0.038)**
Probability of Emigration			
Oil price	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration			
Shocks	0.148	0.148	0.148
	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.874	-0.874	-0.874
	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.100	-1.100	-1.100
	(0.014)***	(0.014)***	(0.014)***
rho_12	0.222	0.262	0.218
	(0.122)*	(0.120)**	(0.107)**
rho_13	0.223	0.252	0.210
	(0.103)**	(0.102)**	(0.094)**
rho_23	1.388	1.388	1.388
	(0.037)***	(0.037)***	(0.037)***
N	4,098	4,098	4,098

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

Table 2.5 introduces a further dimension of gender equality. Previous research has often regarded decision-making power within the family as a key aspect of female empowerment (Assaad *et al.* (2014a)), focusing specifically on married women and their bargaining power against other household members, usually husbands. This dimension is notably relevant for our paper since a strand of the literature pays particular attention to the effect of migration on the decision-making power of left-behind women. For instance, the recent work by Antman (2015) suggests that migrant husbands can hardly monitor the decision-making and resource allocation at home, thereby increasing left-behind wives' responsibilities and empowerment.[9] However, although during the migration experience the absence of husbands can increase wives' responsibilities, this may be merely due to a change in household composition and not to a real transfer of positive gender norms. Most men may take back their patriarchal roles when they return back

[9]Spouse strategic responses to changes in monitoring have been confirmed by Ashraf (2009). Exploiting a randomized experiment in the Philippines, Ashraf finds that spousal control affects the decision-making power within the household.

TABLE 2.4: Return migration and the Freedom of Mobility Index (FMI)

	(1)	(2)	(3)
FMI	***mca***	***pca***	***equal***
Return migrant	-0.131	-0.140	-0.131
	(0.045)***	(0.043)***	(0.045)***
Probability of Emigration			
Oil price	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration			
Shocks	0.148	0.148	0.148
	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.899	-0.899	-0.899
	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.138	-1.138	-1.138
	(0.015)***	(0.015)***	(0.015)***
rho_12	0.304	0.336	0.303
	(0.095)***	(0.095)***	(0.095)***
rho_13	0.282	0.318	0.282
	(0.092)***	(0.092)***	(0.092)***
rho_23	1.387	1.387	1.387
	(0.037)***	(0.037)***	(0.037)***
N	4,098	4,098	4,098

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

home (De Haas & Van Rooij (2010)), or even stream disciminatory gender norms, as suggested by our previous results. In order to test this hypothesis, we restrict the sample to only married women, and check whether those whose husbands are returnees have a negative impact of their decision-making power. Interestingly, estimates suggest the consistency of our previous findings, namely a transfer of discriminatory norms against women from return migration. Finally, we control for whether the women themselves migrated and again find that all our results hold.

As a robustness check, we use single variables rather than composite indices. We examine several variables to capture our three types of indicators. Women were asked about their opinions as follows: 1) "Do you think women should get leadership positions in the society"; 2) "Can you go to the doctor for treatment without permission"; 3) "Can you visit a relative, friend or neighbor without permission"; 4) "In your family, do you usually have the final say in making large household purchases"; 5) "In your family,

TABLE 2.5: Return migration and the Decision Making Power Index (DMPI)

	(1)	(2)	(3)
DMPI	***mca***	***pca***	***equal***
Return migrant	-0.153	-0.151	-0.148
	(0.082)*	(0.066)**	(0.088)*
Probability of Emigration			
Oil price	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration			
Shocks	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***
sigma_1	-0.953	-0.953	-0.952
	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.207	-1.207	-1.207
	(0.015)***	(0.015)***	(0.015)***
rho_12	0.243	0.246	0.238
	(0.149)	(0.139)*	(0.155)
rho_13	0.237	0.263	0.232
	(0.135)*	(0.133)**	(0.140)*
rho_23	1.388	1.388	1.388
	(0.037)***	(0.037)***	(0.037)***
N	3,773	3,773	3,773

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

do you usually have the final say in taking the children to the doctor." As Table 16 in the Appendix shows, women in households where there are returnees are more likely to experience negative impact for all outcomes compared to women in households with no migration experience.[10] To quantify our results so far, Table 19 in the Appendix shows that less than 0.5 percent of women in households with a return migrant can visit a doctor without permission compared to 10 percent of women in non-migrant households. Similarly, less than 0.5 percent of women in return migrant's households can make large household purchases decisions compared to 11 percent of women in non-migrant households.

[10]In addition, we also test the robustness of our findings to a different matching age for the real price of crude oil in the selection into emigration equation. Specifically, we associate to each individual in our sample the historical real price of crude oil at the age of 24, which is the standard age for the end of university education in Jordan. This may be an alternative age at which the average Jordanian enters in the labour market, and hence faces the choice between working within the country or migrating abroad. Table A.8 in Appendix suggests again the strong robustness of our results.

Summing up, we consistently find a negative impact of return migration on gender norms in Jordan. According to our hypothesis, returnees bring back home gender norms assimilated during their stay at receiving countries. Hence, to understand why the relationship between returnees and gender norms in Jordan seems to be negative, we need to focus on destinations and their gender norms. As previously mentioned, we restricted our analysis to migration towards the Arab region. Gender norms in Arab countries are overall discriminatory against women. A 2010 Freedom House report argues that women throughout the Middle East continue to face systematic discrimination in both laws and social customs (Kelly (2010). According to the same report, political and civil unrest in some regions have even hindered women's condition over the last decade. For example, gender-based violence in Iraq worsened women's livelihoods by forcing them to stay home, away from education and employment.

However, even within the Arab region, countries have different degrees of discriminatory social norms against women. We exploit this heterogeneity in gender inequality by defining countries on the basis of their degree of conservatism. In order to proxy for the underlying gender norms in practice in each country, we make use of the 2007 CIRI Human Rights Data Project, which includes two indices measuring the political and social rights that women have in each country (Cingranelli & Richards (2010)).[11] Clearly, these rights can be interpreted as opportunities open to women rather than female outcomes (which is instead the case for other cross-country gender indices, such as the Global Gender Gap by WEF or the Gender Inequality Index by UNDP, including educational and employment dimensions as well). We therefore calculate the average of the two CIRI political and social indices, and distinguish destination countries between those having lower average values than Jordan and those with similar or greater values.[12]

Regardless of the weighting technique adopted and controlling for both selections into emigration and return migration, estimates confirm that, whilst migrants towards countries with similar level of discrimination do not matter, having a returnee from more

[11] Data are from 2007 since the indicator on women's social rights has been collected only in that year, but it is instead key for our analysis, as it measures several social norms such as women's right to equal inheritance, right to participate in social, cultural, and community activities, right to enter into marriage on a basis of equality with men, and so forth.

[12] Approximately 11 percent of the returnees in our sample lived in countries with more conservative gender norms than Jordan, which include: Bahrain, Egypt, Kuwait, Lebanon, Lybia, Palestine, Qatar, Saudi Arabia, United Arab Emirates, and Yemen. Conversely, countries with similar gender norms than Jordan represents are: Algeria, Iraq, Morocco, Oman, Sudan, Syria, and Tunisia.

conservative countries drives our finding of a significant and negative impact of return migration on the self-perceived role of women (Table 2.6). Results are similar using the Freedom of Mobility Index (FMI) or the Decision Making Power Index (DMPI) (see Tables 2.7 and 2.8 respectively). This suggests that the impact of international migration on discriminatory social institutions depends on the level of gender inequality in destination countries.

TABLE 2.6: Return migration by destination and the Role of Women Index (RWI)

	(1)	(2)	(3)	(4)	(5)	(6)
	More conservative destinations			***Conservative destinations***		
	mca	***pca***	***equal***	***mca***	***pca***	***equal***
Return migrant	-0.077	-0.103	-0.107	0.153	0.147	0.121
	(0.031)**	(0.035)***	(0.040)***	(0.088)*	(0.111)	(0.103)
Probability of Emigration						
Oil price	0.001	0.001	0.001	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration						
Shocks	0.148	0.148	0.148	0.148	0.148	0.148
	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.874	-0.874	-0.874	-0.874	-0.874	-0.874
	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.100	-1.100	-1.100	-1.100	-1.100	-1.100
	(0.014)***	(0.014)***	(0.014)***	(0.014)***	(0.014)***	(0.014)***
rho_12	0.284	0.332	0.272	-0.661	-0.614	-0.362
	(0.128)**	(0.123)***	(0.111)**	(0.331)**	(0.369)*	(0.265)
rho_13	0.279	0.307	0.255	-0.485	-0.427	-0.295
	(0.107)***	(0.104)***	(0.097)***	(0.212)**	(0.248)*	(0.230)
rho_23	1.387	1.387	1.388	1.387	1.387	1.387
	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***
N	3,993	3,993	3,993	3,365	3,365	3,365

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

TABLE 2.7: Return migration by destination and the Freedom of Mobility Index (FMI)

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	More conservative destinations			***Conservative destinations***		
	mca	***pca***	***equal***	***mca***	***pca***	***equal***
Return migrant	-0.129	-0.137	-0.129	-0.133	-0.142	-0.131
	(0.046)***	(0.043)***	(0.046)***	(0.098)	(0.093)	(0.099)
Probability of Emigration						
Oil price	0.001	0.001	0.001	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration						
Shocks	0.148	0.148	0.148	0.148	0.148	0.148
	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.897	-0.897	-0.897	-0.882	-0.882	-0.882
	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.135	-1.136	-1.135	-1.114	-1.114	-1.114
	(0.015)***	(0.015)***	(0.015)***	(0.015)***	(0.015)***	(0.015)***
rho_12	0.298	0.328	0.298	0.270	0.315	0.267
	(0.096)***	(0.096)***	(0.096)***	(0.236)	(0.242)	(0.236)
rho_13	0.289	0.324	0.289	0.250	0.289	0.246
	(0.097)***	(0.097)***	(0.097)***	(0.222)	(0.224)	(0.223)
rho_23	1.387	1.387	1.387	1.388	1.388	1.388
	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***
N	3,993	3,993	3,993	3,365	3,365	3,365

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

TABLE 2.8: Return migration by destination and the Decision Making Power Index (DMPI)

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	More conservative destinations			***Conservative destinations***		
	mca	***pca***	***equal***	***mca***	***pca***	***equal***
Return migrant	-0.168	-0.151	-0.163	0.098	0.008	0.086
	(0.087)*	(0.067)**	(0.093)*	(0.223)	(0.207)	(0.233)
Probability of Emigration						
Oil price	0.001	0.001	0.001	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration						
Shocks	0.148	0.148	0.148	0.148	0.148	0.148
	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.946	-0.946	-0.946	-0.916	-0.916	-0.916
	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.194	-1.194	-1.194	-1.147	-1.146	-1.147
	(0.015)***	(0.015)***	(0.015)***	(0.014)***	(0.014)***	(0.014)***
rho_12	0.254	0.229	0.247	-0.042	0.036	-0.007
	(0.156)	(0.141)	(0.163)	(0.397)	(0.429)	(0.408)
rho_13	0.273	0.265	0.269	-0.178	-0.024	-0.159
	(0.144)*	(0.140)*	(0.149)*	(0.353)	(0.393)	(0.359)
rho_23	1.387	1.387	1.388	1.387	1.387	1.387
	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***
N	3,675	3,675	3,675	3,114	3,114	3,114

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

Although we control for emigration and return migration, another potential selection is the country of destination. Finding a suitable instrument that affects the migration destination but not the emigration decision (and vice versa) is challenging. It has to be noted that our focus here is on temporary emigration to other Arab countries where migration is indeed determined by wage differentials and tends to be demand driven.[13] Moreover, our econometric specification controls for characteristics such as mother's education and consanguineous marriage, which are a proxy for the conservatorism of the family, and hence partially take into account the gender norms of the migrant before moving abroad. We also look at the difference in means for these two variables for male returnees from more and less conservative destinations. We find no statistical difference between the likelihood of consanguineous marriage and maternal education of returnees from destinations with different levels of conservatorism. Consequently this bias, if it exists, is expected to be positive but small.

2.5.2 Return Migration and Gender Outcomes

Our results so far show that return migration fuels the gender gap. In particular, conservative and very traditional views regarding women are perpetuated through migration. As shown, those gender norms are captured not only through female perceptions of their own roles, but also in their freedom of mobility and their decision making. In order for us to understand further the extent to which return migration affects gender inequalities, we examine several women's outcomes.

We use the same empirical strategy as before where we estimate multi-equation models in which we control for emigration and return migration to study the impact of return migration on our outcome of interest.

$$F_{io} = \alpha_0 + \alpha_1 R_i + \alpha_2 V_i + \epsilon_i \tag{2.5}$$

[13] See McKenzie *et al.* (2014) on how migration to the Gulf States is demand driven.

$$M_k = \beta_0 + \beta_1 O_k + \beta_2 Z_k + \mu_k \tag{2.6}$$

$$R_k = \gamma_0 + \gamma_1 S_k + \gamma_2 C_k + n_k \tag{2.7}$$

F_{io} is the gender outcome of interest detailed below where $o = 1, ..., 4$. V_i are controls capturing the women' s and households characteristics. As before, in equation 2.6 M_k is the probability of individual k being an emigrant, whilst O_k is the historical international oil price variable. Controls Z_i for the potential migrants and their household. In the return migration equation 2.7, R_k is the probability of being a return migrant, S_k represents the shock variable, and C_i is controls related to the migrant.

The first outcome of interest, $o = 1$, is female employment. Although women are on average highly educated, with more than 40 percent having at least a secondary degree, only 14 percent of them is formally employed (see Table 2.1). One of the main causes of this paradox lies in the existence of gender norms which set what is deemed acceptable for women, limiting their employment at full capacity. On the one hand, female limited geographical mobility restrict women's job opportunities, but also employers' perception and low demand for female workers create further hurdles to women's access to the labour market. Indeed, in a recent randomized control trial in Jordan, Groh *et al.* (2016) found that employers often express explicit preferences for male workers, since women may experience problems interacting with customers due to culture.

In order to test the hypothesis of a link between return migration and female employment, we focus on female labour force participation which is preferred to the simple probability of employment since most women in Jordan tend to work for the public sector, and are willing to queue and stay unemployed for a while waiting a governmental job (Assaad *et al.* (2014b)). We also restrict our sample to 291 unmarried women, as wives do not usually work in Jordanian society, and keeping them in the analysis would

bias our estimates.[14] In order to control for household income/wealth, we create an asset index, constructed as exogenously as possible by aggregating information about housing characteristics. Inspired by Filmer & Pritchett (2001), our asset index includes overall area and ownership of the accommodation, whether there is piped water, a bathroom, a fireplace/heater, water heating and whether the house is attached to the public sewage.[15] [16] Once controlling for both selections into emigration and return migration, Table 2.9 indeed shows that having a returnee in the household reduces the likelihood of unmarried women to be in the labour force (column 3). Distinguishing between returnees from more conservative destination countries (column 4) and returnees from countries with similar gender norms than Jordan (column 5) suggests the transfer of opposite norms.

Women's education is a key strategy for reducing poverty and contributing to economic development by improving the productive capacities of the labor force. Our second outcome, $o = 2$, relates therefore to female education. We look at how women's education interacts with return migration. Although Jordan has overall relatively high female education levels, international migration may still affect the probability of a girl dropping out from school if her father has been exposed to highly discriminatory gender norms during his migration experience. Remarkably, in our dataset we are able to identify the likelihood of daughters leaving education for family reasons due to customs and traditions. We condition here on girls who dropped out of school for family reasons and end up with 90 girls. Although this is a small select sample, it still provides us with suggestive evidence on the impact of return migration on female outcomes.

Controlling again for wealth, Table 2.10 suggests that returnees are more likely than non-migrant fathers to make their daughters drop-out from school due to patricarchal gender norms. In particular, column 4 shows that findings are driven by returnees from more conservative Arab destinations (whilst the coefficient of return migration from countries with similar gender norms than Jordan in column 5 is not significant).

[14] As stressed by Assaad *et al.* (2014b), discrimination against married women take place directly at the hiring level, since employers often assume that wives' responsibilities would prevent them from committment at work, and hence they prefer to hire men and unmarried women. As a consequence, women themselves tend to stop looking for a job after marriage and withdraw from the labor force.

[15] The JLMPS database also provides a proxy for household wealth, which is measured by aggregating several housing characteristics and appliances. Results are also robust to this alternative indicator of wealth and are available from the authors.

[16] For robustness we re-run all specifications in the previous section on gender norms controlling for the asset index. Results are comparable and available upon request.

TABLE 2.9: Return migration and female labour force participation

	(1)	(2)	(3)	(4)	(5)	(6)
	All destinations	**All destinations**	**All destinations**	**More conservative**	**Conservative**	**All destinations**
LFP	***Unmarried***	***Unmarried***	***Unmarried***	***Unmarried***	***Unmarried***	***Married***
Return migrant	0.075	-0.282	-0.353	-0.346	0.883	-0.094
	(0.066)	(0.164)*	(0.151)**	(0.157)**	(0.590)	(0.060)
Probability of Emigration						
Oil price		0.002	0.001	0.001	0.001	0.001
		(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration						
Shocks			0.152	0.152	0.152	0.152
			(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1		-0.830	-0.868	-0.868	-0.868	-0.868
		(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.005)***
sigma_2			-1.103	-1.103	-1.103	-1.103
			(0.015)***	(0.015)***	(0.015)***	(0.015)***
rho_12		0.486	0.596	0.573	-0.203	0.045
		(0.206)**	(0.208)***	(0.222)***	(0.573)	(0.082)
rho_13			0.441	0.454	-0.591	0.101
			(0.140)***	(0.151)***	(0.599)	(0.078)
rho_23			1.367	1.367	1.367	1.366
			(0.038)***	(0.038)***	(0.038)***	(0.038)***
N	291	291	291	291	291	291

Notes. (I) Dep. var. is women's participation to the labour force. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 13,943 individuals. (IV) Data source: JLMPS, 2010.

TABLE 2.10: Return migration and daughters' dropout from education

	(1)	(2)	(3)	(4)	(5)
	All destinations	**All destinations**	**All destinations**	**More conservative**	**Conservative**
Dropout					
Returnee father	0.186	1.063	0.861	0.861	-0.089
	(0.134)	(0.500)**	(0.358)**	(0.358)**	(0.082)
Probability of Emigration					
Oil price		0.002	0.001	0.001	0.001
		(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration					
Shocks			0.152	0.152	0.150
			(0.009)***	(0.009)***	(0.009)***
sigma_1		-0.831	-0.869	-0.869	-0.890
		(0.005)***	(0.005)***	(0.005)***	(0.006)***
sigma_2			-1.104	-1.104	-1.119
			(0.015)***	(0.015)***	(0.015)***
rho_12		-1.537	-1.129	-1.129	0.102
		(0.490)***	(0.414)***	(0.414)***	(0.305)
rho_13			-0.562	-0.562	0.119
			(0.358)	(0.358)	(0.346)
rho_23			1.366	1.366	1.361
			(0.038)***	(0.038)***	(0.038)***
N	90	90	90	90	90

Notes. (I) Dep. var. is the probability of a daughter of dropping out from education due to customary and traditional values. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 13,943 individuals. (IV) Data source: JLMPS, 2010.

A further socioeconomic dimension which is deeply interlocked with social norms is women's fertility (Munshi & Myaux (2006)). While at the aggregate level high fertility rates are detrimental to the economy, since they reduce available resources and jobs opportunities, at household level having numerous children is often associated with lower female empowerment, as mothers may not get further education or employment due to the large family size. The dependent variable in columns 1 to 3 of Table 2.11 is hence the probability of having at least one child ($o = 3$).

Results suggest that wives with a returnee husband are more likely to be mothers. Column 4 shows the relationship between returnee husbands and the number of children ($o = 4$), which is instead a choice of the couple. A concern for this analysis may be that returnees have higher incomes and therefore can afford having more children. For this reasons, all presented specifications include our constructed asset index. All the results are robust to the inclusion of the different wealth indicators (ours and that provided directly by the JLMPS) and to the exclusion of a wealth proxy.[17] Remarkably, results are driven again by returnees from more conservative countries (column 5), while returnees from countries with similar discriminatory levels than Jordan do not appear to significantly modify left-behind members' social norms. To sum up, our findings show that return migration affect not only perception but also women's outcomes.

We conclude by quantifying the impact of return migration on the selected female outcomes by calculating their predicted values for women with a returnee household member and women with no migration experience in the family. Table 2.12 shows that having a returnee in the family decreases women's probability of being in the labour force by 11 percent. Similarly, daughters who dropped out of school for traditional values are six times more likely to have a returnee father than a non-migrant father. Finally, wives of returnees are more likely not only to be mothers, but also to have one more child compared to wives of stayers, controlling for income.

[17] Results are available upon request.

TABLE 2.11: Return migration and wives' fertility

	(1)	(2)	(3)	(4)	(5)	(6)
	All destinations	**All destinations**	**All destinations**	**All destinations**	**More conservative**	**Conservative**
Fertility						
Returnee husband	-0.006	0.497	0.370	0.798	0.892	1.090
	(0.013)	(0.050)***	(0.072)***	(0.404)**	(0.419)**	(1.148)
Probability of Emigration						
Oil price		0.002	0.001	0.001	0.001	0.001
		(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration						
Shocks			0.147	0.148	0.148	0.148
			(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1		-0.832	-0.874	-0.874	-0.874	-0.874
		(0.005)***	(0.005)***	(0.006)***	(0.006)***	(0.006)***
sigma_2			-1.100	-1.100	-1.100	-1.100
			(0.015)***	(0.014)***	(0.014)***	(0.014)***
rho_12		-0.970	-0.792	-0.199	-0.235	-0.206
		(0.083)***	(0.116)***	(0.106)*	(0.108)**	(0.265)
rho_13			-0.525	-0.217	-0.240	-0.258
			(0.086)***	(0.101)**	(0.104)**	(0.297)
rho_23			1.383	1.387	1.387	1.387
			(0.037)***	(0.037)***	(0.037)***	(0.037)***
N	3,222	3,222	3,222	3,222	3,222	3,222

Notes. (I) Dep. var. in columns 1 to 3 is the probability of having at least one child, whilst dep. var in columns 4 to 6 is the number of children. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 13,943 individuals. (IV) Data source: JLMPS, 2010.

TABLE 2.12: Average predicted values

	With returnee	Without migrant	Difference (%)	P-value
Probability of being in the labour force	-0.111	0.246	-1.45	0.00
Probability of dropping out from education	0.565	-0.114	-5.93	0.00
Probability of having at least one child	1.169	0.819	0.43	0.00
Number of children	4.792	3.835	0.25	0.00

Notes. (I) P-value reports the results of a t test of Ho: Return migration=Non-migrants. (II) Values are weighted by the sampling weights provided in the dataset. (III) Data source: JLMPS, 2010.

2.6 Conclusions

This paper studies the impact of return migration on the transfer of gender norms. We focus on the case of Jordan where female labour force participation is among the lowest in the world and where more than one household out of 10 have a returnee family member from other Arab countries. We construct several composite indices of female empowerment capturing (i) the self-perceived role of women, (ii) female freedom of mobility and (iii) women's decision making power, and use various weighting techniques.

Controlling for both selection into emigration and selection into return migration, our estimates show that women with a returnee in the household are more likely to bear discriminatory gender norms than women in households with no migration experience. Similar findings are obtained when examining women's freedom of mobility and decision-making power. Our results are also robust to the use of different weighting techniques for the construction of the female empowerment composite index, such as Multiple Correspondence Analysis (MCA), Principal Component Analysis (PCA) and equal weights.

Interestingly, we find that results are driven by returnees from more conservative Arab countries, which indeed bear great level of gender inequalities. This confirms our initial hypothesis of a transfer of gender norms through return migration. However, in this case return migration does not promote better institutions at home through the transfer of norms from destination countries, but encourages greater discrimination against women if the returnee has lived in a highly discriminatory destination. Furthermore our results show that the impact of return migration goes beyond perception and negatively affect women's outcomes as well.

From a policy perspective, the main hurdle for Jordan is to change social norms which are unfavorable towards women by promoting policies that enhance female position in Jordanian society and aim at eradicating discriminatory social institutions, encouraging female entrepreneurial skills and access to finance, and removing the barriers to the full exploitation of women's economic potential. A first step toward this goal is to increase public awareness about the status of women in the Jordanian economy and the

potential benefits to Jordan's economic development from equal gender treatment and participation in the economy.

Chapter 3

International Migration: Driver of Political and Social Change?

3.1 Introduction

In early 2010s the Arab world saw a revolutionary wave of protests spreading throughout the region, sparked by dissatisfaction with the rule of governments, as well as human rights violations and political corruption. By 2014, civil uprisings had been spread across the Arab countries, most notably in Tunisia, Egypt, Libya, Yemen, and Syria. Everybody was asking for one thing: change.

A salient feature of all those troubled Arab countries - with the exception of Libya - is that they have high emigration rates. Hence, an interesting question given this context is whether international migration is a driver of political and social change. More precisely, are returnees more likely to ask for change than non-migrants? Do migrants catalyze the diffusion of new values? This paper explores the migration-induced transfer of political and social norms and its linkages with political outcomes. It examines whether international migrants contribute to a change in preferences and behaviors by channelling modern political norms from destination to origin countries. In addition, it investigates

the importance of destinations in the adoption of less traditional values, since newly-incorporated norms vary according to the level of democracy and political accountability in host countries.

We focus on a North African country - Morocco - which is one of the world's leading emigration countries, with an estimated 4.5 million Moroccans residing abroad in 2014, approximately 13 percent of the population. In particular, more than 3 million Moroccans are living in Europe making them one of the largest migrant communities in Europe (Hamdouch & Wahba (2015)). At the same time, Morocco has seen instigating calls for political change over the last few years. Inspired by the wave of protests in the neighboring countries, demonstrations have been rallied during 2011-2012 to fight government corruption, the lack of civil rights and the absence of legitimate elections.

Very few studies have examined the impact of migration on the transfer of norms so far. Focusing on the quality of institutions, and using panel data for bilateral student flows from 1950 to 2003, the seminal work of Spilimbergo (2009) provides evidence that foreign-educated individuals promote domestic democracy, but only if the level of democracy in destination countries is high. Also at macro level, Beine & Sekkat (2013) broaden the analysis by looking at the impact of emigration on the quality of institutions, pointing at a positive and significant effect of international migration on the change in institutions. Findings are confirmed by Docquier *et al.* (2016), who restrict the focus to developing countries. Batista & Vicente (2011) customize a survey of perceived corruption in public services in Cape Verde, where they additionally ask respondents to mail a pre-stamped postcard if they wanted the anonymous results of the survey to be made publicly available in the media. Interestingly, localities with high international emigration prevalence had higher demand for political accountability.

Electoral data are exploited so far by three studies. Firstly, looking at the 2000-2002 Mexican municipal elections, Pfutze (2012) estimates that one percentage point increase in the proportion of migrant households in a municipality increases the probability that a party in opposition to the former state party would win the elections by more than half a percent. Secondly, Chauvet & Mercier (2014) use electoral data from Mali in order to explore the link between return migration and political outcomes. They find that localities with greater shares of returnees from non-African countries are more

likely to bear higher electoral participation rates. Thirdly, Omar Mahmoud *et al.* (2014) provide evidence that Moldovan municipalities sending migrants to democratic countries experience an increase in political support for more democratic and liberal parties in elections.

Our estimates suggest that, once controlling for selections, return migration boosts the demand for political and social change in Morocco. Results are driven by returnees from the West, which have been exposed to more democratic norms at destination. On the contrary, households with a current migrant are on average less likely to ask for change than non-migrants families, driven by migrants to non-Western countries. Findings are robust to different specifications, sub-samples and techniques. As a robustness check, we also present results based on the 2011 World Value Survey and the 2004 Census, showing that returnees affect attitudes besides their own households in the region where they live. In addition, we show that return migration is associated with outcomes such as the turnout for elections, as we find that regions with larger returnee shares are more likely to have greater turnout to the 2011 political elections.

The remainder of the paper is structured as follows: Section 3.2 introduces stylized facts from migration patterns in Morocco, as well as data and summary statistics from our analysis. Section 3.3 presents our methodology and econometric approach. Estimation results on return and current migration are discussed in section 3.4, whilst Section 3.5 presents extensions to the analysis. Section 3.6 concludes.

3.2 The case of Morocco

3.2.1 Migration in Morocco

Over the last decades, Morocco has become one of the world's leading emigration countries. Over 4 million Moroccans are estimated to be living abroad. Almost three million Moroccans live in Europe. The largest concentration of Moroccans living abroad is in France. In the Netherlands, Moroccans are the third largest group and in Belgium Moroccans are the largest group of non-EU immigrants. Yet, in terms of absolute numbers

of Moroccans, Spain hosts the second largest Moroccan diaspora followed by Italy. At the same time, the remainder of Moroccans is dispersed in the US and Canada among other countries, whilst about 5 percent are in other Arab countries.[1]

Seasonal and circular migration patterns within national borders have characterized Morocco's pre-colonial population history for centuries. However, the great migration boom has exploded only in the 1960s, when the European economies were rapidly expanding in the aftermath of the II World War and were in need of unskilled labour for their mining, industry and construction sectors. Until the mid of the 1970s economic and oil crisis, both Moroccan emigrants and host countries were expecting migration to be temporary in nature, and return migration was a key feature of the Moroccan diaspora. On average, Moroccans resided from seven to ten years in Europe and then returned home (Hamdouch & Wahba (2015)), but the following period of economic stagnation led European governments to close their borders to new migrants, and many Moroccans decided not to return but stay in their host countries. It was mainly through family reunification programme and irregular migration that the Moroccan diaspora in Europe managed to grow steadily.

A direct consequence of the restriction of immigration policies in northwest Europe was a diversification in migration patterns. Many new Moroccan immigrants shifted from classic destinations, such as France, Belgium, Germany and Netherlands, to the southern countries of Spain and Italy, where undocumented trespassing or overstaying was easier. Similarly, a significant number of Moroccans migrated to Libya and oil-producing Gulf countries, as well as to United States and French-speaking Canada.

Despite return migration is relatively less important in Morocco than in other Middle Eastern and North African neighboring countries, it is certainly a growing feature, especially over the last few years, when the financial crisis lowered economic opportunities everywhere, and in particular in those countries where Moroccan immigration is important, such as Spain and Italy. However, national estimates of Moroccan returnees are out-dated. The only national data available are those of the 2004 population census, which indicates an average of 33,100 returnees per year.[2] As mentioned by de Haas

[1] See Khachani (2012) and de Haas (2014) for a survey on migration trends in Morocco.

[2] This estimate is eventually an underestimation of the real extent of return migration, since it does not take into account undocumented and illegal migration.

(2014), migration data from European destinations suggest that about a quarter of Moroccans who migrated between 1981 and 2009 returned to Morocco. Also, the share of returnees fluctuates with the business cycle in Europe.

As a result of the lack of data, researches on return migration in Morocco are rather limited. A few studies though have examined the impact of return migration on the economic development of Morocco and in particular on the returnees' occupational choice and entrepreneurship. Using detailed survey data collected by the Centre for Studies and Demographic Research (CERED) at the High Commission of Planning (HCP) in 2003-04 on return migrants in two main regions of Morocco (Great Casablanca and Souss-Massa-Draa), Hamdouch & Wahba (2015) examined the determinants of entrepreneurial behavior among return migrants, controlling for the potential endogeneity of migration duration, and the potential endogenous impact of having invested overseas. Another exception is Gubert & Nordman (2011) who using the DReMM data explored the occupational status of returnees in Morocco and in the whole of the Maghreb.

To our knowledge, this is the first paper examining the impact of both current and return migration on political and social attitudes in Morocco. Although Morocco has not seen the turmoil caused by the Arab Spring in other parts of the Arab world, intense pro-democracy demonstrations have been put in place in 2011 by the "February 20 Movement" against the political, social and economic conditions. As a result, a new constitution was adopted by referendum in July 2011 aimed at improving democracy and the rule of law.

3.2.2 Data and Descriptive Statistics

The analysis of this paper is based on a new and unique dataset, the "Investigation on the Impact of International Migration on Development of Morocco" (IIIMD), produced by the *Association Migration Internationale* with the support of the *International Organisation for Migration* and the *Ministry for the Moroccans Residing Abroad and Emigration*. The investigation has been conducted in August-October 2013 for about 1,200 households. Since the investigation is national in scope, it covers the entire national

territory. It is conducted with a representative sample of all private households in Morocco (including those composed of foreign individuals), representing the 16 regions of the country in the two areas of residence (urban and rural). The observed units consist of both households having no migrant member, households with one or more migrants currently abroad, households with one or more returnees, and households with at least one immigrant.[3]

The sampling has been conducted randomly on the basis of a previous survey (the 2009-2010 National Demographic Survey (ENDPR)), which itself has been constructed through randomization.[4] In a first step, 62 primary units are randomly selected from the ENDPR survey proportionally to the size of the units in terms of density of the various types of migrants (returnee and current). Then two secondary units are randomly drawn in each primary unit (with equal probabilities). Lastly, 10 households are selected with equal probabilities in each secondary units.

The dataset contains unique features that are key for our analysis. Firstly, it includes questions on non-migrant, current and return migrant households, which can be exploited to compare different types of migration experiences, and also to control for the double selection into emigration and return migration. Specifically, the observed units consist of both households having no migrant (243), households with one or more migrants currently abroad (658), households with one or more returnees (228), and households with at least one immigrant (105).

Table 3.1 compares destination and education levels of current and return migrants. Host countries are similar for both types of migrants. Interestingly, France, Italy and Spain have been preferred as main destinations by over 75 per cent of migrants. On average, return and currents migrants have spent the same time abroad (11 years), which is consistent with the aforementioned stylized fact that nowadays Moroccans tend to stay longer at destination, due to restrictive immigration policies which would impede them to return to the host country if they leave. On the other hand, education attainment

[3] See Hamdouch & Mghari (2014) for a detailed description of the data and its sampling methodology.

[4] Specifically, the sampling of the 2013 IIIMD was based on the "National Population Survey with Repeated Passages" (ENDPR) undertaken by the Haut Commissariat au Plan in 2009-2010 on 105,000 households, which is itself derived from the randomized sample of the "General Census of the Population and Housing" (RGPH) developed in 2009-10 by the Moroccan Department of Statistics in order to meet the needs of household surveys programmed during the intercensal period 2005-2014.

differs greatly among migration experiences. Returnees are less educated, with 41 per cent of no-schooled individuals, whilst only 11 per cent of current migrants have not undertaken formal education. Conversely, over 40 per cent of current migrants hold a secondary or higher degree, a proportion which is halved for returnees.

TABLE 3.1: Characteristics of migrants

	Return migrant	**Current migrant**
Destination (%)		
Spain	14.67	20.75
France	34.22	30.30
Italy	28.44	22.72
Other European countries	7.99	15.80
USA	0.89	4.61
Canada	1.33	1.98
Arab countries	11.09	3.30
African countries	0.44	0.22
Other countries	0.89	0.33
Educational level (%)		
No education	0.41	0.11
Primary education	0.17	0.22
College	0.20	0.25
Secondary education	0.15	0.29
Superior education	0.06	0.12
Duration of migration		
Years	11.32	11.51

Source: IIIMD, 2013.

A second distinctive feature of the IIIMD is the inclusion of questions on the willingness to change the social and political landscapes, which are a direct measure of individuals' attitudes and beliefs. For instance, we exploit a set of variables included in the IIIMD on political and social norms, administered to both households with a returnee, families with a current migrant abroad, and non-migrant households. Our analysis will be based on 5 questions on the willingness to innovate the traditional Moroccan society and politics: (1) "Are you happy about how Morocco is administered?" (2) "I think we should defend the traditional lifestyle in Morocco." (3) "We need to make more effort in order to treat

men and women equally." (4) "We need to make more effort in order to treat everybody equally." (5) "I think people should be more involved in the decision-making process."

We adopt several dimensionality reduction techniques in order to aggregate the 5 aforementioned variables into a composite index of political and social norms. Nevertheless, we also run specifications with each single indicator as dependent variable to show that our results are not driven by the construction of the composite index. In our benchmark analysis, we use Principal Components Analysis (PCA), which has been extensively used to construct multidimensional and composite indices (Filmer & Pritchett (2001)). Its clear advantage is to measure the group of weights which explains the largest variation in the original variables. The robustness of our composite indicator is tested by using two additional weighting techniques. Firstly, we adopt Multiple Correspondence Analysis (MCA), which has been often preferred to analyze qualitative, categorical and binary variables (Asselin (2002)). Secondly, we make use of equal weights, that have been largely used for their simplicity and apparent objectivity.

The proposed index of political and social change is constructed such that it takes values from 0, corresponding to preference for no change, to 1, meaning complete preference for change, and it is given by:

$$Y_i^j = A_{i1}W_1^j + A_{i2}W_2^j + ... + A_{iq}W_q^j \tag{3.1}$$

where Y_i^j is the value of composite index Y for individual i using the weighting technique j (namely, PCA, MCA and equal weights), A_{iq} is the answer of individual i to question q and W_q^j is the weight obtained using the j methodology applied to question q.[5]

The analysis of this paper is restricted to individuals in the working age (15 - 65 years old) at the time of the survey, in order to exclude those individuals whose political norms may be very different due to their young or old age. Moreover, we exclude from the analysis migrants who left the country for political issues, as well as returnees who

[5]Table B.1 in Appendix lists the 5 variables that are used to construct the Political and Social Change Index and the respective weights using PCA, MCA and equal weights. Remarkably, larger weights imply greater preference for political and social change.

came back to Morocco for political reasons, since they would bias our estimates. Finally, immigrants are not taken into account as non-migrant households, carrying a different set of political and social norms than natives.

Table 3.2 compares characteristics of individuals with a returnee among their family members, individuals with a current migrant, and individuals from non-migrant households. It appears clear that, without controlling for selectivity issues, individuals in our sample do not differ along most of characteristics. In particular, our outcomes of interest (i.e. the five proxies of political and social change, as well as the three different composite indicators using PCA, MCA and equal weights) do not suggest specific differences among migration experiences. Econometric techniques are therefore required in order to better understand the impact of international migration on political norms.

TABLE 3.2: Characteristics of respondents from households with no migrants, returnees and current migrants

	Without migrant	**With returnee**	**With current**
Political and social change (%)			
Political administration	0.24	0.32	0.29
Civil engagement	0.92	0.86*	0.89
Traditional lifestyle	0.06	0.04	0.04
Gender equality	0.89	0.89	0.89
Social cohesion	0.94	0.95	0.94
Composite index (PCA)	0.61	0.61	0.61
Composite index (MCA)	0.8	0.79	0.79
Composite index (equal weights)	0.61	0.61	0.61
Educational level (%)			
No education	0.35	0.40	0.40
Primary education	0.23	0.18	0.20
College	0.15	0.18	0.12
Secondary education	0.18	0.19	0.20
Superior education	0.09	0.06	0.09
Individual characteristics			
Female	0.29	0.19*	0.43***
Age	48.5	54.44***	53.79***
Married	0.81	0.79	0.69***
Rural areas	0.15	0.16	0.12
Metropolis	0.23	0.19	0.22
Employment status	0.54	0.45	0.34***
Head of household	0.73	0.74	0.69
Accommodation owner	0.63	0.89***	0.80***
N	216	225	915

Notes. (I) T-test for different means, where the control group is always those individuals with no migrant in the household. (II) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (III) Data source: IIIMD, 2013.

3.3 Methodology

3.3.1 Empirical Strategy

We first focus on returnees. We are interested in understanding whether returnee households differ in their political norms from non-migrant households. We therefore model two interrelated decision: the propensity to want change (equation 3.2) and the probability of being a returnee (equation 3.3). The preference for change in the political and social landscapes is proxied by the constructed composite indicator Y_i.

$$Y_i = \alpha_0 + \alpha_1 R_i + \alpha_2 X_i + \alpha_3 F_r + \epsilon_i \tag{3.2}$$

In equation 3.2, Y_i is the level of political and social change desired by individual i, which can take any value between 0 and 1, where 0 means no change and 1 implies complete change. R_i is the return migration variable, a dummy being 1 if the individual has at least a returnee member within the household. X_i is a vector of individual's characteristics, including age, educational attainment, marital status, employment status, living in a rural area or in a metropolis (3 biggest Moroccan cities: Casablanca, Fes, Rabat-Sale), being the head of the household and a dummy for owing the accommodation, a proxy for wealth. Fixed effects at regional level are absorbed by F_r, while ϵ_i is a zero-mean error term.

The return migration decision is instead denoted by R and is observed only when the latent variable measuring the gains from being a return migrant (R^*) is positive.

$$\begin{cases} R = 1 & \text{if } R^* > 0, M > 0 \\ R = 0 & \text{otherwise} \end{cases} \tag{3.3}$$

However, we need to introduce a third decision, since return migration is only measured if the individual has emigrated. Hence R is only observed if an individual has emigrated,

i.e., $M > 0$. The emigration decision (M) is observed when the latent variable measuring the gains from migration (M^*) is positive.

$$\begin{cases} M = 1 & \text{if } M^* > 0 \\ M = 0 & \text{otherwise} \end{cases} \tag{3.4}$$

We therefore estimate a multi-equation mixed system, where the three decisions above are estimated simultaneously using a Conditional Mixed Process (CMP) estimator (Wahba (2015)). CMP fits a Seemingly Unrelated Regressions (SUR) framework, in which regressors seem unrelated as no endogenous component appears as explanatory variable in the other equations, although their errors can be correlated (Roodman (2011)). In CMP, equations may vary in sample sizes: selection equations will be modelled for the full data set, while the dependent variable of interest in equation (2) for the subset with complete observations.

Although our data allow us to control for observables variables affecting the selection of migrants, unobservables may still induce those who have migrated to be self-selected on the basis of some latent characteristics. If both emigrants and return migrants are not a random sample of the Moroccan population, estimates would be biased.

In particular, it is worth to note that, in the context at hand, selection into emigration and selection into return migration may carry along several biases to our OLS estimates. On the one hand, personality traits influence the intention to migrate (Canache *et al.* (2013)). If greatly open-minded individuals are more likely to migrate, this may have an upward bias to the estimated effect of international migration on political attitudes at home, as individuals would transfer modern political norms that they already had before migrating. Conversely, it may be well the case that, if those moving abroad are the individuals more in contrast with the political norms in place in Morocco, self-selection along political lines would play against a positive impact of migration (Li & McHale (2009)). On the other hand, also the bias carried by return migration is ambiguous. In fact, as stressed by Bastia (2011) and Abramitzky *et al.* (2012) among others, returnees may be disproportionately drawn from both the pools of the most successful and least

successful migrants. In either case, the families of the returnees may prefer political and social change in Morocco regardless of a transfer of norms, but simply due to the rewarding or unfruitful migration experience of the returnee. Moreover, if those more open-minded moved abroad in first place, their return in Morocco would raise the level of preference for political and social change at home, biasing again our results. In sum, the lack of a correct estimation of the double selectivity would carry along several biases to the OLS estimations, but the direction of such biases is ambiguous, and it is ultimately an empirical question that the present chapter attempts to answer.

3.3.2 Identification

The correct identification of the full structural model requires two valid exclusion restrictions for the emigration and return decisions. For the emigration decision, we construct a proxy for the attractiveness of the foreign labour market in each year. Specifically, our measure is given by:

$$A_t = \max(G_{jt} - G_{mt})W_j^{1990} \tag{3.5}$$

A_t is the most attractive foreign labour market at time t. G_{jt} is the GDP per capita growth rate of destination j at time t, whilst G_{mt} is the growth rate of Morocco at time t. This measure of foreign attractiveness is weighted by the size of the diaspora given the importance not only of economic factors, but also of social networks in emigration. Weights W_j^{1990} are constructed as follows: using data from Özden *et al.* (2011b), we take the share of Moroccan stocks, in each destination country j, in the total Moroccan migrant population in 1990. We adopt A_t for when the individual was 23 years old, which is the average year of finishing education, assuming that this is the time in which individuals enter in the labour market. However we also check the robustness of our results using alternative age, between 25-30 years of age.[6] Clearly, the attractiveness of foreign countries relative to Morocco in the past when the individual was 23 should

[6] See Table B.2 in Appendix.

have no bearing on their opinion at the time of survey in 2013 when the average age of non-migrant is 49 and 54 years of age in the case of return migrants.

For the return migration decision, we construct a dummy including several exogenous shocks that induced Moroccan emigrants to come back to their homes. Firstly, the explosion of the Gulf War in 1990 has led to a great out-migration of Moroccan migrants from oil-producing Gulf states. Secondly, in 2000 xenophobic uprising exploded in Libya, triggered by the rising unemployment of natives, inconstancy in migration policy and an increasing presence of foreign workers (Migration Policy Centre (2013)). Unrest led to the deaths of hundreds of foreigners, encouraging many immigrants working in Libya to return to their origin countries. Thirdly, in 2004 film-director Van Gogh was murdered by Moroccan Mohammed Bouyeri in Amsterdam. The murder sparked a violent storm of outrage and grief throughout the Netherlands, which may have lead some Moroccan immigrants to return home.

In our shock variable we also include two new legislations emanated in destination countries where Moroccans were more present, as they have been particularly restrictive against undocumented migrants, and consequently they have provoked an inflow of Moroccans back home. In total, 16 percent of our sample of returnees came back to Morocco due to these two shocks. For instance, in 2006 France approved a new immigration law that toughened up restrictions on immigrants who do not have skills and qualifications targeted by the French government as important to France (Chou & Baygert (2007)). Previously, illegal immigrants in France could obtain documents to ensure legal status if they could demonstrate a stay in-country of ten years or more, whilst with the new law these regulations were scrapped. Moreover, the government planned approximately 26,000 deportations in that year only, due to the high volume of undocumented immigrants. Similarly, a new immigration law was passed in Italy in 2009 according to which illegal immigration became an official crime, and as such helping or housing undocumented migrants resulted prosecutable in court. Employment of irregular migrants became punishable with up to 5 years of imprisonment. Teachers in schools were also compelled to report undocumented children to officials.

It is worth stressing that, while these shocks increased the propensity to return home in a given year, they did not affect the probability of emigration given the multiple available

destinations. Figure B.1 in Appendix shows graphically that our chosen shocks are not associated with a decrease in the magnitude of emigration from Morocco. In addition, negative past shocks in destination countries are clearly not directly correlated with Moroccans' political and social norms in 2013, as opinions are measured back home on issues such as gender equality, for example whether individuals think we should make more effort to treat men and women equally, or on local matters such as traditional lifestyle in Morocco.

We therefore obtain a system of three equations as follow:

$$\begin{cases} Y_i = \alpha_0 + \alpha_1 R_i + \alpha_2 X_i + \alpha_3 F_r + \epsilon_i \\ R_k = \beta_0 + \beta_1 S_k + \beta_2 C_k + \beta_3 F_r + n_k \\ M_k = \gamma_0 + \gamma_1 A_t + \gamma_2 Z_k + \gamma_3 F_r + \mu_k \end{cases} \tag{3.6}$$

In the return migration equation, R_k is the linear probability of individual k being a return migrant, conditional on being an emigrant, and S_k represents the shock variable, constructed as previously explained.[7] Controls C_k are the characteristics of the returnee. In the emigration equation, M_k is the linear probability being an emigrant, whilst A_t is the attractiveness of the foreign labour market. Controls Z_k include the characteristics, such as age, sex, education, of the migrant and the household left behind.

3.4 Estimation Results

3.4.1 Households of Return Migrants and Change

We first look at the impact of having a returnee in the household on the preference for political and social change. The main outcome variable in Table 3.3 is the composite indicator of preference for change as previously constructed through Principal Component

[7] Note that individuals i in the first equation and k in the selection equations may coincide or not. In particular, $i = k$ if the survey respondent i is directly the family member who migrated. Conversely, $i \neq k$ if respondent i is not the returnee k himself. Importantly, we have only one – or maximum two – individuals per household in the survey.

Analysis (PCA). Interestingly, no effect is found using a simple OLS estimator (column 1). However, controlling for selection into return migration and emigration leads to a strongly significant impact of return migration on the demand for political and social change (columns 2 and 3). This emphasizes that migrants are not randomly chosen among the Moroccan population, but are selected on the basis of some observed and unobserved characteristics.[8] The sign of the relationship is positive: returnee households are more likely than non-migrants to ask for change. This may be due to the assimilation of more democratic norms while living abroad, a possibility which will be confirmed below by further analysis.

It is worth noting that both exclusion restrictions used to identify our full model works as expected. The shock dummy is a good predictor of the probability of being a returnee, while our measure of attractiveness of the foreign labour market also has a positive and significant impact on the likelihood of emigrating in a given year. Looking at the correlations among equations, results suggest a negative selection of both current and return migrants. However, those who returned to Morocco are positively selected among the migrants' pool. Return migration behaviors, therefore, accentuate the selection that characterized the initial emigration flows, as discussed by Borjas & Bratsberg (1996).

To test the robustness of our findings, Table 3.4 shows results using two alternative outcome variables: the composite index of political and social change aggregated through Multiple Correspondence Analysis (columns 1, 2, and 3), and using equal weights (columns 4, 5, and 6). We can safely reject the eventuality that previous estimates were driven by the weighting technique used to construct the composite indicator, since return migration still bears a positive and significant effect on preference for change.

[8] As shown in the descriptive statistics of Table 3.2, at first look households with no migrant and household with either a current or a return migrant do not seem to differ along the five dimensions under scrutiny in the chapter (and their composite indicators). It therefore comes as no surprise that the size and statistical significance of the migration coefficients in the OLS specifications are very small. However, controlling for selection into return migration first, and the double selectivity then do lead to both statistically and economically significant estimates. This implies that selection on unobservables is indeed a major issue when looking at the migration-induced transfer of norms. In Table 3.3 the coefficient of return migration on political and social change stabilizes around 0.06 and 0.09, which is in line with the results from the following tables.

TABLE 3.3: Return migration and the preference for political and social change

	(1)	(2)	(3)
Political and Social Change			
return migration	-0.004	0.059	0.093
	(0.26)	(2.52)**	(2.72)***
Probability of Return Migration			
shock		0.833	0.792
		(33.68)***	(27.28)***
Probability of Emigration			
attractiveness			0.050
			(2.84)***
sigma_1		-1.163	-1.160
		(31.30)***	(30.99)***
sigma_2			-0.981
			(29.59)***
rho_12		-0.181	-0.212
		(2.79)***	(2.93)***
rho_13			-0.169
			(1.78)*
rho_23			0.292
			(6.46)***
N	441	441	441

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

TABLE 3.4: Return migration and the preference for change using different weighting techniques

	(1)	(2)	(3)	(4)	(5)	(6)
Political and Social Change		***mca***			***equal***	
return migration	0.004	0.050	0.072	0.005	0.055	0.079
	(0.21)	(1.88)*	(2.24)**	(0.33)	(2.20)**	(2.60)***
Probability of Return Migration						
shock		0.833	0.792		0.833	0.792
		(33.68)***	(27.30)***		(33.68)***	(27.29)***
Probability of Emigration						
attractiveness			0.050			0.050
			(2.88)***			(2.87)***
sigma_1		-1.163	-1.160		-1.163	-1.160
		(31.30)***	(30.99)***		(31.30)***	(30.99)***
sigma_2			-0.981			-0.981
			(29.59)***			(29.60)***
rho_12		-0.123	-0.143		-0.146	-0.171
		(1.87)*	(1.99)**		(2.20)**	(2.38)**
rho_13			-0.106			-0.132
			(1.38)			(1.66)*
rho_23			0.292			0.292
			(6.45)***			(6.47)***
N	441	441	441	441	441	441

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

Results are also robust to the use of a different exclusion restriction for the selection into emigration equation (Table 3.5). We have constructed the alternative measure as follows: for each year, we picked the maximum attractiveness of the foreign labour markets in only the main destinations in each region, that is France for Europe, Canada for North America, and Libya for MENA.[9] The instrument appears to be a strong predictor of the probability of emigration, leaving positive and significant the effect of return migration on attitude towards change.

TABLE 3.5: Return migration and the preference for change using a different instrument for the selection into emigration

	(1)	(2)	(3)
Political and Social Change	***pca***	***mca***	***equal***
return migration	0.093	0.072	0.079
	(2.72)***	(2.23)**	(2.59)***
Probability of Return Migration			
shock	0.792	0.792	0.792
	(27.14)***	(27.16)***	(27.14)***
Probability of Emigration			
attractiveness (FRA, CAN, LBY)	0.048	0.049	0.048
	(2.81)***	(2.85)***	(2.83)***
sigma_1	-1.160	-1.160	-1.160
	(30.99)***	(30.99)***	(31.00)***
sigma_2	-0.981	-0.981	-0.981
	(29.63)***	(29.63)***	(29.64)***
rho_12	-0.212	-0.143	-0.171
	(2.93)***	(1.99)**	(2.38)**
rho_13	-0.170	-0.107	-0.131
	(1.78)*	(1.37)	(1.65)*
rho_23	0.290	0.291	0.290
	(6.40)***	(6.40)***	(6.41)***
N	441	441	441

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

Since results may be driven by the use of a composite indicators (regardless of the weighting technique applied), Table 3.6 shows specifications where the outcome of interest has

[9] On the contrary, the former instrument considered the whole world.

been replaced by the single sub-indices. In particular, columns 1, 2 and 3 presents results using the dummy variable "I am not happy with how Morocco is run/administered" (proxy for political norms), whilst column 4, 5 and 6 use the dummy "We need to make more effort in order to treat men and women equally" (proxy for social norms). Findings are robust to this additional test too.

In order to understand the reasons behind the positive sign of the coefficient of return migration, and also to clarify whether migrants do actually transfer norms from host to home countries, we further disaggregates results by destination. By distinguishing between migrants from Western (Europe, US & Canada) and non-Western (Arab) countries, we expect that returnees from more democratic countries should drive our results, as they have assimilated more equal and democratic values while living abroad. Columns 1 and 2 of Table 3.7 confirm our hypothesis: findings are driven by returnees from West countries, while the coefficient for non-Western returnees is not statistically significant. Comparing returnees from the West to returnees from non-Western countries suggests that the formers are more likely to demand change than non-Western migrants (column 3). This result is in line with the findings of de Haas & Fokkema (2010), which, using semi-structured interviews in the Todgha valley, note that "exposure to European media and public discourse is likely to have influenced migrants' attitudes toward Moroccan lifestyle and bureaucracy. Also, migrants might attempt to present themselves as more modern and superior by dissociating themselves from Moroccan authorities and society."

TABLE 3.6: Return migration and the preference for change using single variables

	(1)	(2)	(3)	(4)	(5)	(6)
Political and Social Change	***Good administration***			***Gender equality***		
return migration	0.060	0.126	0.176	0.060	0.069	0.099
	(1.48)	(1.91)*	(1.86)*	(1.71)*	(1.57)	(1.75)*
Probability of Return Migration						
shock		0.833	0.792		0.833	0.792
		(33.68)***	(27.29)***		(33.68)***	(27.38)***
Probability of Emigration						
attractiveness			0.050			0.050
			(2.87)***			(2.86)***
sigma_1		-1.163	-1.160		-1.163	-1.160
		(31.30)***	(31.01)***		(31.30)***	(31.01)***
sigma_2			-0.980			-0.981
			(29.57)***			(29.67)***
rho_12		-0.066	-0.084		-0.050	-0.064
		(1.06)	(1.23)		(1.00)	(1.18)
rho_13			-0.092			-0.071
			(0.91)			(0.96)
rho_23			0.292			0.290
			(6.47)***			(6.44)***
N	441	441	441	441	441	441

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

TABLE 3.7: Return migration by destination and the preference for change

	(1)	(2)	(3)	(4)
	Unconditional		***Conditional***	
Political and Social Change	***West***	***non-West***	***West***	***West***
return migration	0.074	-0.044	0.067	0.068
	(2.71)***	(1.15)	(2.05)**	(2.08)**
Probability of Return Migration				
shock	0.796	0.798	0.792	0.792
	(28.20)***	(28.23)***	(27.41)***	(27.45)***
Probability of Emigration				
attractiveness	0.050	0.051	0.051	0.051
	(2.85)***	(2.89)***	(2.91)***	(2.91)***
sigma_1	-1.160	-1.160	-1.160	-1.160
	(31.02)***	(31.03)***	(30.97)***	(30.98)***
sigma_2	-0.981	-0.981	-0.981	-0.980
	(29.62)***	(29.63)***	(29.59)***	(29.60)***
rho_12	-0.170	-0.068	-0.243	-0.248
	(2.90)***	(1.43)	(2.92)***	(2.96)***
rho_13	-0.117	0.029	-0.375	-0.341
	(1.43)	(0.47)	(1.47)	(1.38)
rho_23	0.290	0.290	0.291	0.293
	(6.47)***	(6.50)***	(6.47)***	(6.52)***
N	441	441	225	225

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

A concern might rise on the exogeneity of the migration destination. In fact, it can be argued that more open-minded individuals may prefer to migrate in first place to the democratic Western countries. If this is the case, then the effect previously found would not be due to a migration-induced transfer of norms, but rather to a selection issue. In table B.3 in Appendix we show evidence suggesting that our sample is not remarkably affected by this issue. Indeed, we exploit 3 variables included in the IIIMD database in order to proxy for open-mindedness ("Your main raison to emigrate was to improve your lifestyle"; "Overall, would you say you are happy to have lived abroad?"; "Would you like to migrate again abroad?"). We then run additional migration equation where the dependent variable is a dummy being 1 if the returnee lived in the West, whilst it is 0 if he/she lived in a non-West country. Importantly, we control for the 3 aforementioned proxies of open-mindedness (both separately in columns 1 to 3, simultaneously in column 4, and aggregated in a composite indicator through PCA in column 5) and show that being more open-minded is not a major driver of migration towards more democratic Western countries. We then use the composite index of open-mindedness as additional control in column 4 of Table 3.7: results are robust, suggesting that selection into destination is not an issue in our sample. We will come back to the issue of the self-sorting into destination below, where we will test the robustness of our main findings to the addition of a further selection equation.

3.4.2 Households of Current Migrants and Change

We now turn to the impact of having a current migrant E_k in the household on the preference for political and social change (Table 3.8). We estimate the following model:

$$\begin{cases} Y_i = \alpha_0 + \alpha_1 E_k + \alpha_2 X_i + \alpha_3 F_r + \epsilon_i \\ E_k = \gamma_0 + \gamma_1 A_t + \gamma_2 Z_k + \gamma_3 F_r + \mu_k \end{cases} \tag{3.7}$$

As before, in the political change equation Y_i is the level of political and social change desired by individual i, which can take any value between 0 (no change) and 1 (complete change). In the emigration equation, E_k is the probability of being an emigrant.

Caution is however required in estimating this model. In fact, emigration from Morocco is largely male-dominated, and consequently survey respondents in households with a current emigrant abroad are more likely to be left-behind women compared to non-migrant families where the male head is usually the respondent. As a matter of fact our data show that, whilst no woman has been interviewed among non-migrant families, one out of three respondents with a current migrant is a female. A clear bias may arise if men and women carry different social norms. Therefore in order to have comparable treatment and control groups, columns 1 to 4 of Table 3.8 exclude females from the estimation sample, although we show results with women included in columns 5 and 6 as robustness.

Remarkably, left behind households of current migrants have lower demand for political and social change across all specifications. Column 2 presents our benchmark results, controlling for selection into emigration and using the composite index constructed through PCA. Results are however robust to the use of MCA (column 3) and equal weights (column 4). It may be the case that current migrants are mostly the former heads of the household, which migrated abroad in order to provide for the left-behind family. If this was correct, comparing non-migrant households to respondents with a current migrant may again bias our estimates, since we might be comparing non-migrant heads of the family with sons or elderly of migrant heads, who may bear different social norms. This is the reason why column 5 includes only heads of the household from the analysis. In column 6, we also test the robustness of our findings to focusing only on employed people, as we may want to restrict the analysis to individuals comparable in terms of their labour market status. Finally, column 7 is most parsimonious specification, where we focus only on male and employed heads of the household.[10]

[10]Clearly, given the selected sample, inference about results based on solely this specification would be wrong. However, such specification and the previous ones are rather seen as robustness checks of the benchmark specifiction in column 2.

TABLE 3.8: Current migration and the preference for political and social change

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Political and Social Change	***pca***	***pca***	***mca***	***equal***	***pca***	***pca***	***pca***
current migration	-0.036	-0.140	-0.158	-0.084	-0.134	-0.183	-0.179
	(1.67)*	(2.66)***	(2.58)***	(1.88)*	(2.20)**	(2.61)***	(2.49)**
Probability of Emigration							
attractiveness		0.073	0.070	0.071	0.058	0.089	0.102
		(3.33)***	(3.20)***	(3.10)***	(2.77)***	(3.47)***	(3.52)***
sigma_1		-0.908	-0.908	-0.908	-0.954	-0.881	-0.879
		(28.55)***	(28.55)***	(28.53)***	(26.11)***	(22.60)***	(18.64)***
rho_12		0.364	0.381	0.224	0.303	0.517	0.527
		(2.37)**	(2.74)***	(1.69)*	(1.75)*	(2.62)***	(2.50)**
N	448	448	448	448	510	300	228

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 732 observations. (IV) Data source: IIIMD, 2013.

TABLE 3.9: Current migration by destination and the preference for change

	(1)	(2)	(3)
	Unconditional		***Conditional***
Political and Social Change	***West***	***non-West***	***West***
current migration	0.008	-0.095	0.092
	(0.16)	(2.43)**	(2.61)***
Probability of Emigration			
attractiveness	0.056	0.057	0.059
	(2.59)***	(2.67)***	(2.78)***
sigma_1	-1.013	-1.013	-1.013
	(31.45)***	(31.45)***	(31.47)***
rho_12	-0.068	-0.034	0.112
	(0.54)	(0.60)	(0.45)
N	448	448	319

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 732 observations. (IV) Data source: IIIMD, 2013.

Regardless of the specification, results suggest a negative impact of current migration on political and social change, and according to our theoretical predictions this should be due to a stream of less democratic norms from destination countries. We therefore test this hypothesis by disaggregating between West and non-West migrants. Findings in Table 3.9 do confirm a transfer of norms and show that the negative coefficient of current migration is driven by migrants from non-West countries, which indeed have lower institutional quality and democracy levels than Morocco. When comparing migrants currently in the West to migrants in non-West countries, we notice that, conditional on migration, individuals in Europe and North America are more likely to transfer political change than migrants in the Arab world (column 3).

3.4.3 Destination Selectivity

Importantly, a still unexplored potential source of bias may derive from a self-selection process of migrants into destination countries. In fact, when deciding to emigrate,

individuals may choose to move to specific locations according to unobservable (to the econometrician) characteristics or preferences. For instance, in the previous section and table B.3 we provided evidence that open-mindedness does not affect our results on return migration. In table 3.10, we test the robustness of our main findings to the inclusion of an additional selection equation for self-sorting into West/non-West destinations. Specifically, our dependent variable is a dummy whether the migrant lived in the West or Arab world.

In order to estimate the model, however, a further exclusion restriction is needed, and remarkably this does not have to be correlated with the probability of emigration in the first place, nor the likelihood of return migration or social/political preferences in 2013. We hence construct the instrument as the ratio between GDP per capita growth in France versus Libya (the two main destination countries in the regions) as follows $FL_t = G_{France,t}/G_{Libya,t}$. Again we use the average age of finishing education and entering the labour market (i.e. 23 years of age). This would clearly affect the location where the migrant chooses to move, but not the migration decision itself. It is worth noting that our previous exclusion restriction for the selection into emigration expressed in equation 3.5 would be violated if we include the selection into destination equation in the simultaneous model. In fact, the most attractive foreign labour market would also affect the destination choice. Hence, we replace this instrument with the average attractiveness of the foreign market in time, as follows: $AV_t = mean(G_{jt} - G_{mt})W_j^{1990}$. We argue that AV_t would capture more the push factor in determining migration: if Morocco is doing badly relative to on average all other countries, the individual decides to emigrate, otherwise they would not emigrate. Also, FL_t (the ratio between GDP per capita growth in France versus Libya) when the individual first enters the labor market (at the age of 23 years) should not have any impact on the return decision nor on political and social preferences in 2013.

We estimate the following system to control for destination selectivity in the case of return migration:

$$\begin{cases} Y_i = \alpha_0 + \alpha_1 R_i + \alpha_2 X_i + \alpha_3 F_r + \epsilon_i \\ R_k = \beta_0 + \beta_1 S_k + \beta_2 C_k + \beta_3 F_r + n_k \\ D_k = \theta_0 + \theta_1 FL_t + \theta_2 I_k + \theta_3 F_r + \in_k \\ M_k = \gamma_0 + \gamma_1 AV_t + \gamma_2 Z_k + \gamma_3 F_r + \mu_k \end{cases} \tag{3.8}$$

Similarly in the case of current migrants, we add the destination selection equation as follows:

$$\begin{cases} Y_i = \alpha_0 + \alpha_1 E_k + \alpha_2 X_i + \alpha_3 F_r + \epsilon_i \\ D_k = \theta_0 + \theta_1 FL_t + \theta_2 I_k + \theta_3 F_r + \in_k \\ E_k = \gamma_0 + \gamma_1 A_t + \gamma_2 Z_k + \gamma_3 F_r + \mu_k \end{cases} \tag{3.9}$$

Estimates for both return migration (column 1) and the diaspora (column 2) show that self-selectivity into destination does not alter our results. We find that return migration increases the demand for political and social change, but households of current migrants are less likely to quest for change; i.e. our findings remain robust to this further test. Indeed, we find that there is positive selection between choosing Western countries relative to Arab countries and emigration. However, we find a negative significant correlation between return migration and Western destinations relative to Arab countries, albeit it is not significant.

Table 3.10: Selection into destination

	(1)	(2)
Political and Social Change		
return migration	0.055	
	(2.01)**	
current migration		-0.069
		(2.02)**
Probability of Return Migration		
shock	0.823	
	(31.24)***	
Probability of Emigration		
attractiveness	4.558	4.617
	(5.63)***	(5.74)***
Destination selection		
growth france/libya	0.000	0.000
	(1.76)*	(1.74)*
sigma_1	-1.163	-1.045
	(31.27)***	(26.47)***
sigma_2	-1.045	-1.152
	(26.48)***	(8.56)***
sigma_3	-1.171	
	(8.18)***	
rho_12	-0.181	0.075
	(2.70)***	(0.80)
rho_13	0.011	0.124
	(0.16)	(1.43)
rho_14	0.122	
	(1.66)*	
rho_23	0.102	1.219
	(2.29)**	(4.89)***
rho_24	-0.011	
	(0.17)	
rho_34	1.179	
	(4.32)***	
N	441	448

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

TABLE 3.11: Average predicted values

	With migrant	Without migrant	Difference (%)	P-value
Preference for change - Return migration				
Whole sample	0.649	0.559	0.16	0.000
Returnees from the West	0.641	0.559	0.15	0.000
Returnees from the non-West	0.572	0.559	0.02	0.005
Preference for change - Current migration				
Whole sample	0.450	0.559	-0.20	0.000
Current migrants in the West	0.557	0.559	0.00	0.000
Current migrants in the non-West	0.464	0.559	-0.17	0.003

Notes. (I) P-value reports the results of a t test of Ho: Migration=Non-migrants. (II) Values are weighted by the sampling weights provided in the dataset. (III) Data source: IIIMD, 2013.

We finally calculate the predicted values of the impact of return and current migration on the preference for political and social change (Table 3.11). Results suggest that having a returnee family member increases preference for change by over 60 percent. Confirming previous findings, this effect is due to returnees from Western countries, whilst returnees from non-West countries have much closer preferences for change than non-migrant households. Focusing on families with a current migrant shows that on average diaspora decreases preference for change by 20 percentage points compared to respondents with no migration experience. This time, current migrants outside the Western world drive this result.

3.5 Spillover Effects of Return Migration

In order to show the consistency of our findings, we extend the present analysis by looking at different data sources. We intend to explore whether the new political norms that return migrants bring back home expand beyond the household of origin to the local community.

First, we use the 2011 World Values Survey (WVS) of Morocco and exploit two questions: "I do not have confidence in the government" and "I am interested into politics", which proxy for political preferences. We then utilize the most current available population census carried out in 2004 to calculate the share of returnees among the population of each of the 24 available sub-regions, which we then merge into the 2011 WVS. The resulting dataset provides information on over 1,100 individuals in Morocco on both political norms and the share of returnees in each sub-region. The following OLS regression is therefore estimated in order to test the existence of spillover effects of return migration:

$$N_{is} = \alpha_0 + \alpha_1 R_s + \alpha_2 C_{is} + \epsilon_{is} \tag{3.10}$$

where N_{is} is our proxy of political norms for individual i living in sub-region s, and R_s is the share of returnees in each of the 24 sub-regions. Controls C_{is} include sex

and marital status dummies, age and age squared, number of children, educational attainment, working status, as well as a dummy if individual i works for the government.

Columns 1 (Dependent variable: "I do not have confidence in the government") and 2 (Dependent variable: "I am interested into politics") in Table 3.12 show the results of equation 3.10, which confirm that return migration affects political norms beyond the household of origin thanks to spillover effects to the local communities. Since the share of returnees may be endogenous, we also adopt a 2SLS estimation, where return migration is instrumented by the growth rate of returnees in each sub-region (RG_s). In particular, data on the share of returnees by sub-region (R_s) are calculated using the 2004 and the 1994 Moroccan census. The growth rate RG_s of returnees in each sub-region s is given by:

$$RG_s = \frac{R_s^{2004} - R_s^{1994}}{R_s^{1994}} \tag{3.11}$$

2SLS estimation in columns 3 and 4 of Table 3.12 emphasizes the validity of our instrument and the robustness of our findings: political norms are indeed transferred from returnees to household members and ultimately spread by word of mouth to the local communities.

Second, we want to examine whether political and social attitudes translate into actions or outcomes. We adopt the Round 5 of the AfroBarometer, a survey that measures public attitudes on economic, political, and social matters in more than 30 African countries, carried out by the Institute for Justice and Reconciliation (IJR) in South Africa, the Ghana Center for Democratic Development, the Institute for Empirical Research in Political Economy in Benin, the Institute for Development Studies (IDS) at the University of Nairobi, and the Department of Political Science at Michigan State University.

Specifically, we focus on the survey for Morocco, which has been undertaken in 2013 on 1,200 individuals, and we exploit one question on the 2011 parliamentary election: "Did you vote in the last national election held in 2011?". It is worth noting that the demonstrations exploded during the Arab spring led King Mohammed VI to establish

TABLE 3.12: Spillover effects of return migration on political norms

	(1)	(2)	(3)	(4)
	Panel A: Second stage			
share of returnees	7.787	3.776	57.279	26.109
	(2.58)**	(1.68)*	(2.34)**	(1.80)*
	Panel B: First stage			
return migration change			0.002	0.002
			(5.67)***	(5.63)***
R2	0.06	0.18		
F-Stat			32.11	31.67
N	1,073	1,155	1,073	1,155

Notes. (I) Dep.var. in columns 1 and 3 is "I do not have confidence in the government", whilst dep. var. in columns 2 and 4 is "I am interested into politics". (II) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (III) All specifications are weighted by the sampling weights provided in the datasets, with robust standard errors. (IV) Data source: World Values Survey (WVS), 2011 & Census, 2004.

earlier election, to be held all around Morocco on November 25th 2011. By matching again the shares of returnees in each of the 60 localities from the 2004 Census with the AfroBarometer data, we are able to estimate the following specification:

$$V_{il} = \alpha_0 + \alpha_1 R_l + \alpha_2 C_{il} + \epsilon_{il} \tag{3.12}$$

where V_{il} is a dummy being 1 if individual i has voted in the 2011 elections; R_l is the share of returnees in locality l where individual i lives, and C_{il} are the controls, which include sex, age, age squared, rural dummy, education and employment status, as well as proxies for wealth, such as having a the shelter's roof in cement and having the main source of water inside the house.

Remarkably, results in Table 3.13 shows that individuals living in areas with higher concentration of returnees are more likely to have participated in the 2011 elections. Findings are robust to the inclusion of additional controls capturing regional characteristics, such as average educational attainment, employment rate, access to water and electricity (column 2), as well as instrumenting the share of returnees in a given locality

by the growth rate of returnees in each locality (RG_l), as calculated above. In sum, using different databases, such as the 2011 World Value Survey, the 2013 AfroBarometer and the 1994/2004 Census, indicates that migration affects political preferences as well as behaviors.

TABLE 3.13: Spillover effects of return migration on political outcomes

	(1)	(2)	(3)
Panel A: Second stage			
share of returnees	8.213	21.786	100.490
	(1.80)*	(3.08)***	(1.72)*
Panel B: First stage			
return migration change			0.001
			(4.26)***
Regional controls	No	Yes	Yes
R2	0.11	0.13	
F-Stat			18.17
N	1,200	1,200	1,200

Notes. (I) Dep.var. is a dummy being 1 if the individual has participated in the 2011 national elections. (II) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (III) All specifications are weighted by the sampling weights provided in the datasets, with robust standard errors. (IV) Data source: AfroBarometer, 2013 & Census, 2004.

3.6 Conclusions

Does international migration act as a driver of political and social change? We look at the interesting case of Morocco, a North-African country that has become a major emigration hub to Europe and where there have been insistent calls for political change over the last few years. We exploit a recent and unique dataset in order to test whether returnees have different political behaviors and preferences than non-migrants. Findings provide evidence that return migration has a positive impact on the preference for political and social change after controlling for the double selectivity of emigration and

return migration. We further demonstrate that the positive impact of return migration is driven by returnees coming from Western countries, where they have acquired democratic political norms.

We also examine the impact of having a current migrant overseas on the attitudes of the left behind versus non-migrants. Interestingly, having a current migrant among the household members has an opposite and negative effect on the demand for political and social change, driven by migrants residing in Arab countries, where the level of political institutions and accountability is low. Importantly, we control for the destination selectivity, and find that our results are robust.

Furthermore, in order to test whether the impact of migration not only affects attitudes but also actions, we study electoral participation and find a positive and significant impact of the share of returnees in a given locality on the participation rate in the 2011 parliamentary elections.

Overall, our findings suggest that international migration can be a driver of political and social change. However, the impact of host countries matters, as newly acquired norms and attitudes are not always "superior" to the norms at origin. This implies an eventual benefit for migration to Western countries, where the level of democracy and institutional quality is greater than in the rest of the world, and hence there is potential for positive transfer of norms from host to home countries.

Chapter 4

How Do Regulated and Unregulated Labour Markets Respond to Shocks? Evidence from Immigrants during the Great Recession

4.1 Introduction

The Great Recession has brought a substantial increase in unemployment in Europe, with an average unemployment rate that has grown from 8 percent in 2008 to 12 percent in 2014. The change has been very heterogeneous. In northern Europe, unemployment did not grow substantially or even fell: in Germany, for example, unemployment rate actually declined from 7 to 5 percent. At the same time, in Greece unemployment increased from 8 to 26 percent, in Spain from 8 to 24 percent, and in Italy from 6 to 13 percent.

Why have unemployment dynamics been so different in European countries? One of the most often cited explanation is the difference in labor market institutions that prevents wages from adjusting downward. If wages cannot decline, negative aggregate demand shocks (such as the Great Recession) result in unemployment growth. On the other hand, if wages can fall, labor markets reach a new equilibrium with unemployment rates returning to normal levels. Downward adjustment of wages in response to macroeconomic shocks is especially important in the euro area where labor markets cannot accommodate shocks through exchange rate depreciation or through internal labor mobility (migration among EU countries is much more limited than, for example, labor mobility across US states).

Albeit straightforward, this argument is not easy to test empirically. Indeed, cross-country studies of labor markets are subject to comparability concerns. Similar problems arise when comparing labor markets in different industries within the same country. In order to construct a convincing counterfactual for a regulated labor market, one would need to study a non-regulated labor market in the same sector within the same country. That is precisely the scope of this paper. We compare formal and informal labor markets in Italy over the years 2001-13 considering informal employment as a proxy for unregulated counterfactual to the regulated formal labor market.[1]

We use a unique dataset that contains information on workers' informality status, a large annual survey of immigrants working in Lombardy carried out by the Foundation for Initiatives and Studies on Multi-Ethnicity (ISMU). Lombardy is the largest region of Italy in terms of population (10 million people, or one sixth of Italy's total) and GDP (one fifth of Italy's total GDP). It is also the region with the largest migrant population: in 2005, 23 percent of the entire migrant population legally residing in Italy were registered in Lombardy. It is also likely to be the largest host of undocumented migrants: in the last immigrants' regularization program in 2002, Lombardy accounted for 22 percent of amnesty applications. Although Lombardy has higher GDP per capita and lower unemployment rates than the Italian average, it has also suffered from the recent crisis. Unemployment increased from 4 percent in 2008 to almost 9 percent in

[1] We define informal employment as employment without a legal work contract. We use the term "informal" as a synonym of "underground" and "unofficial". A key assumption of our analysis is that we consider the informal labor market to be less regulated than the formal labor market.

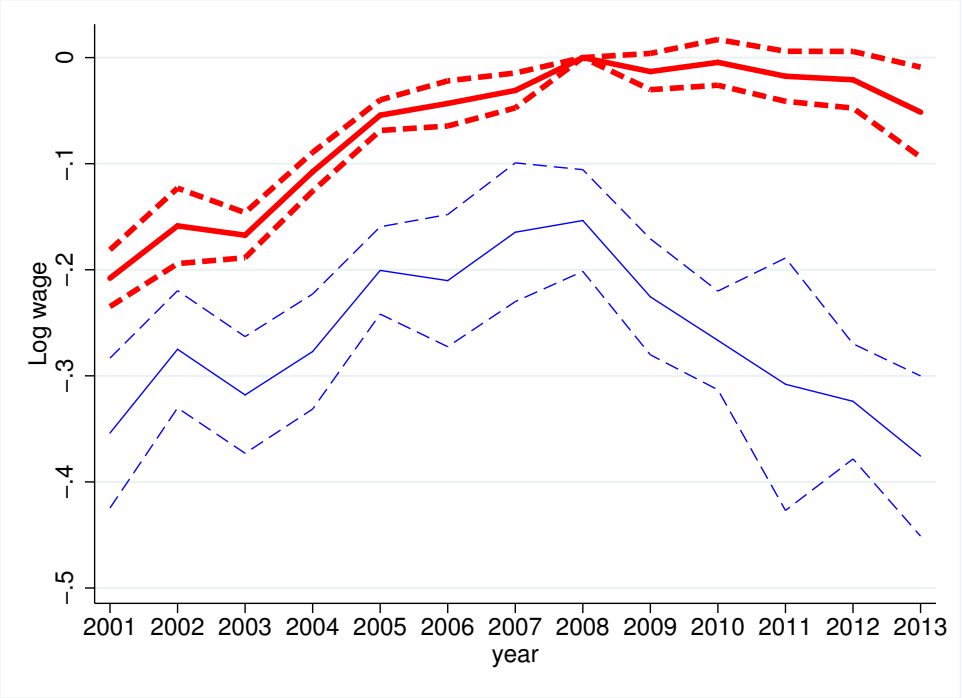
2013. Recession started in 2009, it was followed by a weak recovery in 2010-11 and resumed in 2012; in 2012 real GDP was 5 per cent below its 2008 level.

Our data cover around 4000 full-time workers every year, a fifth of which works in the informal sector. The dataset is therefore sufficiently large to allow us comparing the evolution of wages in the formal and informal sectors controlling for household characteristics, occupation, skills and other individual characteristics (age, gender, year of arrival to Italy and country of origin). We adopt a difference-in-differences methodology in order to test our main hypothesis that a severe recession in Italy (and Lombardy) should have resulted in a larger decline of wages in the unregulated labor market (i.e. in the informal sector) compared to the regulated labor market (i.e. the formal sector).

Our main result is presented in Figure 4.1 which shows the wage trends in the formal and informal sectors controlling for occupation, gender, age, education, country of origin, and family characteristics. We find that the wage differential between formal/regulated and informal/unregulated sectors has increased after 2008. Moreover, while wages in the informal sector decreased by about 20 percent in 2008-13, wages in the formal sector virtually did not fall. This is consistent with the view of a substantial downward stickiness of wages in the regulated labor market. Importantly, before the recession, wages in the formal and informal sectors moved in parallel — confirming the validity of the parallel trends assumption required for a difference-in-differences estimation and showing that both regulated and unregulated labor markets have a similar degree of *upward* flexibility of wages.

Conventional wisdom relates the downward stickiness of wages to the minimum wage regulation. Unfortunately, it is impossible to carry out a randomized control trial to directly test this relationship, nor we are aware of natural experiments that exogenously change minimum wages in differential ways within the same industry and the same country. We thus construct sector-specific minimum wages using information from collective bargaining contracts at the industry level. We find that the effect in Figure 4.1 is similar in both occupations where the average wage is close to the minimum wage and in those where the average wage is far above the minimum wage. Therefore minimum wages do not seem to explain the downward stickiness of wages in the formal labor market.

FIGURE 4.1: Wages in formal and informal sector in Lombardy.



Notes. Logarithm of wages (relative to formal sector in 2008) controlling for sector of employment, gender, age, education, country of origin, family characteristics, occupation dummies, provinces of residence dummies. Thick red line: formal sector. Thin blue line: informal sector. Dashed lines: 95% confidence interval. Source: ISMU survey, authors' calculations.

We then test whether the effect is stronger in "simple" rather than "complex" occupations. The formers require only generic skills and allow for greater substitutability between workers (in particular, between natives and immigrants) within occupations and across occupations. In such jobs we should expect a greater downward adjustment in the absence of regulation. On the contrary, in complex occupations workers need specific skills and are harder to replace; therefore even in unregulated labor markets wages may not decline during recession. Our estimates are consistent with this prediction: the increase in wage differential between formal and informal sectors during the recession is stronger in simple than in complex occupations.

We also analyze the impact of the crisis on formal and informal employment. We find that formal employment decreases substantially while informal employment does not change. Since the aggregate demand shock affects both labor markets, this finding implies that upon losing a job in the formal sector at least some workers move to the

informal sector. We calibrate a simple model describing such spillovers between formal and informal labor markets. Using the existing estimates for demand and supply elasticities for the Italian labor market, we estimate the degree of integration of formal and informal sector (i.e. the share of workers who move from the formal to the informal labor market after the crisis). Our model also allows to carry out a counterfactual analysis of the formal sector's response to crisis in a scenario where formal wages were fully flexible. We find that in this case the crisis would have resulted in a much smaller decline in formal employment between 2008 and 2013 (1.5-4.5 percent rather than the actual 16 percent).

Our paper contributes to several strands of research. First, we bring new evidence on the labor markets' reaction to recessions and the respective channels of adjustment. The seminal contribution by Blanchard & Katz (1992) studies the response of the US economy to regional shocks and points at inter-state labor mobility as the major channel of adjustment in the long run. For instance, after several years local economies adjust to aggregate demand shocks in terms of labor force participation and unemployment rates, whilst the workers who cannot find jobs in the depressed states move out to other states. Decressin & Fatas (1995) carry out a similar analysis for European regions. They find that European workers are less mobile than their American counterparts, and adjustment mainly occurs through reduced labor force participation.

Mauro & Spilimbergo (1999) consider the case of a single European country, Spain, focusing on the heterogeneity of the adjustment mechanisms across skills groups. Their results suggest that high-skilled Spanish workers respond with out-migration from the depressed provinces while the low-skilled drop out of the labor force or remain unemployed.[2] Another study of the labor market adjustment during the Great Recession is Elsby *et al.* (2016), who analyze the experience of the US and the UK. They find that nominal wage rigidity played a role in the US during the Great Recession but not in the UK. Nevertheless, despite of different previous experiences, a recent contribution by Beyer & Smets (2015) suggests that declining interstate migration in the US since the

[2]The analysis of the heterogeneity of the workforce and therefore of the labor market adjustments has greatly benefited from the development of measures of skill content of occupations by Autor *et al.* (2003), Peri & Sparber (2009), Goos *et al.* (2009), and Goos *et al.* (2014). We also adopt these measures to disaggregate the channels of adjustment in our data.

1980s and rising migration in Europe over the last 25 years are gradually leading to a convergence of the adjustment processes in the US and Europe.

We also contribute to a large literature using the difference-in-differences approach to analyze the impact of labor market institutions on employment. In particular, Card & Krueger (1994) compare the employment evolution in New Jersey after a 20 percent increase in the minimum wage with neighboring Pennsylvania (where the minimum wage did not change). The recent surveys of this literature by Neumark *et al.* (2014) and Neumark (2014) conclude that minimum wages do have a negative impact on employment.

In addition, our paper brings new evidence on the recent literature on dual labor markets in Europe. Bentolila *et al.* (2012) compare labor market institutions in France and Spain to explain the strikingly different evolution of unemployment during the Great Recession in the two countries. In fact unemployment rate was around 8 percent in both France and Spain just before the Great Recession, but by 2011 it increased to 10 percent in France and 23 percent in Spain. The authors explain the differential with the larger gap between firing costs in permanent and temporary contracts, and the laxer rules on the use of the latter in Spain. The issue of the dual labor market in Europe is discussed in detail by Boeri (2011), who provides a comprehensive survey of the literature on the impact of recent labor market reforms in Europe. Our paper also considers dual labor markets, although we study the duality of formal/regulated versus informal/unregulated markets rather than the duality between permanent and temporary contracts.

Meghir *et al.* (2015) develop a model with endogenous selection of firms and workers into the formal and informal sectors and calibrate it using Brazilian data. They show that on average firms in the formal sector are more productive and pay higher wages (which is consistent with our findings). Since we do not have data on informality at the firm level, we assume that the recession has a similar effect on the labor productivity in the formal and in the informal sector (controlling for industry and worker characteristics).

Since our data include only immigrants, a direct comparison of the effects of the recession

on immigrant and native workers is not possible.[3] However, we use the insights from the literature on the impact of immigration on wages and employment of natives and on the evolution of labor market outcomes of immigrants versus natives through the business cycle. Orrenius & Zavodny (2010) compare the impact of the Great Recession on Mexican-born immigrants and native US workers with similar characteristics. They find that immigrants' employment and unemployment rates are particularly affected by the recession; the impact is especially strong for low-skilled and illegal immigrants. The authors also argue that one of the major channels of adjustment is a great reduction of the inflow of Mexican immigrants during the recession. Lessem & Nakajima (2015) confirm this finding using the data from the Mexican Migration Project based on the undocumented migrants' recollections of their dates of trips to the US and the wages they earned there. They also show that undocumented Mexican immigrants' wages in the US are negatively correlated with the US unemployment rate — unlike the wages of the legal migrants and the wages of the natives, including those of Mexican origin. Their estimates stress the important role of occupational spillovers: during the US recessions, undocumented Mexican immigrants are more likely to shift to agricultural jobs. Cadena & Kovak (2016) show that Mexican-born immigrants help to equalize spatial differences across local US labor markets. Interestingly, this takes place in both the high-skilled and low-skilled segments of the labor market. Low-skilled immigrants turn out to be very responsive to labor market shocks, which helps equilibrating local labor markets even though low-skilled natives are not mobile.

Cortes (2008), Manacorda *et al.* (2012) and Ottaviano & Peri (2012) study the impact of immigration on the wages of natives and find that immigrant and native workers are imperfect substitutes. Using data on fifteen Western European countries during the 1996-2010 period, D'Amuri & Peri (2014) find that an inflow of immigrants generates a reallocation of natives to occupations with a stronger content of complex abilities. This reallocation is more salient in countries with low employment protection and for workers with low education levels. Their estimates also show that this process remained significant—even if it slowed down—during the first years of the Great Recession.

[3] For instance, a possible reason why immigrants and natives differ during crisis is that foreign workers' bargaining power with their employers might change during the recession if being employed is a condition required to extend the residence permit.

Our analysis complements the immigration literature by showing important implications of labor market regulation for the economic integration of immigrants. During periods of crisis, labor market regulation lowers immigrants' probability of formal employment by preventing downward wage adjustments. It also causes a switch from formal to informal employment, which implies lower labor income tax revenues. Remittance behavior may also change, because of a decrease in expected earnings. Since only documented immigrants can work in both the formal and informal sector, labor market regulation during periods of crisis can also reduce the attractiveness of regularization programs, i.e. fewer undocumented immigrants would apply for getting legal status in the host country. Similarly, more regulated labor markets in destination countries can lower the expected value for potential migrants in source countries to choose the legal emigration option rather than emigration without a visa.

The rest of the paper is structured as follows. Section 4.2 presents background information on the Italian labour market. In Section 4.3 we discuss our empirical methodology, and data are introduced in Section 4.4. Section 4.5 presents the econometric results. Section 4.6 analyzes the spillover effects between formal and informal sectors. Section 4.7 concludes.

4.2 Background Information on the Italian Labour Market

The Italian formal labor market has centralized collective bargaining institutions. After the abolishment of the automatic indexation of wages to past inflation (the so-called *scala mobile*) in 1992, Italy created a two-tier bargaining structure where wages are determined via both plant-level and industry-level/centralized negotiations. However, as Boeri (2014) documents, the percentage of firms relying on the two-tier bargaining decreased over time, down to less than 10 percent in 2006: employers in Italy typically prefer following the wages set by industry agreements, rather than through further negotiations at the plant level.

Italy's formal labor market is also characterized by relatively high levels of employment protection, and relatively low levels of both unemployment benefits and active labor

market policies (such as training programs, job search assistance, counseling, etc.). According to the 2013 OECD indicators of employment protection, Italy ranks 30 out of the 34 OECD members in terms of protection of permanent workers against individual and collective dismissals, and 27 out of 34 in terms of regulation of temporary employment.[4] These features make the Italian context different for instance from the flexicurity of Scandinavian countries. However, over the last decades, and similarly to other European countries, several reforms aimed at introducing various types of temporary contracts and increasing labor market flexibility.[5]

Italy has a large informal labor market. In the period considered in our study — from 2001 to 2013 — both left- and right-wing governments adopted several pieces of legislation to reduce informality. Nonetheless, these policies have not been particularly effective in tackling the issue of informal employment. In fact, according to recent estimates the Italian underground economy accounts for about 25 percent of the GDP (Orsi *et al.* (2014)).[6] As Capasso & Jappelli (2013) describe, industries differ in terms of level of informality: measures of job informality are as high as 31 percent in the construction sector and 25 percent in the retail and tourism sectors and as low as 12 and 15 percent in finance and manufacturing, respectively. Capasso & Jappelli (2013) also document that informal labor markets are particularly well-developed in sectors with relatively low levels of competition and small firm sizes.

The large size of the informal labor market implies that immigrants who reside in Italy without a regular residence permit (we will refer to these as "undocumented" or "illegal" immigrants) have a relatively high probability of finding a job. Given that they are not entitled to work in the formal sector, illegal immigrants might prefer to locate in countries like Italy with a large shadow economy. In terms of labor market outcomes,

[4]These indicators rank OECD members from countries with least restrictions to those with most restrictions.

[5]Examples of these reforms are the law no. 196/1997 ("Treu law"), decree law no. 368/2001, law no. 30/2003 ("Biagi law") and law 78/2014 ("Poletti decree"). See Ichino & Riphahn (2005), Kugler & Pica (2008), Cappellari *et al.* (2012), Leonardi & Pica (2013), and Cingano *et al.* (2016) for works on the effects of changes in employment protection legislation. For empirical evidence on the consequences of temporary work employment on subsequent labor market outcomes, see Booth *et al.* (2002), Ichino *et al.* (2008), and Autor & Houseman (2010).

[6]Consequently, the informal labor market in Italy cannot be considered a niche, and it may somehow compete to a similar extent with the formal sector. This is in line with research by Amaral & Quintin (2006), which, focusing on a country with similar levels of informality, Argentina, finds that, despite of several differences, formal and informal labor markets are perfectly competitive.

both documented and undocumented immigrants lag behind natives with similar levels of education. For instance, Accetturo & Infante (2010) show that returns to schooling for immigrants are much lower than the ones for native Italians. Moreover, immigrants residing in Italy are likely to work in occupations that are not appropriate to their level of education. As the OECD (2008) report suggests, one of the reasons why immigrants' over-qualification occurs lies in the fact that Italy is a relatively new immigration country. Given that an appropriate match between jobs and immigrants' qualifications takes time—because for instance immigrants do not have well-developed professional networks in the host country or they lack complementary skills such as the knowledge of the host country language—upon arrival immigrant workers are likely to accept unskilled jobs with the hope of upward professional mobility as their stay in Italy continues.

4.3 Methodology

We use the difference-in-differences methodology to analyze the evolution of wages in the formal and informal sectors before and during the crisis. Our benchmark specification is the following:

$$W_{iocpt} = \alpha Informal_i + \beta Crisis_t \, Informal_i + \gamma X_i + \delta_o + \delta_c + \delta_p + \delta_t + \varepsilon_{iocpt} \quad (4.1)$$

where W is the logarithm of after-tax wage of a full-time employed worker i from country of origin c working in occupation o and residing in province p at the time of the interview t ($t = 2001, ..., 2013$).[7] We include dummy variables δ_o, δ_c, δ_p, and δ_t for occupations, countries of origin, provinces of residence and year fixed effects, respectively. Furthermore, control variables X_i include gender, age, age squared, years in Italy, education, married dummy, children abroad and children in Italy. We cluster the standard errors by province of residence, by simple/complex dummy and by before/after crisis dummy; we end up with 44 clusters (11 provinces times 2 types of occupations times 2 time periods).

[7] Conditioning on full-time employment, the estimated coefficient of the interaction term does not include the differential effect of informality during the crisis through changes in working hours. In Table 4.5 we show regressions where we use information on individuals who are employed on part-time basis.

Our main variables of interest are $Informal_i$ (dummy for employment in the informal sector) and $Crisis_t\, Informal_i$ — the interaction term of $Informal_i$ and $Crisis_t$. The latter is a dummy for years after 2009: $Crisis_t = \mathbf{1}(t \geqslant 2009)$.[8] As the informal labour market is unregulated, we should expect $\beta < 0$ — during the crisis wages in the informal sector should adjust downward to a greater extent than wages in the regulated formal sector.

Following Donald & Lang (2007), we carry out a two-stage procedure as well, where in the first stage we regress wages on individual characteristics (gender, age, age squared, education, family status, children in Italy, children in the home country, years in Italy, dummies for country of origin and province of residence) controlling for pre-crisis occupation-specific linear trends. In the second stage, instead, we regress the residuals on informal sector dummy and $Crisis_t\, Informal_i$ interaction term (controlling for year dummies, occupation dummies, province dummies).

In order to understand what drives the wage adjustment or the lack thereof, we also investigate the heterogeneity of treatment effects. First, we distinguish between occupations where the minimum wage is likely to be binding and those where wages are safely above the minimum wage. For each profession we calculate the average pre-crisis wage in 2007 and divide it by the occupation-specific minimum wage. We then rank occupations by the ratio of average wage to minimum wage and check whether results differ for professions above and below the median of this ratio. More precisely, we estimate a difference-in-difference-in-differences specification similar to equation (4.1), including three additional interaction terms: the interaction of high average wage to minimum occupation dummy with crisis time dummy $Crisis_t\, High\, avg.\, wage/min.\, wage_o$, the interaction of high average wage to minimum occupation dummy with informal employment dummy $Informal_i\, High\, avg.\, wage/min.\, wage_o$, and the triple interaction $Crisis_t\, Informal_i\, High\, avg.\, wage/min.\, wage_o$. The coefficient of interest in these specifications is the one associated with the triple interaction term. If the minimum wage prevents downward adjustment of wages in the formal sector, we should find a positive sign for $Crisis_t\, Informal_i\, High\ avg.\, wage/min.\, wage_o$, i.e. a stronger effect of the crisis

[8] In section 5.1, we show that the crisis significantly affected labour market outcomes from 2009 onwards. However, we find qualitatively similar results, but smaller magnitudes, when we consider an alternative proxy for $Crisis$ using $Crisis_t = \mathbf{1}(t \geqslant 2008)$ (i.e., assuming that the crisis started a year before).

on the wage differential between formal and informal employment for those occupations where wages before the crisis were not too far from the minimum wages.

We also distinguish between simple and complex occupations. Since simple occupations involve generic skills, there is a greater extent of substitutability between workers (including immigrant and native workers) within such occupations — as well as across such occupations. Therefore in the absence of regulation, such occupations should undergo a more substantial downward wage adjustment during recession. On the other hand, in complex occupations, skills are more specific and workers are less substitutable. In these complex occupations even unregulated labour markets may not see large drops in wages in times of recession and high unemployment. To check this, in a specification similar to (4.1), we include three additional interaction terms: $Crisis_t\, Informal_i\, Simple_o$, $Crisis_t\, Simple_o$ and $Informal_i\, Simple_o$. In this difference-in-difference-in-differences specification, the coefficient at $Crisis_t\, Informal_i$ allows to quantify the effect of the recession on the wage differential between formal (regulated) and informal (unregulated) employment for complex professions. We expect to find a stronger effect for simple rather than complex occupations, i.e. a negative sign of the coefficient at $Crisis_t\, Informal_i\, Simple_o$.

We also use the same approach to check whether the effects vary across occupations with different degree of informality. Finally, we study heterogeneity of effects by education, age and gender.

4.4 Data

Our main database comes from the annual survey of immigrants undertaken by an independent Italian non-profit organization called Foundation for Initiatives and Studies on Multi-Ethnicity (ISMU). This survey provides a large and representative sample of both documented and undocumented immigrants residing in Lombardy and working in formal and informal sectors.[9] The ISMU survey adopts an intercept point sampling

[9] In other datasets containing information on natives' labor market outcomes — such as the Survey on Household Income and Wealth (SHIW) by the Bank of Italy or the Labor Force Survey by ISTAT — the informality status is either confidential or not available.

methodology, where the first step involves listing a series of locations typically frequented by immigrants (such as religious sites, ethnic shops, or healthcare facilities), while in a second step both meeting points and migrants to interview are randomly selected. At each interview, migrants are asked how often they visit the other meeting points, which permits to compute ex-post selection probabilities into the sample. This approach allows the ISMU survey to produce a representative sample of the total immigrant population residing in Lombardy.[10]

Table C.1 in the Appendix presents descriptive statistics on immigrants working in the formal sector (regular workers) and the informal sector (irregular workers) as well as on legal (documented) and illegal (undocumented) immigrants.[11] Approximately 6 percent of legal immigrants work in the informal sector. The informal sector accounts for around 12 percent of the overall (documented and undocumented) foreign-born workforce.

In our main regressions we focus on full-time workers to abstract from changes in hours worked (although we show robustness of our findings to the inclusion of part-time employment as well). We consider the following categories of workers: full-time permanent and fixed-term regular workers, irregular workers in stable employment, regular self-employment, and irregular self-employment. Conversely, part-time employment includes the following three categories: regular part-time workers, irregular workers in unstable employment, and subaltern employment (e.g. collaborations). According to this definition, there are about 4,000 full-time-employed respondents in each year. Respondents also provide information about their occupation, country of origin, year of arrival to Italy, monthly earnings, family status etc. Summary statistics are in Table C.2 in the Appendix. Table C.3 in the Appendix presents the breakdown of the sample by occupations, as well as formal and informal employment for each occupation. The table also includes average wages in the formal and informal sector and the minimum wage for each occupation.

[10] See Fasani (2015) and Dustmann *et al.* (2016) for a more detailed description of these data. Mastrobuoni & Pinotti (2015) also use data from the ISMU survey.

[11] Throughout the paper we refer to those employed in the formal sector as "regular workers" and those employed in the informal sector as "irregular workers". Similarly, we use "illegal" and "undocumented" interchangeably to denote immigrants residing in Italy without a regular residence permit.

The ISMU dataset contains information on immigrants only. In order to compare the labor market dynamics during the recession for the whole Italian workforce with those for the immigrant population, we exploit data from the Survey on Household Income and Wealth (SHIW) by the Bank of Italy. This survey is administered every two years and provides information on a representative sample of natives and foreign born workforce, even if for confidentiality issues the variable on nationality is not publicly available. SHIW includes information on wages along several individual characteristics, although it does not include the informality variable which is key to our analysis. We restrict the sample to Lombardy only and to the period 2000-2012, so that descriptives are comparable with the ISMU data. Table C.4 in the Appendix shows that average monthly net wages by occupation in the SHIW survey are directly comparable to those of immigrants from the ISMU (see last column of Table C.3). Moreover, Figure C.1 suggests that, after controlling for observables, wages in ISMU and in SHIW moved in parallel in 2000-2012, and their difference was statistically different from zero until 2004. Such descriptive statistics reassure us of the external validity of our findings.

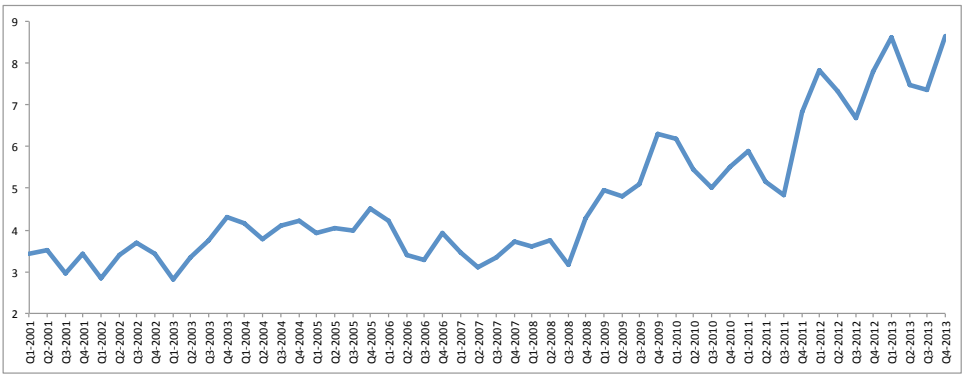
There is no national minimum wage in Italy (even though Article 36 of the Constitution states that salaries must be high enough to provide a decent subsistence for the worker and his family). Instead, minimum wages are set through collective bargaining agreements between employers associations and trade unions. In particular, national collective contracts impose minimum salaries for employees at different skill levels in numerous economic activities, covering both unionized and non-unionized workers (Manacorda (2004)). We collect and reconstruct minimum wages from over 140 nationwide collective contracts in effect in 2007, just before the start of the crisis. We then aggregate minimum wages in order to match the professions included in the ISMU dataset (see Table C.3 in Appendix). To our knowledge, there has been no previous study attempting to collect so many collective bargaining agreements and compute occupation-wide minimum wages for Italy.

In order to time the beginning of the recession, we use official macroeconomic data on Lombardy and its eleven provinces.[12] Figure 4.2 plots quarterly data on unemployment

[12]The province of Monza e della Brianza was officially created by splitting the north-eastern part from the province of Milan on May 12, 2004, and became fully functional after the provincial elections of June 7, 2009. For consistency with pre-2009 data, we consider the newly-created province of Monza e della Brianza as part of Milan province.

rate in Lombardy at regional level for the period considered in the regression analysis (2001-2013). The increase in unemployment in Lombardy started in the beginning of 2009 and continued until the end of 2013. Figure 4.3 presents the evolution of unemployment rates in Lombardy's provinces (this information is available only since 2004). While there is substantial heterogeneity in levels and dynamics of unemployment, most Lombardian provinces have experienced sharp increase in unemployment since 2009.

FIGURE 4.2: Unemployment rate in Lombardy by quarters (2001-2013).

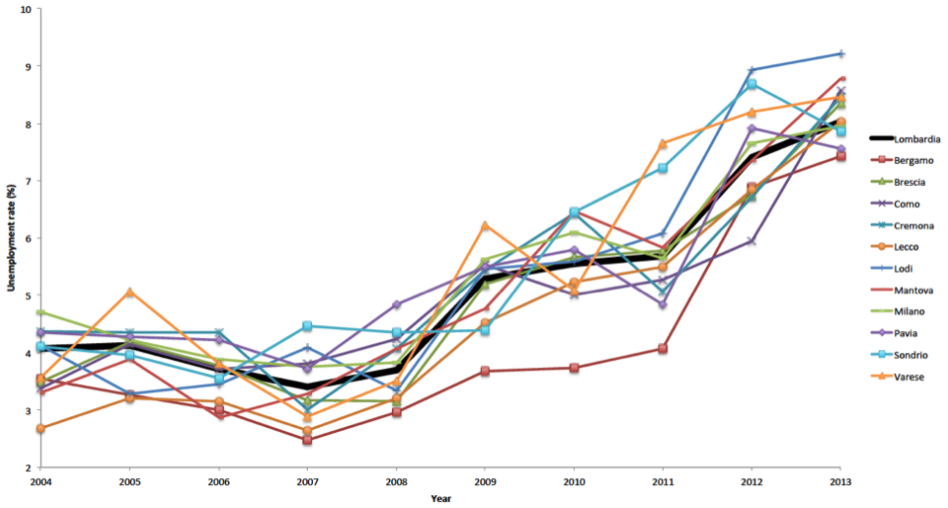


Source: ISTAT.

In order to differentiate between simple and complex occupations, we follow Peri & Sparber (2009) and D'Amuri & Peri (2014) and exploit the US Department of Labor's O*NET abilities survey to gain information on the abilities required by each occupation. This database estimates the importance of 52 skills required in each profession. We merge information from the ISMU survey with the O*NET values and select 23 O*NET variables which are supposed to provide an adequate representation of simple/complex jobs (Peri & Sparber (2009) carry out a similar procedure). In particular, we distinguish between two types of skills: manual (or physical) skills represent limb, hand and finger dexterity, as well as body coordination, flexibility and strength; conversely, communication (or language) skills include oral and written comprehension and expression.

Once the 23 variables have been selected (see the Table C.5 in the Appendix), we normalize them to [0,1] scale. Importantly, we invert the scale for the four communication

FIGURE 4.3: Unemployment by province within Lombardy.



Source: ISTAT.

skills (oral comprehension, written comprehension, oral expression, written expression) and then calculate the average of the 23 variables. The resulting index ranks professions in order of complexity where a profession with a high communication skill intensity is considered as "complex", whilst high levels of manual skill intensity refer to "simple" jobs. Finally, we compute the median value for the index and distinguish between simple and complex occupations (i.e. jobs whose values are above the median are considered simple, and vice versa).

4.5 Results

4.5.1 Placebo Tests

The identifying assumption of our difference-in-differences specification is that wages of workers in the formal and informal sectors would have followed the same time trend in the absence of the Great Recession. If this parallel trends assumption holds, our empirical strategy allows to control for all unobserved differences between formal and informal workers that remain constant over time.

Figure 4.1 has already provided visual support to the main identifying hypothesis, showing that wages moved in parallel in formal and informal sectors before the recession. For further verification of the common trends assumption, we run several placebo tests. The rationale behind these checks is to use only data before the recession and create a placebo treatment that precedes the crisis. This exercise also allows to provide additional confirmation on the timing of the beginning of the crisis in Lombardy—2009 rather than 2008—a finding that is consistent with the evolution of unemployment over time in Figure 4.2.

TABLE 4.1: Placebo tests

	(1) 2001-2007 Placebo=2007	(2) 2001-2007 Placebo⩾ 2006	(3) 2001-2008 Placebo=2008	(4) 2001-2008 Placebo⩾ 2007	(5) 2001-2008 Placebo⩾ 2006
Placebo X Informal	0.006	-0.017	-0.013	-0.002	-0.015
	(0.043)	(0.037)	(0.033)	(0.034)	(0.032)
Informal	-0.155***	-0.149***	-0.152***	-0.154***	-0.148***
	(0.016)	(0.015)	(0.019)	(0.016)	(0.014)
Female	-0.169***	-0.169***	-0.173***	-0.173***	-0.173***
	(0.016)	(0.017)	(0.011)	(0.015)	(0.016)
Age	1.319***	1.321***	1.478***	1.476***	1.479***
	(0.410)	(0.345)	(0.406)	(0.337)	(0.267)
Age squared	-1.523***	-1.524***	-1.711***	-1.707***	-1.711***
	(0.479)	(0.384)	(0.445)	(0.392)	(0.292)
Years in Italy	0.011***	0.011***	0.010***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Compulsory school	0.015*	0.015	0.016**	0.016**	0.016*
	(0.008)	(0.011)	(0.006)	(0.007)	(0.009)
High school	0.025*	0.025**	0.024***	0.024**	0.024***
	(0.012)	(0.009)	(0.009)	(0.011)	(0.008)
Tertiary education	0.067***	0.066***	0.068***	0.068***	0.068***
	(0.014)	(0.011)	(0.009)	(0.012)	(0.010)
Married	0.013*	0.013*	0.011	0.011*	0.011*
	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)
Children abroad	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Children in Italy	0.002	0.002	0.003	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	28,912	28,912	33,857	33,857	33,857
R-squared	0.304	0.304	0.322	0.322	0.322

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey. We restrict the sample to immigrants with permanence in Italy equal to or less than 30 years. The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage. We use data before the crisis (2001-2007). The Placebo variable is equal to 1 for the year 2007 in column 1 and for the years 2006 and 2007 in column 2. The Placebo variable is equal to 1 for the year 2008 in column 3, for the years 2007 and 2008 in column 4, and for the years 2006, 2007 and 2008 in column 5.

In the first two columns of Table 4.1 we use data from 2001 to 2007. The placebo treatment variable *Placebo* is equal to 1 for the year 2007 in column 1 and for the years 2006 and 2007 in column 2. In the last three columns of Table 4.1 we use data from 2001 to 2008. The Placebo variable is equal to 1 for the year 2008 in column 3, for the years 2007 and 2008 in column 4, and for the years 2006, 2007 and 2008 in column 5. Indeed, throughout all specifications, the interaction term between the *Informal* dummy and the *Placebo* variable is not statistically significant, implying the validity of our difference-in-differences strategy. Importantly, the estimation results in Table 4.1 also show the absence of an "Ashenfelter's dip" (see Ashenfelter (1978)), that is the wage differential does not change just prior to the crisis, which would invalidate our measurement of the treatment effect.

4.5.2 Main Results

Our main results are presented in Table 3.3. The first column reports the estimation of specification (4.1), considering 2009 as the beginning of the crisis. Results are in line with our hypotheses: the wage differential between formal and informal sector is 15 percent before 2009, while it raises by 12 percentage points to 27 percent during the crisis (the difference is statistically significant).

In order to measure the wage differential between formal and informal sectors in every year, in the second column we include interaction terms of the dummy for the informal sector with year dummies. The coefficients of these interaction terms are not significant before the crisis but become significant after the crisis. The wage differential increases by 6 percentage points in 2009 relative to 2008 (however the increase is not statistically significant); the wage differential grows to 11 percentage points in 2010, then to 14 percentage points in 2011, to 15 percentage points in 2012, and to 17 percentage points in 2013 (all statistically significant).

In the third column, we approximate the wage differential with piecewise-linear function of time allowing for a discontinuous shift at 2009 and a change in the slope afterwards. Once again, we find that in 2009 the wage differential between formal and informal sectors increases by 6 percentage points and then rises by 2.5 percentage points every

year. In the last column of Table 3.3 we assume that the crisis started in 2008 rather than in 2009. Results are qualitatively similar, but the magnitude of the coefficient of interest is smaller: a 9-percentage point increase in the wage differential between formal and informal workers during the crisis, which is smaller than the 12-percentage point increase in the benchmark specification.

Controls are statistically significant; the coefficients have the expected sign. Holding other things equal, women earn 17 percent less than men. The effect of age is non-linear: an additional year increases earnings by 1 percent at the age of 18 but has negative effect after the age of 43; at the age of 55, an additional year of age decreases earnings by about 0.5 percent. Each year spent in Italy raises wages by 1.1 percent. Completion of compulsory school increases wages by 2.2 percent (relative to no schooling), higher education by another 5 percent. Such low returns to education are not surprising given that most immigrants are employed in low-skilled and middle-skilled jobs. Married workers earn wages that are 2 percent higher than those of other workers.

Table 4.3 reports the results of our two-stage procedure. We run regressions separately with and without sample weights. We also check whether the results are similar if we group the data into occupation-province cells (for each year and for formal and informal sector separately) or whether we use individual data (in the latter case we cluster standard errors by province, occupation, year and informal sector dummy). The results are similar. Before the crisis, the wage differential between formal and informal sector is 14-21 percent; after the crisis it increases by additional 12-15 percentage points.

4.5.3 Heterogeneity of Treatment

As discussed in Section 4.3, in order to analyze the role of the minimum wage regulations, we estimate a difference-in-difference-in-differences specification similar to equation (4.1), but where we allow for a differential effect between occupations in which average wage in the formal sector is close to the occupation-specific minimum wage and occupations where average wage is substantially higher than the minimum wage. For each of the 18 occupations we calculate the average pre-crisis wage in 2007 (in the formal sector only) and divide it by minimum wage. Estimates in column 3 of Panel A of Table 4.4

show that our findings do not differ according to whether this ratio is below or above the median (the coefficient at the interaction term $Crisis_t\, Informal_i\, High\, wage/min.\, wage_o$ is not statistically different from zero). Therefore the minimum wage is not an important driver of our results. This finding is confirmed by the first two columns of Panel A where we estimate our baseline specification for the subsample with high average-to-minimum wage ratios and for the subsamble with low average-to-minimum wage ratios; the coefficient at the $InformalXCrisis$ interaction term is the same in the two regressions.

We also assess whether there exists a differential impact for individuals working in occupation highly prone to informality. Specifically, we calculate the median value of the amount of informal workers in the economy and distinguish occupation between those below and above the median.[13] Results in columns 4-6 of Panel A are strikingly homogeneous, with a wage gap for informal workers during the crisis of about 10-12 percent.

We then rank occupations according to complexity. As discussed in the Section 4.4, we refer to occupations with high intensity of communications skills and low intensity of manual skills as "complex" and the others as "simple".[14] We again run two checks: the regressions for subsamples of simple and complex occupations (columns 1 and 2 of Panel B) and difference-in-difference-in-differences specification (column 3 of Panel B). We find that our main result is driven by simple occupations (where the effect is both large and statistically significant). In the subsample of complex occupations (column 2 of Panel B) the coefficient of the Crisis*Informal interaction term is not statistically significant. The results from the difference-in-difference-in-differences specification are similar. A possible reason for the larger downward wage adjustment during the recession in simple occupations is that they involve generic skills, which may imply a larger degree of substitutability between workers (including immigrant and native workers).

On the contrary, distinguishing between unskilled and skilled workers (the latter having attained secondary or greater education) suggests no differential impact of the crisis on

[13] Another way to distinguish between jobs differently prone to informality would be to separate the analysis for workers in small versus large-size firms, as companies with a larger workforce are likely to be more tightly regulated. However, lack of information on the number of employees by firm in the ISMU dataset does not allow such analysis.

[14] "Simple" occupations include unskilled workers, building workers, farm workers, cleaners, craftsmen, and truck workers.

the wages of the workforce by skill level: the wage gap of informality is stable at around 11-13 percent during the crisis (columns 4-6 of Panel B). Similarly, there appears to be no significant difference for women and men (columns 1-3 of Panel C) nor between youth and old workers, defined as those below/above the median age of the sample (columns 4-6 of Panel C).

Our main results are obtained for the whole sample of documented and undocumented immigrants in full-time employment. Columns 1-3 of Table 4.5, instead, focuses on illegal and legal immigrants separately. Results are similar to our benchmark specification, although documented migrants seems to bear more negative impacts from the recession (with an additional wage reduction in the informal sector during crisis of about 8 percent). Similarly, self-employed workers in the shadow economy have also been hit harder by the 2009 crisis, with their wages reduced by an additional 15 percent (columns 4-6). Finally in columns 7-9, we look at part-time and full-time workers separately and in a difference-in-difference-in-differences specification. Again, the wage differential after the recession remains similar to the benchmark results when we consider part-time or full-time workers only (-0.13 and -0.12 respectively).

TABLE 4.2: Wage differential between formal (regulated) and informal (unregulated) sector

	(1) Crisis$\geqslant$ 2009	(2) Crisis$\geqslant$ 2009	(3) Crisis$\geqslant$ 2009	(4) Crisis$\geqslant$ 2008
Informal X Crisis	-0.119***		-0.059*	-0.089***
	(0.035)		(0.034)	(0.022)
Informal	-0.145***	-0.154***	-0.150***	-0.144***
	(0.017)	(0.024)	(0.018)	(0.017)
Informal X Year2001		0.008		
		(0.029)		
Informal X Year2002		0.037		
		(0.041)		
Informal X Year2003		0.003		
		(0.032)		
Informal X Year2004		-0.016		
		(0.031)		
Informal X Year2005		0.007		
		(0.020)		
Informal X Year2006		-0.013		
		(0.025)		
Informal X Year2007		0.020		
		(0.032)		
Informal X Year2009		-0.059		
		(0.036)		
Informal X Year2010		-0.109***		
		(0.036)		
Informal X Year2011		-0.137**		
		(0.066)		
Informal X Year2012		-0.150***		
		(0.036)		
Informal X Year2013		-0.171***		
		(0.044)		
Informal X max$\{Year - 2009, 0\}$			-0.025***	
			(0.007)	
Female	-0.167***	-0.167***	-0.165***	-0.167***
	(0.008)	(0.008)	(0.008)	(0.008)
Age	1.659***	1.649***	1.601***	1.658***
	(0.330)	(0.329)	(0.321)	(0.334)
Age squared	-1.936***	-1.923***	-1.843***	-1.938***
	(0.373)	(0.370)	(0.358)	(0.377)
Years in Italy	0.010***	0.010***	0.010***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)
Compulsory school	0.022***	0.022***	0.020***	0.022***
	(0.007)	(0.007)	(0.007)	(0.007)
High school	0.033***	0.032***	0.032***	0.032***
	(0.008)	(0.008)	(0.007)	(0.008)
Tertiary education	0.073***	0.073***	0.071***	0.073***
	(0.008)	(0.008)	(0.008)	(0.008)
Married	0.017**	0.017**	0.015*	0.016**
	(0.008)	(0.008)	(0.008)	(0.008)
Children abroad	-0.001	-0.001	-0.002	-0.001
	(0.003)	(0.003)	(0.003)	(0.003)
Children in Italy	0.005**	0.005**	0.005**	0.005**
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	49,193	49,193	49,193	49,193
R-squared	0.333	0.333	0.342	0.332

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy. All regressions include year dummies, occupation dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years. The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage.

TABLE 4.3: Two-stage difference-in-differences estimation

	Individual data		Province-occupation cells	
	Unweighted	Weighted	Unweighted	Weighted
	(1)	(2)	(3)	(4)
Crisis X Informal	-0.12***	-0.15***	-0.15***	-0.14***
	(0.025)	(0.041)	(0.037)	(0.042)
Informal	-0.16***	-0.21***	-0.18***	-0.14***
	(0.012)	(0.021)	(0.017)	(0.020)
Observations	60322	60322	1960	1960
R^2	0.492	0.424	0.284	0.207

Notes: In the first stage, we estimate the relationship between the logarithm of after-tax wage and individual characteristics (gender, age, age squared, education, family status, children in Italy, children in the home country, years in Italy, pre-crisis linear trends, dummies for country of origin, occupation-specific pre-crisis time trends, province dummies). In the second stage, we regress the residuals on informal sector dummy and CrisisXInformal interaction term (controlling for year dummies, occupation dummies, province dummies). Robust standard errors in parentheses. In the first two columns, standard errors are clustered by province times occupation times year times informal sector dummy. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years. The sample includes full-time workers only.

TABLE 4.4: Heterogeneity of treatment (1)

	(1)	(2)	(3)	(4)	(5)	(6)
			PANEL A			
Crisis X Informal	-0.106**	-0.109***	-0.097***	-0.125***	-0.103***	-0.117***
	(0.049)	(0.031)	(0.028)	(0.036)	(0.035)	(0.039)
Informal	-0.171***	-0.134***	-0.180***	-0.151***	-0.145***	-0.160***
	(0.027)	(0.013)	(0.021)	(0.020)	(0.016)	(0.018)
Crisis X Informal X			-0.014			
X High avg./min.wage			(0.043)			
Crisis X High avg./min.wage			-0.054***			
			(0.016)			
Informal X High avg./min.wage			0.048**			
			(0.023)			
Crisis X Informal X						0.011
X Above med. informal						(0.049)
Crisis X Above med. informal						-0.038**
						(0.017)
Informal X Above med. informal						0.016
						(0.021)
Sample	Low avg./min.wage	High avg./min.wage	Full sample	Below med. informal	Above med. informal	Full sample
Observations	26,755	22,438	49,193	25,713	23,480	49,193
R-squared	0.300	0.374	0.335	0.293	0.361	0.333
			PANEL B			
Crisis X Informal	-0.179***	-0.072	-0.078**	-0.128***	-0.111***	-0.118***
	(0.039)	(0.050)	(0.035)	(0.040)	(0.033)	(0.029)
Informal	-0.092***	-0.179***	-0.170***	-0.148***	-0.143***	-0.164***
	(0.008)	(0.026)	(0.016)	(0.024)	(0.016)	(0.016)
Crisis X informal X Simple			-0.095*			
			(0.050)			
Crisis X Simple			0.013			
			(0.018)			
Informal X Simple			0.054***			
			(0.021)			
Crisis X informal X Unskilled						-0.024
						(0.036)
Crisis X Unskilled						-0.007
						(0.009)
Informal X Unskilled						-0.030
						(0.020)
Sample	Simple	Complex	Full sample	Unskilled	Skilled	Full sample
Observations	28,356	20,837	49,193	22,244	26,949	52,579
R-squared	0.311	0.317	0.333	0.347	0.333	0.326
			PANEL C			
Crisis X Informal	-0.089*	-0.139***	-0.157***	-0.120***	-0.111**	-0.103***
	(0.049)	(0.031)	(0.032)	(0.032)	(0.043)	(0.032)
Informal	-0.167***	-0.106***	-0.189***	-0.140***	-0.159***	-0.252***
	(0.021)	(0.014)	(0.031)	(0.019)	(0.021)	(0.038)
Crisis X Informal X Female			0.057			
			(0.044)			
Crisis X Female			-0.012			
			(0.015)			
Informal X Female			0.026			
			(0.036)			
Crisis X informal X Youth						-0.021
						(0.030)
Crisis X Youth						0.013
						(0.009)
Informal X Youth						0.118***
						(0.038)
Sample	Female	Male	Full sample	Youth	Old	Full sample
Observations	15,684	33,509	52,579	25,995	23,198	52,579
R-squared	0.254	0.300	0.327	0.320	0.331	0.329

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy in subsamples, by province times occupation in columns 3 and 6. All regressions include individual characteristics (gender, age, age squared, years in Italy, education, marital status, number of children), year dummies, occupation dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years. The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage.

TABLE 4.5: Heterogeneity of treatment (2)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crisis X Informal	-0.076*	-0.113**	-0.127***	-0.211*	-0.112***	-0.103***	-0.135***	-0.119***	-0.173***
	(0.043)	(0.048)	(0.032)	(0.120)	(0.036)	(0.026)	(0.026)	(0.035)	(0.022)
Informal	-0.077***	-0.212***	-0.230***	-0.287***	-0.135***	-0.154***	-0.195***	-0.145***	-0.134***
	(0.020)	(0.034)	(0.022)	(0.038)	(0.018)	(0.012)	(0.023)	(0.017)	(0.018)
Crisis X Informal X Illegal			0.080**						
			(0.036)						
Crisis X Illegal			-0.057***						
			(0.011)						
Informal X Illegal			0.080***						
			(0.024)						
Crisis X Informal X Self-emp						-0.149**			
						(0.068)			
Crisis X Self-emp						0.145***			
						(0.027)			
Informal X Self-emp						-0.229***			
						(0.063)			
Crisis X Informal X Part-time									0.306***
									(0.033)
Crisis X Part-time									-0.370***
									(0.011)
Informal X Part-time									-0.323***
									(0.018)
Sample	Illegal migrants	Legal migrants	Full sample	Self-employed	Wage workers	Full sample	Part time	Full time	Full sample
Observations	6,265	42,700	52,327	2,407	46,786	52,579	10,245	49,193	63,354
R-squared	0.280	0.330	0.328	0.407	0.335	0.335	0.224	0.333	0.388

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy in subsamples, by province times occupation in columns 3, 6 and 9. All regressions include individual characteristics (gender, age, age squared, years in Italy, education, marital status, number of children), year dummies, occupation dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years. The sample includes full-time workers only (unless otherwise specified in columns 7 to 9). The dependent variable is the logarithm of after-tax wage.

4.5.4 Time-varying selection on unobservables

Our difference-in-differences approach provides unbiased results as long as unobserved omitted differences between formal and informal workers remain constant over time. If this assumption holds, then—conditional on all control variables in our specifications—our identification strategy controls for immigrants self-selecting into informal work depending on their unobserved and observed characteristics, and therefore workers can be considered exogenously assigned to the treatment group.

To investigate the sign of the potential bias from selection into informal sector, we have compared actual and counterfactual wage distributions, following Chiquiar & Hanson (2005). In order to construct counterfactual wage densities, we calculate the probability of being an informal worker as a function of a set of covariates. These logit results are then used to compute the weights that we apply to the sample of formal workers to estimate the counterfactual kernel densities of wages for formal workers with informal characteristics. Figure C.2 in Appendix shows the wage densities pre- and post-crisis. As clear in Figure C.3, the difference between actual and counterfactual wage densities remains the same before and after the crisis, suggesting that selection into informal sector is not a major driver of our findings.

In addition, our estimation strategy controls for the selection into the informal sector. We illustrate this identifying assumption with an example. Suppose that workers choose between formal and informal jobs depending on some unobserved factors, such as their level of risk aversion. For instance, more risk-averse workers might be more likely to prefer employment in the formal sector. Our difference-in-differences estimates remain unbiased if differences in risk aversion between formal and informal workers remain similar before and after the crisis. To check whether our findings are due to changes that occurred after the crisis in the composition of the immigrant population with respect to their risk aversion, in Table 4.6 we show that results remain similar when control variables are added sequentially. We include observables such as gender, age and education, which are important correlates of the level of risk aversion, as previous literature shows (see for instance Barsky *et al.* (1997), Guiso & Paiella (2008), and Borghans *et al.*

(2009)). Estimates of the interaction term of $Informal_i$ and $Crisis_t$ are remarkably similar across all specifications.

TABLE 4.6: Regressions with gradual inclusion of control variables (Altonji et al.'s (2005) test)

	(1)	(2)	(3)	(4)	(5)	(6)
Crisis X Informal	-0.081**	-0.085***	-0.088***	-0.077**	-0.088***	-0.093***
	(0.033)	(0.030)	(0.033)	(0.033)	(0.030)	(0.028)
Informal	-0.21***	-0.20***	-0.18***	-0.20***	-0.18***	-0.15***
	(0.016)	(0.016)	(0.016)	(0.016)	(0.015)	(0.018)
Female		yes			yes	yes
Age			yes		yes	yes
Age squared			yes		yes	yes
Years in Italy						yes
Compulsory school				yes	yes	yes
High school				yes	yes	yes
Tertiary education				yes	yes	yes
Married						yes
Children abroad						yes
Children in Italy						yes
Altonji test	7.75	11.63	18.60	5.81	18.60	
Observations	49193	49193	49193	49193	49193	49193
R^2	0.282	0.306	0.302	0.285	0.327	0.344

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy in subsamples, by province times occupation in columns 3 and 6. All regressions include year dummies, occupation dummies, dummies for country of origin, province dummies.* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants with permanence in Italy equal to or less than 30 years. The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage. In columns 1-5, we exclude observed variables that are good predictors of the unobserved risk aversion. We denote the estimated coefficient of interest (i.e. the coefficient of the interaction term) in these specifications as β_r. The value of the Altonji et al.'s (2005) test is then calculated as the absolute value of $\beta_f/(\beta_r - \beta_f)$, where β_f is the coefficient of the interaction term in column 6, i.e. from the estimation that includes the full set of covariates. Whenever covariates are included, we also include their interaction with the "after crisis" dummy.

The table also reports a test in the spirit of Altonji *et al.* (2005).[15] After estimating the

[15]See Bellows & Miguel (2009) and Nunn & Wantchekon (2011) for a similar use of the test to assess the bias from unobservables using selection on observables.

equation using a restricted set of control variables—as in columns 1-5, where we choose to exclude observed variables that are good predictors of the unobserved risk aversion—denote the estimated coefficient of interest (i.e. the coefficient of the interaction term) as β_r. The value of the test is then calculated as the absolute value of $\beta_f/(\beta_r - \beta_f)$, where β_f is the coefficient of the interaction term in column 6 of Table 4.6, i.e. the estimation that includes the full set of covariates.

The median value of the test is 12: considering that age, gender and education are variables that are highly correlated with risk aversion—as previous literature shows—selection on unobserved risk aversion would have to be at least 12 times greater than selection on observables to attribute the entire difference-in-differences estimate to selection effects. This check provides some indirect confirmation that the $Crisis$ dummy is orthogonal to the individuals' risk aversion, i.e. that the composition of formal and informal workers with respect to risk aversion remained very similar before and after the crisis, which is an important identifying assumption in our regressions.

Another potential source of selection is the effect of the Great Recession on return migration. However it is worth stressing that this effect would only strengthen our results. By definition, immigrants are the most mobile category of workers. If during the crisis the least successful informal workers are more likely to go back to their home country, then the coefficient of the interaction term in equation (4.1) would *underestimate* the true magnitude of the wage reduction for informal workers.

To check whether this may represent an issue in our context, in Table C.6 in the Appendix we run regressions similar to our main specification, except that we use the information we have on the immigrants' intentions to return to their origin country. More precisely, the dependent variable in these regressions is a dummy equal to 1 if the immigrant intends to return to her home country. This question is only available in the 2010, 2011, 2012 and 2013 waves of our survey. Therefore we focus on the coefficient of the $Informal_i$ variable, and we cannot add the interaction term between the $Informal_i$ dummy and the $Crisis_t$ variable. Given that long permance in host countries is likely to affect intentions to return (Yang (2006)), we investigate whether results from this check differ according to the length of stay in Italy: in column 1 of Table C.6 there is no

restriction on residence in the host country, column 2 includes individuals whose permanence in Italy is equal to or less than 30 years (as our benchmark specification), 25 years in column 3, 20 years in column 4 and 15 years in column 5. In all specifications the coefficient of interest is not statistically significant. This finding suggests that selection into return migration does not represent an issue in our context.

4.5.5 Robustness Checks

In our benchmark specifications we restrict the estimation sample to immigrants whose length of stay in Italy does not exceed 30 years. This choice is motivated by Figure C.4, which shows that the distribution of permanence in Italy is much more skewed toward the left for informal workers. This restriction has aimed to ensure common support for the distributions of formal and informal workers. In columns 1-4 of Table 4.7 we show that our results remain very similar when we do not consider any restriction on length of stay in Italy (column 1) or when we consider different maximum permanence durations: 25 years (column 2), 20 years (column 3) and 15 years (column 4). Results are comparable across all specifications.

In columns 5-7 we present additional checks. We estimate a specification similar to our benchmark one, but we exclude the year 2002 (column 5). This check is particularly meaningful because in 2002 there was a large immigrant regularization program that legalized about 700,000 immigrants residing in Italy without a regular residence permit. In column (6) we exclude the year 2005, while in column (7) we consider an estimation sample from 2006 to 2013 (rather than from 2001 to 2013 as in the benchmark regressions). Findings are very similar throughout all robustness checks.

In Table C.7 in Appendix, we measure the wage differential between formal and informal sector in each year by subsamples. Specifically, we distinguish between female and male (columns 1 and 2 respectively), unskilled and skilled workers (columns 3-4), youth and old (columns 5-6). Results are overall robust to the different sub-samples, although they shed additional light on the heterogeneous impact of the crisis on different segments of the workforce. Indeed, the negative and significant effect of the Great Recession on the wages of informal workers seems to have started few years later, around 2011-12, for

women, unskilled and elderly. Moreover, the magnitude of such effect is smaller for the aforementioned subsamples:

TABLE 4.7: Robustness checks

	(1) No restriction years in Italy	(2) Years in Italy ⩽25	(3) Years in Italy ⩽20	(4) Years in Italy ⩽15	(5) 2001-2013 except 2002	(6) 2001-2013 except 2005	(7) 2006-2013
Crisis X Informal	-0.115***	-0.116***	-0.113***	-0.105***	-0.115***	-0.118***	-0.113***
	(0.034)	(0.035)	(0.036)	(0.037)	(0.035)	(0.035)	(0.039)
Informal	-0.164***	-0.144***	-0.143***	-0.139***	-0.147***	-0.144***	-0.139***
	(0.017)	(0.017)	(0.017)	(0.017)	(0.019)	(0.017)	(0.024)
Observations	49,285	48,918	47,838	44,129	45,098	45,452	29,977
R-squared	0.323	0.332	0.328	0.324	0.332	0.335	0.317

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy. All regressions include individual characteristics (gender, age, age squared, years in Italy, education, marital status, number of children), year dummies, occupation dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years (unless otherwise specified in columns 1-4). The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage.

4.6 Spillovers between Formal and Informal Sectors

In the analysis above we treated formal and informal sectors separately. However, it may well be the case that these two labour markets are at least partially integrated: some of the formal workers that lose their jobs due to macroeconomic shocks and downward wage stickiness may be able to reallocate in the informal sector. This increases labour supply in the informal sector and results in further downward pressure on informal wages (in addition to the compression due to the demand shock).[16] In this Section, we consider a parsimonious partial equilibrium model to illustrate these effects. We then carry out an empirical analysis of the changes in employment in the formal and informal sectors during the Great Recession. Finally, we use our model to reconcile the empirical findings and estimate the degree of integration between the two sectors.

4.6.1 Model

We consider a model of two imperfectly integrated labour markets: formal F and informal I. We assume that α percent of workers are perfectly mobile between the two sectors while the remaining $1-\alpha$ percent cannot move across sectors. (If $\alpha = 0$, the two markets are perfectly segmented, if $\alpha = 1$ the markets are perfectly integrated.) We assume that the mobility shock is independent of all other parameters. The elasticities of labour supply and demand in formal and informal markets are e_S^k, e_D^k, $k = F, I$, respectively.[17]

Initially, both markets are in equilibrium, and employment in formal and informal sectors is L^F and L^I, respectively. Then an aggregate demand shock shifts labour demand curves down in both formal and informal sectors (see Figure 4.4). We assume that the shock is proportional so in both sectors the labour demand curves move down by x percent.

[16] Another potential source of spillovers is linked to the fact that recessions may induce workers to move to lower paying occupations, such as agriculture (Lessem & Nakajima (2015)). In order to reject this hypothesis, we re-run our benchmark Table 4.2 without occupation dummies. Results in Table C.8 in Appendix show that the coefficient of the interaction between the informality dummy and the crisis variable is remarkably similar to the one in Table 4.2 throughout all specifications.

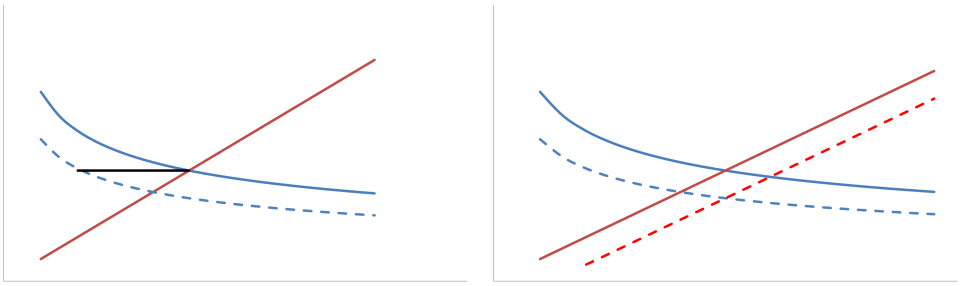
[17] The microfoundations for labour demand and labour supply are provided in Appendix B. See also Boeri & Garibaldi (2005) for a fully-specified matching model with heterogenous workers and their sorting into formal and informal employment.

The wage in the formal sector is downward sticky so the following number of workers are displaced:[18]

$$\Delta L^F = x e_D^F L^F. \tag{4.2}$$

Given the imperfect integration of formal and informal markets, $\alpha \Delta L^F$ displaced workers move to the informal sector while the others are unemployed or leave the labour force.

FIGURE 4.4: Adjustments in the formal and informal sectors.



Notes. Supply and demand graphs for the formal sector (left) and the informal sector (right). We assume that both markets experience a negative labour demand shock. As the wage in the formal sector is rigid, this results in underemployment of workers in the former sector some of whom move to the informal labour market; therefore the supply curve in the informal labour market shifts rightwards. The new equilibrium in the informal labour market is the intersection of two dotted lines.

Let us now consider the informal labour market. This market experiences a decrease in demand (the labour demand curve shifts by x percent down) and an increase in labour supply (labour supply curve moves rightwards by $\alpha \Delta L^F$ workers). Both of these shocks drive wages down. The overall reduction in wages of the informal sector is:

$$\frac{\Delta w^I}{w^I} = \frac{x e_D^I}{e_D^I + e_S^I} + \frac{\alpha L^F}{L^I} \frac{x e_D^F}{e_D^I + e_S^I}. \tag{4.3}$$

The first term is the reduction in wage due to the macro shock while the second one is due to the reallocation of workers from the formal sector.

[18] In what follows, we assume that changes are small and that elasticities are constant in the neighborhood of the equilibrium.

The change in employment in the informal sector is as follows:

$$\frac{\Delta L^I}{L^I} = -x\frac{e_D^I e_S^I}{e_D^I + e_S^I} + x\frac{\alpha L^F}{L^I}\frac{e_D^F}{e_D^I(e_D^I + e_S^I)}. \tag{4.4}$$

The first term is the reduction of employment due to a decrease in demand for labour, whilst the second term is the increase in employment due to the increase in labour supply.

4.6.2 Employment in Formal and Informal Sector: Empirical Facts

We now study the changes in employment in the formal and the informal sectors after the crisis. In Table 4.8 we present regressions where the dependent variables are employment in the formal sector (first two columns) and employment in the informal sector (last three columns). In the second and fourth columns we condition on labour force participation, while in the fifth column we condition on employment.

In all specifications the coefficients at the year dummies are never significantly different from zero before the beginning of the recession (year 2008 is the omitted category). The situation changes after the crisis. The first column of Table 4.8 shows that the employment rate in the formal sector decreases by 3 percent in 2009, 4 percent in 2010, 12 percent in 2011, 15 percent in 2012 and 16 percent 2013 (relative to 2008). Results conditional on labour force participation (column 2) are similar except that the significant decrease in the employment rate in the formal sector starts in 2011.

Conversely, columns 3 and 4 — the latter presenting the estimates conditional on labour force participation — show that the employment rate in the informal sector does not fall (it actually *increases* by about 2 percent in 2012 relative to 2008). With regard to the estimates that condition on employment, the last column of the table shows an increase in the informal employment rate by 3 percentage points in 2012 and 2013.[19]

[19] Looking separately at women and men in Tables 4.9 and 4.10 respectively, we find that the Great Recession has a stronger impact on men. In fact, female employment rates in the formal sector start decreasing significantly in 2011 with a maximum reduction of 12 percent in 2012 (column 1 Table 4.9), whilst male employment is hit already in 2010 and reaches a reduction of 20 percent in 2013 (column 1 Table 4.10). Similar results hold once conditioning for labour force participation (column 2 of the

TABLE 4.8: Employment in the formal and informal sectors, whole sample

	(1) Employment formal sector	(2) Employment formal sector	(3) Employment informal sector	(4) Employment informal sector	(5) Employment informal sector
Year2001	-0.020	-0.010	0.008	0.011	0.011
	(0.017)	(0.014)	(0.014)	(0.015)	(0.015)
Year2002	-0.000	-0.001	0.005	0.005	0.005
	(0.015)	(0.015)	(0.016)	(0.016)	(0.016)
Year2003	-0.005	0.001	-0.000	0.001	0.000
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Year2004	0.009	0.008	-0.009	-0.009	-0.009
	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)
Year2005	0.013*	0.010	-0.008	-0.009	-0.009
	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)
Year2006	-0.007	-0.007	0.008	0.008	0.008
	(0.008)	(0.009)	(0.010)	(0.009)	(0.009)
Year2007	-0.009	-0.015	0.015	0.015	0.015
	(0.016)	(0.015)	(0.015)	(0.016)	(0.015)
Year2009	-0.027***	-0.009	0.006	0.008	0.009
	(0.009)	(0.010)	(0.010)	(0.009)	(0.009)
Year2010	-0.035***	-0.015	0.010	0.012	0.013
	(0.009)	(0.010)	(0.010)	(0.010)	(0.010)
Year2011	-0.115***	-0.098***	0.006	0.008	0.018
	(0.020)	(0.021)	(0.018)	(0.018)	(0.019)
Year2012	-0.147***	-0.136***	0.017*	0.019*	0.033***
	(0.015)	(0.015)	(0.010)	(0.010)	(0.011)
Year2013	-0.160***	-0.149***	0.016	0.019	0.032**
	(0.026)	(0.026)	(0.012)	(0.012)	(0.015)
Female	-0.043***	-0.044***	0.038***	0.039***	0.040***
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Age	2.383***	1.246***	-0.790***	-0.966***	-1.024***
	(0.403)	(0.236)	(0.223)	(0.241)	(0.245)
Age squared	-2.774***	-1.526***	0.958***	1.157***	1.235***
	(0.444)	(0.278)	(0.276)	(0.293)	(0.296)
Years in Italy	0.003***	0.005***	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	-0.003	-0.009	0.003	0.003	0.004
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Children abroad	-0.003***	-0.002**	0.002*	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Children in Italy	-0.003**	-0.003*	0.003**	0.003**	0.003**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Compulsory school	0.027***	0.027***	-0.027***	-0.027***	-0.027***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
High school	0.028***	0.036***	-0.033***	-0.032***	-0.033***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Tertiary education	0.038***	0.051***	-0.054***	-0.052***	-0.053***
	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)
Year dummies	yes	yes	yes	yes	yes
Occupation dum.	yes	yes	yes	yes	yes
Province dummies	yes	yes	yes	yes	yes
Origin dummies	yes	yes	yes	yes	yes
Observations	57,061	56,208	57,061	56,208	54,945
R-squared	0.103	0.094	0.083	0.085	0.088

Notes: Robust standard errors in parentheses, clustered by province, simple occupation dummy, Crisis dummy. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Sample is limited to documented migrants. Estimates in columns 2 and 4 are conditional on labour force participation. The specification in column 5 is conditional on employment.

respective tables). Conversely, the crisis increases men's participation in informal employment, without any significant effect on female rates (columns 3-5 of Tables 4.10 and 4.9 respectively).

TABLE 4.9: Employment in the formal and informal sectors, female

	(1) Employment formal sector	(2) Employment formal sector	(3) Employment informal sector	(4) Employment informal sector	(5) Employment informal sector
Year2001	-0.012	0.020	-0.027	-0.019	-0.019
	(0.042)	(0.030)	(0.026)	(0.029)	(0.029)
Year2002	-0.015	-0.015	0.019	0.019	0.018
	(0.032)	(0.033)	(0.034)	(0.034)	(0.034)
Year2003	-0.013	-0.007	0.008	0.009	0.009
	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)
Year2004	0.001	-0.004	0.001	-0.000	-0.000
	(0.020)	(0.020)	(0.019)	(0.019)	(0.019)
Year2005	0.040***	0.035***	-0.033**	-0.034***	-0.034***
	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)
Year2006	-0.020	-0.020	0.020	0.020	0.020
	(0.021)	(0.023)	(0.023)	(0.023)	(0.023)
Year2007	-0.011	-0.019	0.020	0.019	0.019
	(0.028)	(0.027)	(0.027)	(0.027)	(0.027)
Year2009	-0.040**	-0.011	0.007	0.010	0.010
	(0.016)	(0.015)	(0.014)	(0.014)	(0.014)
Year2010	-0.015	0.008	-0.014	-0.011	-0.010
	(0.016)	(0.015)	(0.016)	(0.016)	(0.016)
Year2011	-0.094***	-0.076***	-0.022	-0.019	-0.007
	(0.018)	(0.018)	(0.015)	(0.016)	(0.016)
Year2012	-0.125***	-0.114***	0.005	0.008	0.023
	(0.022)	(0.021)	(0.020)	(0.021)	(0.022)
Year2013	-0.110***	-0.103***	0.001	0.002	0.014
	(0.022)	(0.020)	(0.018)	(0.018)	(0.019)
Age	2.846***	1.649***	-1.163***	-1.403***	-1.449***
	(0.410)	(0.251)	(0.288)	(0.289)	(0.293)
Age squared	-3.137***	-1.848***	1.263***	1.529***	1.585***
	(0.456)	(0.311)	(0.368)	(0.365)	(0.370)
Years in Italy	0.002	0.003***	-0.003***	-0.003**	-0.003***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	-0.027**	-0.040***	0.031***	0.030***	0.031***
	(0.010)	(0.011)	(0.009)	(0.009)	(0.009)
Children abroad	-0.003	-0.002	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Children in Italy	-0.009***	-0.009***	0.008***	0.008***	0.008***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Compulsory school	0.036**	0.036**	-0.035*	-0.034*	-0.035*
	(0.018)	(0.017)	(0.018)	(0.018)	(0.019)
High school	0.040**	0.047**	-0.044**	-0.042**	-0.044**
	(0.019)	(0.019)	(0.019)	(0.020)	(0.020)
Tertiary education	0.057***	0.074***	-0.079***	-0.077***	-0.078***
	(0.021)	(0.018)	(0.018)	(0.019)	(0.019)
Year dummies	yes	yes	yes	yes	yes
Occupation dum.	yes	yes	yes	yes	yes
Province dummies	yes	yes	yes	yes	yes
Origin dummies	yes	yes	yes	yes	yes
Observations	20,854	20,405	20,854	20,405	19,933
R-squared	0.117	0.117	0.120	0.122	0.125

Notes: Robust standard errors in parentheses, clustered by province, simple occupation dummy, Crisis dummy. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Sample is limited to documented migrants. Estimates in columns 2 and 4 are conditional on labour force participation. The specification in column 5 is conditional on employment.

TABLE 4.10: Employment in the formal and informal sectors, male

	(1) Employment formal sector	(2) Employment formal sector	(3) Employment informal sector	(4) Employment informal sector	(5) Employment informal sector
Year2001	-0.026***	-0.030***	0.029***	0.029***	0.029***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)
Year2002	0.004	0.002	0.001	0.001	0.001
	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)
Year2003	0.002	0.008	-0.007	-0.007	-0.007
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Year2004	0.011	0.011	-0.012	-0.012	-0.012
	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)
Year2005	-0.003	-0.004	0.005	0.005	0.005
	(0.007)	(0.005)	(0.005)	(0.005)	(0.005)
Year2006	0.003	0.002	-0.003	-0.003	-0.002
	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Year2007	-0.010	-0.014	0.014	0.014	0.014
	(0.010)	(0.010)	(0.011)	(0.011)	(0.011)
Year2009	-0.018**	-0.007	0.006	0.007	0.007
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Year2010	-0.050***	-0.032***	0.028**	0.030***	0.031***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Year2011	-0.128***	-0.114***	0.026	0.028*	0.036*
	(0.019)	(0.021)	(0.016)	(0.016)	(0.019)
Year2012	-0.164***	-0.153***	0.027**	0.029***	0.041***
	(0.021)	(0.020)	(0.010)	(0.010)	(0.014)
Year2013	-0.197***	-0.181***	0.026***	0.028***	0.042***
	(0.022)	(0.025)	(0.009)	(0.009)	(0.012)
Age	2.069***	0.955***	-0.531**	-0.676***	-0.736***
	(0.388)	(0.218)	(0.200)	(0.216)	(0.219)
Age squared	-2.647***	-1.402***	0.841***	1.009***	1.097***
	(0.461)	(0.283)	(0.255)	(0.275)	(0.279)
Years in Italy	0.004***	0.005***	-0.004***	-0.004***	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	0.032***	0.030***	-0.031***	-0.031***	-0.032***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Children abroad	-0.005**	-0.004**	0.003***	0.003***	0.004***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Children in Italy	0.001	0.001	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Compulsory school	0.024***	0.024***	-0.023***	-0.023***	-0.024***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
High school	0.025***	0.033***	-0.030***	-0.029***	-0.030***
	(0.008)	(0.009)	(0.008)	(0.008)	(0.008)
Tertiary education	0.027***	0.037***	-0.034***	-0.034***	-0.035***
	(0.007)	(0.008)	(0.008)	(0.007)	(0.008)
Year dummies	yes	yes	yes	yes	yes
Occupation dum.	yes	yes	yes	yes	yes
Province dummies	yes	yes	yes	yes	yes
Origin dummies	yes	yes	yes	yes	yes
Observations	36,207	35,803	36,207	35,803	35,012
R-squared	0.103	0.088	0.055	0.057	0.060

Notes: Robust standard errors in parentheses, clustered by province, simple occupation dummy, Crisis dummy. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Sample is limited to documented migrants. Estimates in columns 2 and 4 are conditional on labour force participation. The specification in column 5 is conditional on employment.

4.6.3 Discussion and Counterfactual Analysis

Our empirical results imply three stylized facts about the formal and informal labour markets in Italy during the Great Recession. First, in the formal sector wages do not change while employment declines. Second, in the informal sector wages decline while employment does not change. Third, the percentage change in employment in the formal sector is roughly equal to that of the wage in the informal sector.

These facts directly give rise to two important results. On one side, the informal labour market is flexible — otherwise informal wages would have not declined. On the other side, as long as the informal labour supply is elastic, the formal and informal markets are at least partially integrated; if they were perfectly segmented, employment in the informal market would have declined — while we observe no change or even an increase in the informal employment.

Our simple model in the Subsection 4.6.1 reconciles the stylized facts from our empirical findings in both qualitative and quantitative terms. First, consider the fact that the employment in the informal sector does not change. By setting the right-hand side in (4.4) to zero, we find: $\frac{e_D^I e_S^I}{e_D^I+e_S^I} = \frac{\alpha L^F}{L^I}\frac{e_D^F}{e_D^I(e_D^I+e_S^I)}$ or:

$$\frac{\alpha L^F}{L^I} = \frac{e_D^I e_S^I}{e_D^F/e_D^I} \tag{4.5}$$

The second empirical observation is that the percentage change in the informal wage is roughly equal to the percentage change in the formal employment. Using equations (4.2) and (4.3), we find :

$$e_D^F = \frac{e_D^I + e_D^F\frac{\alpha L^F}{L^I}}{e_D^I + e_S^I}. \tag{4.6}$$

Equations (4.5)-(4.6) imply that:

$$\alpha = \frac{L^I}{L^F}\frac{e_D^I e_S^I(e_D^I + e_S^I)}{e_D^I e_S^I + 1} \tag{4.7}$$

$$e_D^F = \frac{e_D^I(e_D^I e_S^I + 1)}{e_D^I + e_S^I} \tag{4.8}$$

Thus if we know the elasticities of demand and supply, we can estimate the degree of integration of the formal and informal labour markets.

We will assume that the elasticity of demand in the formal sector is e_D^F is close to 1 (the exact point estimate from Navaretti *et al.* (2003) is 0.96 but the confidence interval includes 1). Equation (4.8) then implies $e_D^I = 1$ as well. In the meanwhile, the survey of Bargain *et al.* (2014) shows that the labour supply elasticity in Italy is in the range of 0.1-0.65. Taking $L^I = 0.1L^F$ from the data and elasticity of supply equal to 0.1, we obtain $\alpha = 0.01$. If the elasticity of supply is equal to 0.65, then $\alpha = 0.065$. In both cases, only a very small share of displaced formal workers move from the formal to the informal sector.[20]

These results allow us predicting the reaction of formal labour markets to the labour demand shock in the scenario where formal wages were fully flexible. If we assume as above that the elasticity of demand is 1 and the elasticity of supply is 0.1, then the decline of demand for labour by x percent would be mostly accommodated through drops in wages. Specifically, formal wages would fall by $\frac{xe_D^F}{e_D^F+e_S^F}$ percent. Using data from the informal sector, we find that if formal wages were flexible, they would have fallen by 17 percent between 2008 and 2013. On the other hand, the decline in employment would be smaller than equation (4.2) by the factor of $\frac{e_D^F+e_S^F}{e_S^F} = 11$. Instead of falling by 16 percent between 2008 and 2013, formal employment would have declined only by 1.5 percent. If we assume that elasticity of labour supply is 0.65 then the results of the counterfactual analysis are less striking. Nonetheless, the change in employment would still be low: only 6 percent.

[20] If we assume that the informal labour supply is perfectly inelastic, $e_S^I = 0$, then our empirical findings are consistent with the setting where formal and informal labour markets are perfectly separated $\alpha = 0$. For this to be the case, the elasticity of the formal labour market demand must be equal to one, $e_D^F = 1$ (which is in line with Navaretti *et al.* (2003)); there are no constraints on the elasticity of demand in the informal sector e_D^I.

4.7 Conclusions

In this paper we study the process of wage adjustment in formal and informal labour markets in Italy. We show that despite substantial growth of unemployment in 2009-13, wages in the regulated formal labour market have not adjusted. Conversely, wages in the unregulated informal labour market have declined dramatically. The wage differential between formal and informal markets, which has been relatively constant at 15 percent in 2001-08, has grown rapidly after 2009 and reached 32 percent in 2013. We show that the wage adjustment in the informal sector takes place along with a shift from formal to informal employment.

These results are consistent with the view that regulation is responsible for the lack of wage adjustment and increase in unemployment during recessions. Our findings are based on data on immigrants rather than the general labour force. However, we also find that our results are more pronounced for individuals in simple occupations. These are the occupations with relatively easy substitutability between immigrants and natives, and allow us to speculate that our findings can be generalized for low-skilled natives as well.

Chapter 5

Conclusion

This Thesis have shedded light on three novel aspects of the economics of migration. Firstly, it has deepened our knowledge of the migration-induced transfer of social norms. In particular, we found robust evidence that, while living abroad, migrants assimilate host country's values and attitudes towards women, and then, upon return, they bring back home these newly-acquired gender norms and diffuse them among their family members. Econometric analysis for Jordan suggest that women with a returnee in the household are more likely than women from a non-migrant family to bear discriminatory gender norms. This is driven especially by women living with a returnee from highly-conservatory Arab destinations, which notably face great gender inequalities. Moreover, this effect goes well beyond perceptions, affecting also development outcomes, such as female labour force participation, girl's education, and fertility choices.

Secondly, we showed that both current and return international migrants are drivers of political change. Exploiting detailed data on Morocco, we found that, after being exposed to more democratic and equal behaviours in Europe and North America, households with a returnee from the West are more likely to ask for a change in the political and social status quo than non-migrant families. Conversely, additional estimates suggest that families with a current migrant are less likely to prefer change than non-migrant households, driven by the diaspora in the Gulf and Arab destinations.

Hence, from a policy perspective this Thesis proved that, through exposure to different values, migration is a powerful way to modify both social and political norms in origin countries. However, destination matters, and not always the norms acquired abroad turn out to be more equal, democratic and modern than the ones at home.

From a research perspective, instead, the analysis undertaken emphasized the importance of controlling for selectivity when comparing migrants and stayers. Even more importantly, however, the present Thesis innovated the economic literature by also showing that selection into return migration and selection into destination are remarkable sources of additional bias. The econometric and identification strategies proposed in this Thesis correspond to a first contribution towards the estimation of such a multiple migrant selection. Promising avenues for further research are lying in this area. Novel identification strategies to tackle the three-fold migration selectivity are hence well awaited.

Remarkably, there is also a lack of knowledge on the migrants' adoption process of norms at destination. In fact, whilst this Thisis has well proved that households with a current or return migrant member bear different social and political norms than non-migrant families, little is still known on how migrants adopt different attitudes when living abroad. Is the assimilation of destination countries' beliefs a slow and gradual process, or short-term temporary migration is enough to let migrants change their preferences? Are certain individuals (such as youth or women) more likely to adopt different norms when abroad? Does the education level of the migrant play a role in the assimilation process? Is just the exposure to different attitudes surrounding the migrant enough to modify norms, or first-hand experiences are the real drivers of change? All these questions, and many more, are still unanswered and open the door to a promising strand of the economic literature.

Finally, this Thesis contributed to the literature on the labour market outcomes of immigrants during crises. Adopting a difference-in-differences approach on 2001-2013 data on immigrants in Italy, we found that wages for documented workers did not adjust during the Great Recession, whilst wages of undocumented immigrants fell drastically. This wage adjustment took place along with a movement from formal to informal employment.

Nonetheless, the 2009-13 period does not provide an exhaustive answer with regard to the speed and nature of this wage adjustment. In fact, our data show that wages in the informal sector continue to fall throughout the period. It is not possible yet to judge whether this continuing decrease in wages is the delayed response to the initial one-off shock or every subsequent decrease is a reaction to the next round of aggregate demand decline. In order to address this important question, we would need to collect data on both formal and informal labor markets for several years after the economy starts to recover.

Clearly, there is a large gap in the availability of nationally-representative information on the informal and underground economy. Such lack of data limits critical research on the labour market performance of large segments of the population (for example, as discussed in Chapter 4 of this Thesis, in Italy the informal sector contributes to around a fourth of the total GDP). Therefore, in addition to the already available labour market information, it is therefore imperative to enforce collection of data on informal workers as well, either within national labour force surveys, or household surveys, or even through specifically-designed questionnaires.

In sum, as shown in the Introduction of this manuscript, the economics of migration research is moving away from the traditional topics of interest and it is exploring new areas. Clearly, the findings of this Thesis are an important step towards a better understanding of the migration phenomenon. But overall our results can be extended to different contexts and countries, and, in this sense, there is great room for future research.

Appendix A

Appendix to Chapter 2

Table A.1: Variables included in RWI and respective weights

Variable	Categories	EQUAL	PCA	MCA
Place of a woman should not only be the house, she should be allowed to work	Agree	0.1	0.3949	0.079
	Disagree			-0.812
A husband should help the working mother in taking care of the children	Agree	0.1	0.3855	0.055
	Disagree			-1.109
A husband should help the working wife in housework	Agree	0.1	0.3390	0.084
	Disagree			-0.560
Female education should be to get jobs, not only to become good wives/mothers	Agree	0.1	0.1112	0.063
	Disagree			-0.080
The woman working outside home can be a good mother	Agree	0.1	0.2489	0.069
	Disagree			-0.370
Women should work in order to be financially independent	Agree	0.1	0.1643	0.088
	Disagree			-0.126
Female work doesn't contradict with ability to build good relationship with husband	Agree	0.1	0.2481	0.092
	Disagree			-0.276
Women should get leadership positions in the society	Agree	0.1	0.3071	0.089
	Disagree			-0.437
I do not mind if boys and girls get the same level of education	Agree	0.1	0.4028	0.026
	Disagree			-2.547
Boys and girls should be treated equally	Agree	0.1	0.4014	0.023
	Disagree			-2.856

Source: JLMPS, 2010.

TABLE A.2: Variables included in FMI and respective weights

Variable	Categories	EQUAL	PCA	MCA
You can go to the market without permission	Agree	0.25	0.5009	0.186
	Disagree			-3.522
You can go to the doctor for treatment without permission	Agree	0.25	0.5140	0.192
	Disagree			-3.590
You can go to take one of the children to the doctor without permission	Agree	0.25	0.4927	0.197
	Disagree			-3.217
You can visit a relative, friend or neighbour without permission	Agree	0.25	0.4921	0.186
	Disagree			-3.408

Source: JLMPS, 2010.

TABLE A.3: Variables included in DMPI and respective weights

Variable	Categories	EQUAL	PCA	MCA
In your family you usually have the final say in making large household purchases	Agree	0.11	0.3193	1.174
	Disagree			-0.115
In your family you usually have the final say in making household purchases for daily needs	Agree	0.11	0.3495	0.881
	Disagree			-0.183
In your family you usually have the final say in visiting family, friends or relatives	Agree	0.11	0.3108	0.856
	Disagree			-0.149
In your family you usually have the final say in choosing what food should be cooked each day	Agree	0.11	0.3083	0.405
	Disagree			-0.310
In your family you usually have the final say in getting medical treatment or advice for yourself	Agree	0.11	0.3489	0.466
	Disagree			-0.345
In your family you usually have the final say in buying clothes for yourself	Agree	0.11	0.2831	0.248
	Disagree			-0.427
In your family you usually have the final say in taking the children to the doctor	Agree	0.11	0.3874	0.836
	Disagree			-0.237
In your family you usually have the final say in sending the children to school	Agree	0.11	0.2954	0.775
	Disagree			-0.149
In your family you usually have the final say in buying clothes for the children	Agree	0.11	0.3808	0.698
	Disagree			-0.275

Source: JLMPS, 2010.

TABLE A.4: Characteristics of returnees and non-migrants

	Non-Migrant	Returnee	t-Test
Employment status	0.38	0.42	(-3.03)**
Less than basic education	0.19	0.16	(2.64)**
Basic education	0.41	0.27	(10.75)***
Secondary education	0.20	0.25	(-4.33)***
Post-secondary education	0.20	0.32	(-11.06)***
Married	0.51	0.68	(-12.68)***
Consanguinity	0.14	0.19	(-4.48)***
Rural areas	0.31	0.09	(18.64)***
Age	30.47	38.12	(-23.78)***
Age squared	10.65	16.18	(-24.57)***
Children	0.92	0.94	(-1.78)
Mother's education	1.94	2.10	(-4.66)***
N	12425	1518	

Source: JLMPS, 2010.

TABLE A.5: Robustness check - Heckman selection

	(1)	(2)
	Probability of Return Migration	***Probability of Emigration***
Oil price		0.007
		(12.55)***
Shocks	0.104	
	(7.36)***	
Mills	0.618	
	(12.65)***	
$\chi^2(18)$=1156.26	Prob¿χ^2=0.000	
Observations	13,943	

Source: JLMPS, 2010.

TABLE A.6: Robustness check - Single variables

	(1)	(2)	(3)	(4)	(5)
	Female Leadership	***Go to Doctor***	***Visit Relatives***	***Decide purchases***	***Children to Doctor***
Return migrant	-0.251	-0.133	-0.106	-0.142	-0.321
	(0.097)***	(0.043)***	(0.046)**	(0.042)***	(0.108)***
Probability of Emigration					
Oil price	0.001	0.001	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration					
Shocks	0.148	0.148	0.148	0.148	0.155
	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.874	-0.874	-0.875	-0.874	-0.900
	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.100	-1.101	-1.101	-1.101	-1.143
	(0.014)***	(0.014)***	(0.014)***	(0.014)***	(0.015)***
rho_12	0.263	0.253	0.219	0.163	0.298
	(0.104)**	(0.082)***	(0.090)**	(0.073)**	(0.106)***
rho_13	0.209	0.258	0.220	0.158	0.279
	(0.090)**	(0.077)***	(0.084)***	(0.065)**	(0.099)***
rho_23	1.387	1.387	1.386	1.387	1.352
	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***
N	4,098	4,098	4,098	3,773	3,773

Notes. (I) Dep. var. in column 1 is "You think women should get leadership positions in the society"; Dep. var. in column 2 is "You can go to the doctor for treatment without permission"; Dep. var. in column 3 is "You can visit a relative, friend or neighbour without permission"; Dep. var. in column 4 is "In your family you usually have the final say in making large household purchases"; Dep. var. in column 5 is "In your family you usually have the final say in taking the children to the doctor". (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 13,943 individuals. (IV) Data source: JLMPS, 2010.

TABLE A.7: Average predicted values - Single variables

	With returnee	Without migrant	Difference (%)	P-value
Female leadership	0.648	0.867	-0.25	0.00
Go to doctor	-0.002	0.097	-1.02	0.00
Visit relatives	0.009	0.089	-0.90	0.00
Decide purchase	0.003	0.112	-0.97	0.00
Children to doctor	0.121	0.387	-0.69	0.00

Notes. (I) P-value reports the results of a t test of Ho: Return migration=Non-migrants. (II) Values are weighted by the sampling weights provided in the dataset. (III) Data source: JLMPS, 2010.

TABLE A.8: Robustness check - Reference year for historical oil price

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		RWI			***FMI***			***DMPI***	
	mca	***pca***	***equal***	***mca***	***pca***	***equal***	***mca***	***pca***	***equal***
Return migrant	-0.072	-0.097	-0.106	-0.097	-0.109	-0.097	-0.134	-0.155	-0.131
	(0.024)***	(0.029)***	(0.034)***	(0.041)**	(0.039)***	(0.041)**	(0.086)	(0.067)**	(0.091)
Probability of Emigration									
Oil price at 24	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Probability of Return Migration									
Shocks	0.159	0.159	0.158	0.158	0.158	0.158	0.158	0.158	0.158
	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***	(0.009)***
sigma_1	-0.886	-0.886	-0.886	-0.910	-0.910	-0.910	-0.966	-0.966	-0.966
	(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.006)***	(0.006)***	(0.006)***
sigma_2	-1.134	-1.134	-1.134	-1.172	-1.172	-1.172	-1.241	-1.241	-1.241
	(0.014)***	(0.014)***	(0.014)***	(0.015)***	(0.015)***	(0.015)***	(0.015)***	(0.015)***	(0.015)***
rho_12	0.272	0.315	0.281	0.215	0.251	0.215	0.202	0.256	0.199
	(0.089)***	(0.098)***	(0.090)***	(0.084)**	(0.084)***	(0.084)**	(0.155)	(0.140)*	(0.161)
rho_13	0.248	0.278	0.242	0.217	0.256	0.216	0.204	0.264	0.200
	(0.082)***	(0.086)***	(0.081)***	(0.087)**	(0.087)***	(0.087)**	(0.136)	(0.128)**	(0.141)
rho_23	1.308	1.308	1.308	1.308	1.308	1.308	1.308	1.308	1.308
	(0.037)***	(0.036)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***	(0.037)***
N	4,098	4,098	4,098	4,098	4,098	4,098	3,773	3,773	3,773

Notes. (I) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (II) The selection equations are based on full sample of 13,943 individuals. (III) Data source: JLMPS, 2010.

Appendix B

Appendix to Chapter 3

TABLE B.1: Variables included in the composite index and respective weights

Variable	Categories	EQUAL	PCA	MCA
I am not happy on how Morocco is administered	Agree	0.20	0.2947	0.209
	Disagree			-0.083
I do not think we should defend the traditional lifestyle in Morocco	Agree	0.20	0.0966	0.200
	Disagree			-0.009
We need to make more effort so that men and women are treated equally	Agree	0.20	0.5371	0.083
	Disagree			-0.693
We need to make more effort so that everybody is treated equally	Agree	0.20	0.5571	0.062
	Disagree			-0.997
I think people should be more involved in the decision-making process	Agree	0.20	0.5523	0.707
	Disagree			-0.086

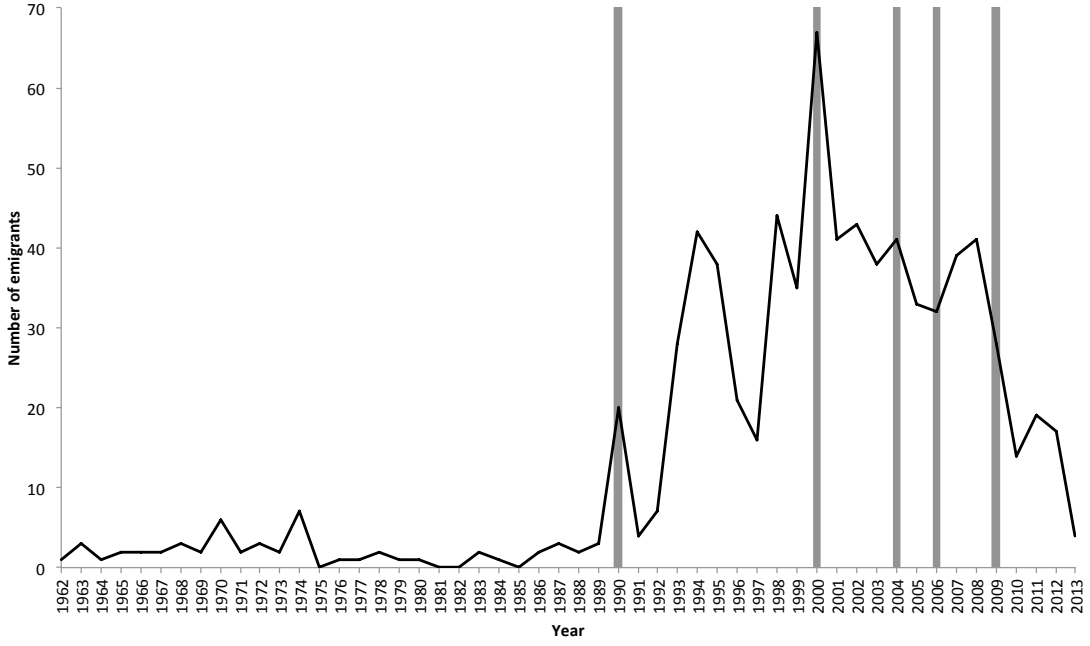
Source: IIIMD, 2013.

TABLE B.2: Robustness check - Reference year for attractiveness

	(1) Age=25	(2) Age=26	(3) Age=27	(4) Age=28	(5) Age=29	(6) Age=30
Political and Social Change						
return migration	0.102	0.089	0.109	0.113	0.117	0.113
	(3.01)***	(2.56)**	(2.72)***	(2.91)***	(3.01)***	(3.09)***
Probability of Return Migration						
shock	0.792	0.790	0.785	0.784	0.783	0.783
	(27.11)***	(26.91)***	(26.09)***	(25.90)***	(25.90)***	(25.89)***
Probability of Emigration						
attractiveness	0.049	0.044	0.034	0.035	0.047	0.045
	(2.88)***	(2.40)**	(1.58)	(1.85)*	(2.46)**	(2.29)**
sigma_1	-1.959	-1.963	-1.956	-1.954	-1.952	-1.954
	(41.11)***	(41.50)***	(40.53)***	(40.61)***	(40.39)***	(40.92)***
sigma_2	-1.160	-1.160	-1.160	-1.160	-1.160	-1.160
	(30.99)***	(31.00)***	(30.96)***	(30.96)***	(30.95)***	(30.96)***
rho_12	-0.218	-0.209	-0.224	-0.228	-0.231	-0.230
	(3.00)***	(2.86)***	(3.00)***	(3.07)***	(3.12)***	(3.10)***
rho_13	-0.206	-0.154	-0.229	-0.242	-0.257	-0.247
	(2.19)**	(1.58)	(1.90)*	(2.10)**	(2.23)**	(2.29)**
rho_23	0.291	0.299	0.319	0.323	0.324	0.322
	(6.06)***	(6.34)***	(6.80)***	(6.88)***	(6.92)***	(6.81)***
N	441	441	441	441	441	441

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) The selection equations are based on full sample of 1,524 observations. (IV) Data source: IIIMD, 2013.

FIGURE B.1: Emigrants by year and shocks



Source: IIIMD, 2013.

TABLE B.3: Selection into destination

	(1)	(2)	(3)	(4)	(5)
Migrated to improve lifestyle	-0.043			-0.033	
	(1.11)			(0.84)	
Happy to have lived abroad		-0.004		0.010	
		(0.07)		(0.18)	
Willingness to migrate again			-0.023	-0.023	
			(0.61)	(0.62)	
Openness index					-0.034
					(0.53)
R2	0.29	0.31	0.31	0.31	0.31
N	243	234	233	233	233

Notes. (I) ***, **, and * respresent 1%, 5% and 10% significance levels, respectively. (II) All specifications are weighted by the sampling weights provided in the dataset, with robust standard errors. (III) Dep. var. is a dummy being 1 if the returnee lived in the West, whilst it is 0 if he lived in a non-West country. (IV) Data source: IIIMD, 2013.

Appendix C

Appendix to Chapter 4

Table C.1: Irregular workers by legal status and gender

	Legal migrants	Illegal migrants	Male	Female
Regular workers	40,185	2,404	30,325	12,412
Irregular workers	2,515	3,861	3,184	3,272
Total	42,700	6,265	33,509	15,684

Source: ISMU survey data, 2001-2013.

TABLE C.2: Summary statistics.

	Mean	Std. Dev.
Log earnings	6.94	0.36
Informal	0.15	0.36
Illegal	0.07	0.25
Female	0.35	0.48
Age	0.35	0.09
Years in Italy	8.34	5.28
Married	0.57	0.49
Children abroad	0.46	1.40
Children in Italy	0.76	1.97
Compulsory school	0.35	0.48
High school	0.44	0.50
Tertiary education	0.14	0.35

Notes: Log(earnings) are the net monthly wages as provided directly by the interviewed. Illegal is a dummy being 1 if the migrant reports having no residence permit. Data source: ISMU survey data, 2001-2013.

TABLE C.3: Number of workers by occupation and monthly wages.

	Regular workers		Irregular workers		Total		Minimum wage	Average wage		
								Regular	Irregular	Total
Unskilled workers	11,412	24.2%	565	1.2%	11,977	25.4%	958	1,106	875	1,095
Skilled workers	2,112	4.5%	128	0.3%	2,240	4.8%	1,218	1,201	937	1,186
Building workers	4,425	9.4%	784	1.7%	5,209	11.0%	1,129	1,297	1,094	1,267
Farm workers	3,185	6.8%	486	1.0%	3,671	7.8%	948	1,227	1,035	1,201
Cleaners	1,678	3.6%	308	0.7%	1,986	4.2%	1,088	1,029	740	985
Warehouse and custody workers	1,634	3.5%	155	0.3%	1,789	3.8%	1,022	1,087	840	1,065
Clerical workers	900	1.9%	38	0.1%	938	2.0%	1,020	1,164	807	1,150
Sales workers	1,215	2.6%	259	0.5%	1,474	3.1%	983	1,062	713	1,000
Food and beverage workers	4,005	8.5%	574	1.2%	4,579	9.7%	1,056	1,091	827	1,058
Craftsmen	3,199	6.8%	521	1.1%	3,720	7.9%	916	1,183	939	1,149
Truck workers	1,682	3.6%	111	0.2%	1,793	3.8%	1,095	1,496	1,142	1,474
House helpers	1,431	3.0%	643	1.4%	2,074	4.4%	590	887	718	834
Home-based caregivers	1,959	4.2%	788	1.7%	2,747	5.8%	590	894	799	867
Baby sitters	414	0.9%	147	0.3%	561	1.2%	590	971	692	898
Social assistance operators	900	1.9%	30	0.1%	930	2.0%	1,043	1,190	917	1,181
Medical and paramedical	797	1.7%	45	0.1%	842	1.8%	1,296	1,510	1,014	1,484
Intellectual professions	553	1.2%	72	0.2%	625	1.3%	1,081	1,412	1,375	1,407
Total	41,501	88.0%	5,654	12.0%	47,155	100.0%				

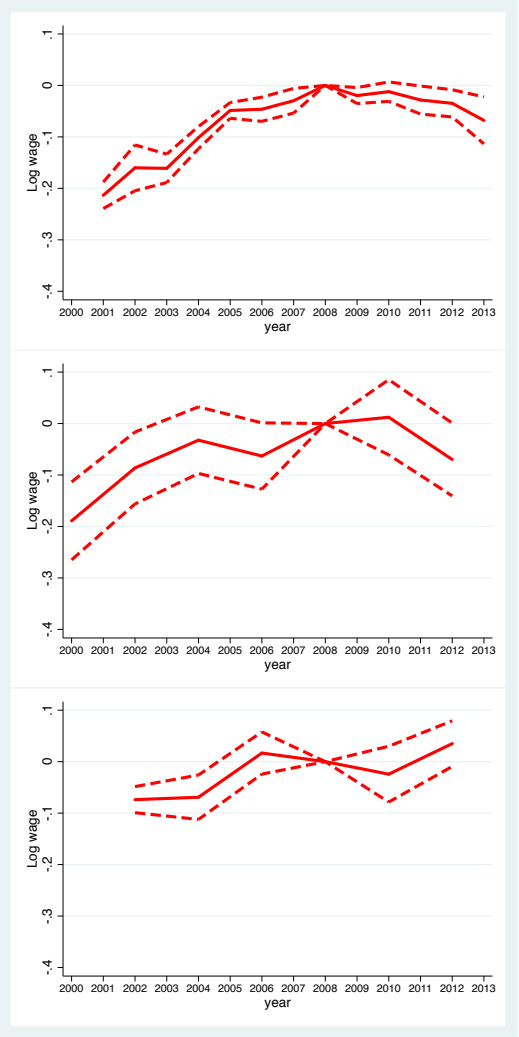
Notes: Wages are in euros per months, calculated only for the full-time workers.

TABLE C.4: Average monthly net wage from SHIW data

	Monthly net wage
Farm workers	1113
Manufacturing & Mining	1432
Building workers	1296
Sales workers	1217
Truck workers	1487
Finance	1856
Other services	1400
House helpers	1044
Public administration	1560
International organizations	2124

Data source: Survey on Household Income and Wealth (SHIW) by Bank of Italy, 2000-2012. Information refers to both native and foreign workforce.

FIGURE C.1: Wages in Lombardy, ISMU and SHIW data.

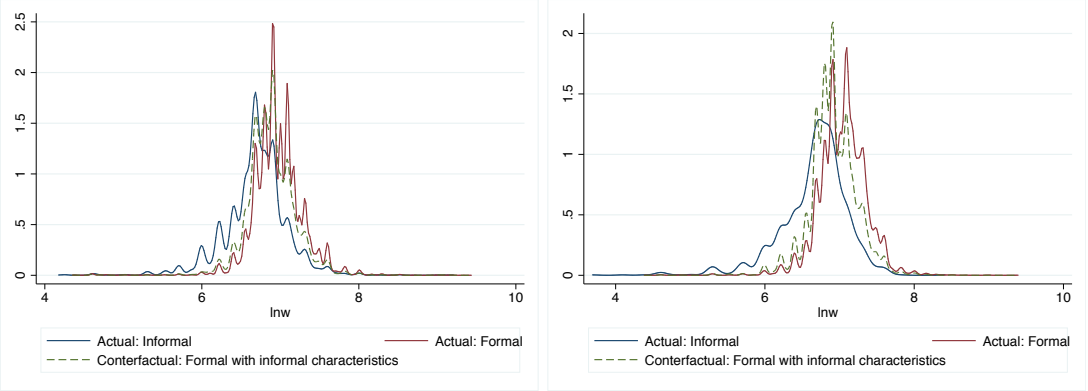


Vertical axis: logarithm of wages (relative to 2008) controlling for available individual characteristics, such as age, gender, education, and occupation, and family characteristics. The ISMU estimates also condition on province dummies, which are not available in the SHIW dataset for confidentiality reasons. The first graph includes immigrants only, while the second graph includes both natives and immigrants. The first graph is based on the ISMU survey (annual, 2001-2013). The second graph is based on the SHIW survey (biannual, 2000-2012). The third graph presents the difference between the residuals of the previous two figures for the years 2002, 2004, 2006, 2008, 2010, and 2012 when both ISMU and SHIW data are available. Dashed lines: 95% confidence interval.

Table C.5: Skill types and variables from O*NET

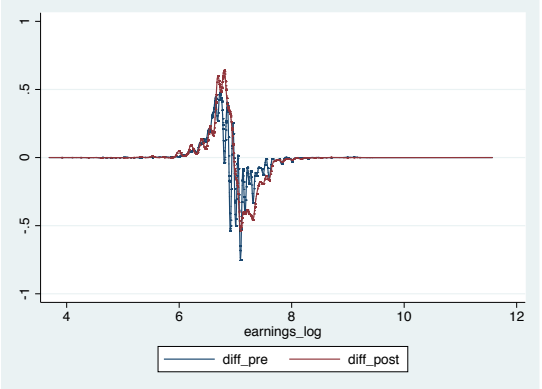
Type of skill	Skill sub-type	O*NET variables
Manual	Limb, hand and finger dexterity	Arm-hand steadiness
		Manual dexterity
		Finger dexterity
		Control precision
		Multilimb coordination
		Response orientation
		Rate control
		Reaction time
		Wrist-finger speed
		Speed of limb movement
		Extent flexibility
	Body coordination and flexibility	Extent flexibility
		Dynamic flexibility
		Gross body coordination
		Gross body equilibrium
		Explosive strenght
		Dynamic strength
		Trunk strenght
		Stamina
Communication	Oral	Oral comprehension
		Oral expression
	Written	Written comprehension
		Written expression

FIGURE C.2: Actual and counterfactual wage densities, pre- and post-crisis



Notes. Figure on the left shows wage densities before the crisis, whilst figure on the right shows wage densities after the crisis. Source: ISMU survey (2001-2013).

FIGURE C.3: Difference between actual and counterfactual wage densities, pre- and post-crisis



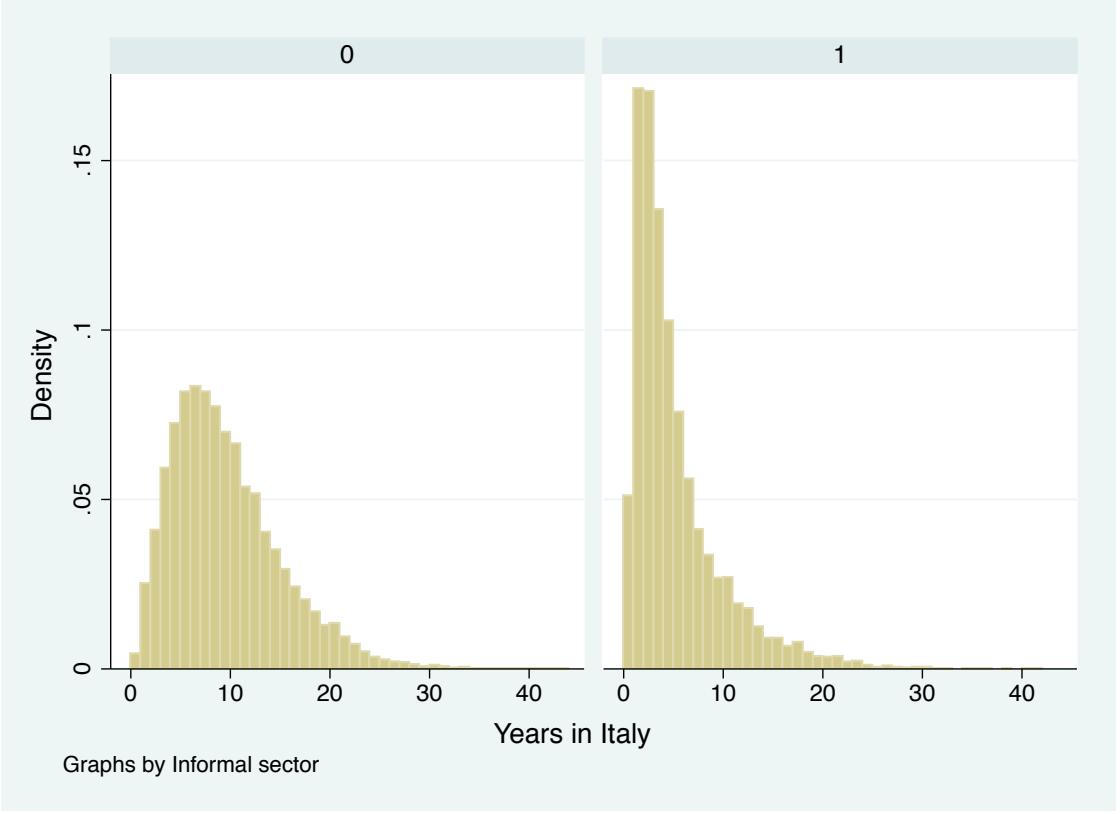
Source: ISMU survey (2001-2013).

TABLE C.6: Intentions to return to the origin country

	(1) No restriction years in Italy	(2) Years in Italy ⩽30	(3) Years in Italy ⩽25	(4) Years in Italy ⩽20	(5) Years in Italy ⩽15
Informal	0.019	0.020	0.020	0.018	0.018
	(0.020)	(0.020)	(0.020)	(0.021)	(0.023)
Female	0.013*	0.013*	0.013*	0.015*	0.018**
	(0.007)	(0.007)	(0.007)	(0.008)	(0.008)
Age	-0.080	-0.100	-0.118	-0.151	-0.182
	(0.280)	(0.281)	(0.285)	(0.308)	(0.345)
Age squared	0.217	0.243	0.268	0.322	0.388
	(0.359)	(0.359)	(0.365)	(0.396)	(0.449)
Years in Italy	-0.001	-0.001	-0.001	-0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Married	-0.003	-0.003	-0.002	-0.002	-0.002
	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Children abroad	0.009**	0.009**	0.009**	0.008**	0.006
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Children in Italy	-0.006	-0.007	-0.007	-0.008	-0.010**
	(0.004)	(0.005)	(0.005)	(0.005)	(0.004)
Compulsory school	-0.045***	-0.045**	-0.045***	-0.037**	-0.039**
	(0.016)	(0.016)	(0.016)	(0.014)	(0.017)
High school	-0.046***	-0.046***	-0.047***	-0.039**	-0.042**
	(0.016)	(0.016)	(0.016)	(0.016)	(0.019)
Tertiary education	-0.053**	-0.053**	-0.053**	-0.048**	-0.051**
	(0.019)	(0.019)	(0.019)	(0.019)	(0.020)
Year dummies	yes	yes	yes	yes	yes
Occupation dummies	yes	yes	yes	yes	yes
Province dummies	yes	yes	yes	yes	yes
Origin dummies	yes	yes	yes	yes	yes
Observations	10,474	10,432	10,329	9,726	8,584
R-squared	0.048	0.048	0.048	0.048	0.051

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy. All regressions include year dummies, occupation dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Estimation sample of column 1: no restriction on immigrant's permanence in Italy. Column 2: we restrict the sample to immigrants with permanence in Italy equal to or less than 30 years. Column 3: permanence in Italy equal to or less than 25 years. Column 4: permanence in Italy equal to or less than 20 years. Column 5: permanence in Italy equal to or less than 15 years. Data are from the ISMU survey. The information on the intentions to return to the origin country is available for the years 2010-2013.

FIGURE C.4: Informal employment and permanence in the host country



Notes. Density of years in Italy by formal (0) and informal (1) workers. Source: ISMU survey (2001-2013).

TABLE C.7: Year dummies in regressions for subsamples

	(1) Female	(2) Male	(3) Unskilled	(4) Skilled	(5) Youth	(6) Old
Informal	-0.180***	-0.089***	-0.183***	-0.125***	-0.137***	-0.178***
	(0.019)	(0.020)	(0.044)	(0.022)	(0.027)	(0.027)
Informal X Year2001	0.009	-0.036	0.096**	-0.065	-0.010	0.036
	(0.033)	(0.050)	(0.038)	(0.054)	(0.031)	(0.058)
Informal X Year2002	0.072*	-0.019	0.064	0.012	0.019	0.055
	(0.037)	(0.034)	(0.047)	(0.043)	(0.033)	(0.074)
Informal X Year2003	0.017	-0.037	0.060	-0.042	0.012	-0.078
	(0.032)	(0.032)	(0.057)	(0.027)	(0.035)	(0.052)
Informal X Year2004	0.056	-0.089**	-0.011	-0.032	-0.051	0.046
	(0.043)	(0.034)	(0.049)	(0.040)	(0.036)	(0.040)
Informal X Year2005	0.004	-0.002	0.033*	-0.017	0.013	-0.016
	(0.034)	(0.027)	(0.018)	(0.031)	(0.018)	(0.040)
Informal X Year2006	-0.036	-0.015	0.004	-0.033	-0.029	0.005
	(0.039)	(0.024)	(0.041)	(0.027)	(0.031)	(0.034)
Informal X Year2007	0.007	0.018	0.007	0.017	-0.010	0.056
	(0.038)	(0.027)	(0.035)	(0.038)	(0.034)	(0.041)
Informal X Year2009	-0.019	-0.102***	-0.022	-0.091*	-0.057*	-0.070
	(0.049)	(0.030)	(0.044)	(0.047)	(0.031)	(0.053)
Informal X Year2010	-0.070	-0.168***	-0.116**	-0.111***	-0.140***	-0.057
	(0.067)	(0.054)	(0.053)	(0.033)	(0.034)	(0.049)
Informal X Year2011	-0.119*	-0.177**	-0.120	-0.153***	-0.189**	-0.077
	(0.063)	(0.081)	(0.118)	(0.046)	(0.081)	(0.059)
Informal X Year2012	-0.100**	-0.207***	-0.144**	-0.157***	-0.165***	-0.124***
	(0.044)	(0.034)	(0.061)	(0.032)	(0.038)	(0.043)
Informal X Year2013	-0.160***	-0.184***	-0.140*	-0.202***	-0.132***	-0.194***
	(0.039)	(0.064)	(0.077)	(0.037)	(0.045)	(0.052)
Female			-0.164***	-0.169***	-0.141***	-0.199***
			(0.012)	(0.008)	(0.010)	(0.009)
Age	1.538***	1.643***	1.369***	1.858***	2.656***	2.561***
	(0.417)	(0.283)	(0.342)	(0.351)	(0.467)	(0.549)
Age squared	-1.736***	-2.049***	-1.575***	-2.193***	-3.910***	-2.865***
	(0.513)	(0.329)	(0.419)	(0.405)	(0.815)	(0.578)
Years in Italy	0.003***	0.013***	0.011***	0.010***	0.011***	0.009***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Compulsory school	0.017	0.023**	0.022***		0.013	0.033***
	(0.013)	(0.009)	(0.006)		(0.014)	(0.011)
High school	0.021	0.040***		-0.042***	0.026*	0.042***
	(0.013)	(0.010)		(0.008)	(0.015)	(0.010)
Tertiary education	0.071***	0.071***			0.051***	0.094***
	(0.012)	(0.009)			(0.014)	(0.012)
Married	-0.041***	0.053***	0.018**	0.016	0.024***	-0.002
	(0.005)	(0.007)	(0.008)	(0.010)	(0.008)	(0.011)
Children abroad	0.002	-0.003	-0.003	0.000	-0.002	0.001
	(0.004)	(0.005)	(0.003)	(0.002)	(0.004)	(0.003)
Children in Italy	-0.002	0.008***	0.009***	0.003	0.000	0.010***
	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)
Observations	15,684	33,509	22,244	26,949	25,995	23,198
R-squared	0.256	0.301	0.348	0.333	0.321	0.332

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy. All regressions include year dummies, occupation dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years. The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage.

TABLE C.8: Regressions without occupation dummies

	(1) Crisis$\geqslant$ 2009	(2) Crisis$\geqslant$ 2009	(3) Crisis$\geqslant$ 2009	(4) Crisis$\geqslant$ 2008
Informal X Crisis	-0.131***		-0.082**	-0.101***
	(0.035)		(0.031)	(0.023)
Informal	-0.156***	-0.173***	-0.156***	-0.154***
	(0.022)	(0.030)	(0.022)	(0.021)
Informal X Year2001		0.021		
		(0.027)		
Informal X Year2002		0.055		
		(0.041)		
Informal X Year2003		0.015		
		(0.036)		
Informal X Year2004		-0.022		
		(0.035)		
Informal X Year2005		0.012		
		(0.019)		
Informal X Year2006		-0.009		
		(0.025)		
Informal X Year2007		0.027		
		(0.035)		
Informal X Year2009		-0.054		
		(0.038)		
Informal X Year2010		-0.123***		
		(0.038)		
Informal X Year2011		-0.134*		
		(0.073)		
Informal X Year2012		-0.160***		
		(0.038)		
Informal X Year2013		-0.184***		
		(0.058)		
Informal X max$\{Year - 2009, 0\}$			-0.033***	
			(0.009)	
Female	-0.229***	-0.228***	-0.229***	-0.228***
	(0.012)	(0.012)	(0.012)	(0.012)
Age	1.686***	1.677***	1.681***	1.686***
	(0.316)	(0.316)	(0.315)	(0.320)
Age squared	-2.052***	-2.040***	-2.044***	-2.054***
	(0.360)	(0.359)	(0.359)	(0.365)
Years in Italy	0.012***	0.012***	0.012***	0.012***
	(0.001)	(0.001)	(0.001)	(0.001)
Compulsory school	0.024***	0.024***	0.024***	0.023***
	(0.008)	(0.008)	(0.008)	(0.008)
High school	0.037***	0.037***	0.037***	0.037***
	(0.007)	(0.007)	(0.007)	(0.007)
Tertiary education	0.093***	0.093***	0.093***	0.093***
	(0.010)	(0.010)	(0.010)	(0.010)
Married	0.019**	0.020**	0.019**	0.019**
	(0.007)	(0.007)	(0.007)	(0.007)
Children abroad	-0.002	-0.002	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Children in Italy	0.004**	0.004**	0.004**	0.004**
	(0.002)	(0.002)	(0.002)	(0.002)
Observations	49,193	49,193	49,193	49,193
R-squared	0.294	0.295	0.295	0.293

Notes: Robust standard errors in parentheses, clustered by province times simple occupations dummy times before/after crisis dummy. All regressions include year dummies, dummies for country of origin, province dummies. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Data are from the ISMU survey (2001-2013). We restrict the sample to immigrants residing in Italy for at most 30 years. The sample includes full-time workers only. The dependent variable is the logarithm of after-tax wage.

Microfoundations of the model in Section 4.6

In this Appendix we provide microfoundations for the labour demand and labour supply. We assume that in each sector $s = F, I$ there is a competitive industry in which firms have Cobb-Douglas production function $Y = A^s L^\beta$, where A^F, A^I are the productivity pararameters in the formal and informal sectors, respectively. We assume that $A^F > A^I$. Then profit-maximizing firms choose the number of jobs by equalizing wages with the marginal labour productivity $w = \beta A^s / L^{1-\beta}$. Therefore the elasticity of labour demand in each sector is $1/(1-\beta)$.

Let us now discuss labour supply. Workers differ across two dimensions: disutility of labour v and mobility across sectors. We assume that these parameters are independently distributed across workers. The cumulative distribution function of disutility of labour in each sector is $G^s(\cdot)$. In the initial equilibrium, α^F percent of workers employed in the formal sector are mobile across sectors (i.e. can move to the informal sector) while $1-\alpha^F$ can only work in the formal sector. As for the workers initially employed in the informal sector, none of them can move to the formal sector. This assumption is natural as wages in the formal sector are higher in equilibrium.

The elasticity of labour supply in each sector is therefore the elasticity of the cumulative distribution function of disutility of labour $e_S^F = w^F G^{F\prime}(w^F)/G^F(w^F)$ and $e_S^I = w^I G^{I\prime}(w^I)/G^I(w^I)$.

When the recession starts, both sectors experience a proportional productivity shock (both A^F and A^L decline by x percent). Since wages in the formal sector are not flexible, $\Delta L^F/L^F$ percent of formal workers are fired. We assume that the rationing of jobs in the formal sector is random so among the workers who are fired, $G^F(w^I)/G^F(w^F)$ percent are interested in working for the wage w^I. The share α^F can move to the informal sector. Therefore, the total proportion of workers previously employed in the formal sector looking for informal jobs is $\alpha = \alpha^F G^F(w^I)/G^F(w^F)$.

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