The Effects of a Temporary Migration Shock: Evidence from the Arab Spring Migration towards Italy

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Abstract

In this study we estimate the short-term effects of migration on employment of native workers. We do so by exploiting the exogenous, unanticipated and temporary migration induced by the Arab Spring on local labor markets in Italy. We find the effects to vary significantly in magnitude and sign across industries. In negatively affected sectors, we estimate the quarterly displacement effect to be 2.6 times as large as the annual displacement estimated by other European studies. Consistent with a rise in sectoral employment operating through increased demand from immigrants, we find that the Arab Spring migration had positive effects on employment in construction while driving up house sales and house prices.

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1 Introduction

The debate over the effects of migration on wages and employment of native workers is a long standing one in the labor economics literature. Several studies exploit the heterogeneous distribution of immigrants across local labor markets to derive causal estimates of the effects of migration on natives' labor market outcomes. Most of these studies find little or no effect of migration on wages and employment[1]. This evidence is inconsistent with the standard labor market model, unless the labor demand is assumed to be perfectly elastic or perfectly inelastic[2]. To explain the lack of effects, the literature has thus proposed different channels through which either native workers or firms respond to migration over time, equalizing wages and employment opportunities across local labor markets[3].

This study provides new estimates of the impact of migration on employment of natives that isolate the short-term component from other confounding factors or longer-term responses. This is accomplished by using quarterly data while exploiting the unique characteristics of the migration to Italy induced by the Arab Spring.

There are multiple reasons why the Arab Spring induced migration is particularly suitable for this analysis. First, the political instability in northern Africa was likely exogenous to the dynamics prevailing in Italian local labor markets at the time of the uprisings. Second, the Arab Spring caused a large spike in immigrants to Italy in a relatively short time period. In the first six months of 2011 the fraction of immigrants from Egypt, Libya, Tunisia and Yemen[4] residing in Italy increased by 23%. During the same period the Italian population experienced close to zero growth[5]. In the first three quarters of 2011 more than 57,000 individuals entered

[1] See for example Altonji and Card (1991), Card (1990), Card (2005), Card and Lewis (2007) in the U.S., Hunt (1992) in France, Pischke and Velling (1997) in Germany, Dustmann et al. (2005) in the UK, Gonzlez and Ortega (2011) in Spain.

[2] In case the labor demand is perfectly inelastic, migration has no effect on employment. On the contrary, if the labor demand is assumed to be perfectly elastic, migration has no effect on wages.

[3] Natives might find it convenient to move from those regions experiencing larger inflows to those less affected, thus offsetting the differential effects of migration across regions (Borjas (2003),Borjas (2006)). Firms might adjust their use of labor inputs to the local labor supply, thus reducing the effects of migration on wages and employment (Lewis (2003), Card and Lewis (2007),Lewis (2011)).

[4] Those are the countries in which the government was overthrown by the rebels during the uprisings.

[5] The number of Italian citizens went down by 0.005 percent in the first 6 months of 2011.

Italy illegally, averaging 19,000 individuals a quarter. This compares to an average of 1,300 individuals per quarter in the two years prior to the uprisings. Finally and most important, the Arab Spring induced a temporary migration wave. It is estimated that 95% of the (legal) immigrants who arrived in Italy during the uprisings left the country within one year.

The temporary, unanticipated and exogenous nature of the Arab Spring migration combined with the use of quarterly data, makes it possible to isolate the short-run effects of migration from the longer-run adjustments that it induces[6].

The estimation strategy exploits the heterogeneous distribution of immigrants across Italian regions. As in most studies that use geographical variation of migration flows, we account for the endogenous settlement by using the share of immigrants from the same origin country previously living in each Italian region, as an instrument for the distribution of immigrants across regions during the Arab Spring[7]. We combine this static measure of migration intensity with the flow of illegal entries in Italy over the same period to form a new instrument.

Two general findings emerge from this analysis. First, temporary migration has considerably larger employment effects in the short term than in the medium and long term. We estimate quarterly displacement effects of 7.8 unemployed natives for every 10 immigrants that find a job. This is around 2.6 times as large as the annual displacement effect estimated by other comparable studies in Europe[8]. Consistent with the temporary nature of the shock, the quarterly displacement effects associated with the Arab Spring are estimated to be around 4 times as large as the annual ones[9]. Second, in the short term the effects of migration on employment

[6]Most of the existing studies focus on longer and more permanent migration waves thus estimating effects that combine together short and long-run responses (e.g. Altonji and Card (1991), Card (2007), Cortes (2008)). The fewer studies that focus on short migration events, use data at annual or lower frequency (e.g. Card (1990), Hunt (1992), Carrington and de Lima (1996)). Since agents in the labor market are more likely to react to migration over longer time horizons (e.g. Campos Vazquez (2008), Monras (2013)), the effects of short-term migration events estimated with low frequency data might still capture longer-term responses.

[7]The instrument was originally introduced in Altonji and Card (1991) and then used in several other studies (e.g. Hunt (1992), Pischke and Velling (1997), Cortes (2008)).

[8]Glitz (2012) and Campos Vazquez (2008) estimate annual displacement effects of 0.3 unemployed natives for each immigrant hired.

[9]Since most of the immigrants left Italy within one year, we expect the difference between quarterly and annual effects of the Arab Spring migration to be larger than the difference between quarterly effects from the Arab Spring and the annual effects that other studies in the European literature find. In line with this we find that, on an annual basis, each Arab Spring immigrant hired displaces 0.2 native workers.

vary in sign and magnitude across sectors. In particular, we find that the Arab Spring migration has a positive effect on employment of natives in construction and educational services and a negative effect in mining, wholesale trade, hotels and restaurants. Taken together, those findings suggest that a substantial part of the action induced by migration on local labor markets takes place in the very short run and it quickly dissipates overtime.

To explain the coexistence of positive and negative employment effects, we show evidence of a shift in native workers across industries. With some assumptions, we estimate that an inflow of 1,000 new immigrants into a region caused around 50 native workers to move from either mining, wholesale trade or hotels and restaurants into construction. We explain the expansion of employment in construction as driven by the rise in the demand for housing by the Arab Spring immigrants. Consistent with this hypothesis, we find positive effects of the Arab Spring migration on house sales in regional capital cities and house prices in the most central neighborhoods of the regional capital cities. In line with other studies in the literature (Saiz (2007)), we estimate that a 1% increase in migration flows increases house prices by around 3%. Finally, we discuss the possibility that employment in educational services went up as an effect of the contemporaneous increase in the demand for educational services that the Arab Spring migration induced. The role played by immigrants in affecting natives' employment while acting as consumers, explains better the positive effects on employment than the standard complementarity argument[10].

Estimating the short-term effects of migration is relevant for multiple reasons. First, measuring the short-term effects provides a benchmark from which to judge the further adjustments generating the estimated longer-term effects. A better assessment of the longer-term adjustments may help to reconcile the empirical evidence of little or no effect of migration on local labor markets with the predictions from the standard labor market model. Second, while the literature has extensively focused on the effects of migration in final destination countries, to date there is little evidence on the effects of migration in countries that are located between origin

[10]Differently from what implied by the standard complementarity argument in fact, we do not find evidence of immigrants entering the sectors in which employment of natives goes up. We also do not find positive effects of migration on earnings of native workers.

and final destination countries (i.e. intermediate countries). The results of this study can thus be relevant to other intermediate countries such as Mexico for migration flows from Central or South America to North America[11], or other southern European countries, such as Spain or Greece, for migration flows from Africa or the Middle East to northern European countries. Finally, estimating the effects of the Arab Spring migration contributes to better inform the political debate on the African migration to Europe. The current instability of the northern African countries suggests that such a debate will acquire increasing importance in the future. The paper is organized as follows. Section 2 describes the the Arab Spring induced migration towards Italy. Section 3 discusses the data. Section 4 introduces the empirical methodology. Section 5 presents the results of the analysis on the labor market effects of migration. Section 6 presents the results of the analysis on the housing market effects of migration. Lastly, Section 7 concludes.

2 The Arab Spring induced migration towards Italy

The series of revolts that has become known as the Arab Spring was sparked by the first protest that occurred in Sidi Bouzid (Tunisia) on the 18th of December 2010. In less than one month protesters succeeded in overthrowing the existing Tunisian government. The success of this first revolt triggered a wave of violent revolts in the neighboring countries. By August 2011, governments had been overthrown in four countries: Egypt, Libya, Tunisia and Yemen. The chaos that followed the ousting of Ben Ali[12] in January 2011 led to the temporary disruption of the coastal control activities performed by the Tunisian police. The lack of controls and the political instability of the region triggered a substantial migration from the unstable countries to Italy, the nearest European country.

Figure 1 provides graphical evidence of this migration. The top panel plots legal immigrants from Egypt, Libya, Tunisia and Yemen as a percentage of the Italian population. Consistent

[11]Studies in the literature document the temporary nature of the migration flows that go through Mexico (e.g. Hamilton and Chinchilla (1991), Garca (2006)).

[12]The Tunisian president at the time of the revolts.

with the timing of the revolts, in the first half of 2011 the number of immigrants from the Arab Spring countries increased by 23%[13]. This is equivalent to an inflow of about 56,000 individuals, around 42,000 of them were of working age. In the same 6 months the growth rate of the Italian population remained close to zero[14].

The bottom panel of Figure 1 plots illegal entries into Italy through the Central Mediterranean route as a percentage of the Italian population[15]. Due to the proximity of Sicily and the Italian Pelagic islands to Tunisia, the central Mediterranean route is believed to have channeled most of the illegal immigrant flows induced by the uprisings[16]. Consistent with the timing of the revolts, the bottom panel in Figure 1 shows a spike in illegal entries in the first 3 quarters of 2011. Such a spike amounts to a total inflow of more than 57,000 illegal immigrants, averaging more than 19,000 immigrants a quarter. In contrast, only 10,000 illegal immigrants entered Italy through the Central Mediterranean route in the 2 years prior to the Arab Spring, averaging 1,300 individuals a quarter. The sizable inflow of illegal immigrants within such a short period received extensive coverage by the Italian and the international media[17]. It was largely unexpected in Italy that in February 2011 declared the state of emergency. The joint effort of the Tunisian, Italian and European institutions, succeeded in stopping the exceptionally high flow of illegals that went back to the pre-crisis levels by the end of 2011.

The top panel in Figure 1 highlights one other important feature of the Arab Spring induced migration. Among the immigrants who arrived in Italy, only a limited fraction of them remained in the country for a period longer than one year. In particular, slightly less than 95%

[13]We believe the pattern followed by legal immigrants in 2009 to reflect, at least partially, the reduction in employment opportunities that resulted from the Euro crisis. This is, in fact, often mentioned as one of the reasons behind the decline in migration flows towards Europe in the second half of 2009 (the quarterly reports from Frontex *Fran* 2010 Q1). In this study we focus on the migration flows induced by the uprisings. Those can be better thought as exogenous to the local labor market conditions at the time of the revolts in Italy.

[14]The number of Italian citizens went down by 0.005 percent in the first 6 months of 2011 (Source: Italian Labor force survey data).

[15]The Central Mediterranean route refers to irregular migration flows from northern Africa towards Italy and Malta through the Mediterranean sea (Frontex).

[16]See also the quarterly reports from Frontex *Fran* 2012 Q2 and Fargues and Fandrich (2012).

[17]E.g. "Italy declares state of emergency after 4,000 illegal immigrants fleeing Tunisia unrest land at its ports in four days" Dailymail, February 13 2011. "Italy declares state of emergency over influx of 5,000 Tunisian immigrants" The Telegraph, February 13 2011. "Crescono le richieste di asilo. Il 102% in piu' da Tunisia e Libia" La Repubblica, December 5 2011.

of the 56,000 immigrants who entered Italy in the first half of 2011 left the country by the end of that same year[18]. In other words, the Arab Spring induced a temporary rather than permanent migration to Italy. The temporary migration of Africans through Italy has been increasingly documented in the the Italian press over the last few years[19]. Once in Europe, African immigrants try to move to those countries that can offer better job opportunities (e.g. Germany, Scandinavian countries) and/or lower linguistic barriers (i.e. France). The *Dublin II Regulation* however, requires the asylum applications to be processed by the country through which asylum seekers first access the EU territory[20]. This can explain why the Arab Spring immigrants stayed in Italy for few months before leaving[21].

While the available data do not provide precise information on when immigrants enter Italy nor do they follow immigrants over time[22], there are reasons to believe that, while in Italy, the Arab Spring immigrants participated into the (formal or informal) labor market. First, we can think at the Arab Spring immigrants as those whose decision to migrate was largely unplanned. Once in Italy, they likely worked for a short time period to afford a new migration. Second, while on a pending or refugee status, immigrants are in principle eligible to receive state-financed assistance. As documented by the Italian and the international media however[23], those programs can accommodate only a very limited number of people. The other immigrants are left to fend for themselves. Quoting Laura Boldrini, the spokeswoman for the United Nations High Commissioner for Refugees in Italy at the time of the uprisings: "If you're not lucky to get one of those (spots in the assistance programs), you're on your own. You have to find a way to

[18]In the last quarter of 2011 there were around 197,000 legal immigrants from Egypt, Libya, Tunisia and Yemen in Italy, only around 3,000 more than the last quarter of 2010 (Italian Labor Force Survey data).

[19]E.g. "Immigrati, boom di sbarchi ma pochi restano in Italia" La Stampa, June 23 2014. "Immigrati, ne arrivano sempre meno, se ne vanno sempre di piu' e 300 mila sono senza documenti" La Repubblica, December 10 2013.

[20]For more details see EU Council Regulation (EC) No 343/2003 of February 18 2003.

[21]The number of pending asylum applications quadrupled in between March and September 2011. In that same period the number of applications received by the Italian border police went up to 37,350, more than twice the average of the previous 2 years (i.e. 15,605) (source: Eurostat). Longer waiting times on asylum application decisions provide one more reason to explain why immigrants remained in Italy for few months before leaving.

[22]Section 3 explains the data into more details.

[23]Quote extracted from "In Italy, Shantytowns of Refugees Reflect Paradox on Asylum" New York Times, December 26 2012. "Gli hotel della disperazione. L'emergenza infinita dei rifugiati" La Repubblica, January 2 2013.

support yourself, learn the language, get a house and a job"[24].

2.1 The short versus long-term effects of migration

The existing literature outlines different ways in which agents in the labor market respond to migration overtime. First, native workers can choose to leave or not to move into those regions that receive larger inflows of immigrants. Borjas (2006) estimates that native migration attenuates the effect of immigration on wages in the U.S. by 40 to 60 percent. Firms also react to migration. In particular, firms in regions experiencing larger inflows of immigrants can adopt technologies that intensively use the labor input that migration makes relatively abundant (Card and Lewis (2007), Lewis (2011)). This attenuates the effects of migration on employment and wages[25]. Existing estimates show that firm adjustments can absorb as much as 80% of the labor supply change associated to migration[26] (Lewis (2003)). More recent studies show that agents are more likely to respond to migration over longer time horizons (e.g. Campos Vazquez (2008), Monras (2013)). Taken together, these studies provide reasons to expect different effects of migration on labor markets in the short term than in the medium and long term.

While several studies estimate the medium or long-term effects of migration, to date there is less empirical evidence on the short-term effects. Most of the existing studies focus on persistent migration waves[27], usually characterized by the permanent stay of immigrants in the destination country (e.g. Altonji and Card (1991), Card (2007), Cortes (2008)). Accordingly, they estimate the long-term effects of migration. Based on the discussion of the previous paragraph, the long-

[24]E.g. "In Italy, Shantytowns of Refugees Reflect Paradox on Asylum" New York Times, December 26 2012.

[25]The effect on wage rates of this type of adjustments is a priori ambiguous. In a model in which firms exhibit CES production functions and where capital is fixed, wage rates of the native workers that are more intensely used in the production fall as a result of migration. The existing empirical evidence however does not support this prediction (Lewis (2003) and Card and Lewis (2007)). When capital can change instead, firms might find it convenient to adjust their technologies of production substituting low skilled labor to capital. Assuming rental rates to be fixed in each local labor market, wages of low skilled workers do not fall as an effect of migration.

[26]One alternative type of adjustment would imply that firms making more intensive use of immigrants' skills expand thus preventing migration from having effects on wages and employment (i.e. Rybczynski theorem). This type of adjustment is shown to play only a limited role (Lewis (2003) and Card and Lewis (2007)).

[27]Migration waves that last years or even decades (e.g. the Mexican migration towards the U.S.).

term effects combine together the direct effects of migration and the attenuating adjustments to it. In line with this, most of those studies estimate the effects of migration to be close to zero (e.g. Altonji and Card (1991), Card (1990), Card (2005), Card and Lewis (2007) in the U.S., Pischke and Velling (1997) in Germany, Dustmann et al. (2005) in the UK,Gonzlez and Ortega (2011) in Spain). Fewer studies analyze temporary migration events, and those that do, use annual or even lower frequency data (Card (1990), Hunt (1992), Carrington and de Lima (1996)). For the reasons discussed in the previous paragraph, with lower frequency data there is a greater chance of capturing attenuating responses to migration. Consistent with this possibility, those latter studies generally conclude that migration has little or no effects on employment and wages of native workers[28].

This study exploits the temporary, unanticipated and exogenous nature of the Arab Spring induced migration combined with the use of quarterly data to isolate the short-term effects of migration from the longer-run responses to it. Estimating the short-term effects of migration is important for multiple reasons. First, measuring the short-term effects provides a benchmark to judge the adjustments generating the estimated longer-term effects. A better understanding of the difference between short and longer-term effects can help to explain why, in contrast with the predictions from the standard labor market model, most of the empirical literature fails to find effects of migration on local labor markets. Second, measuring the short-term effects can be relevant for the study of the effects of migration in intermediate countries. These are countries in which immigrants stay only temporarily before proceeding towards their final destination. Mexico, for example, is known to be the country that channels migration flows from central and southern American countries to the U.S. or Canada (Hamilton and Chinchilla (1991), Garca (2006)). In Europe, Spain or Greece are likely to serve as a bridge between the Middle East or Africa and northern European countries. Despite the rich literature on the labor market effects of migration in final destination countries, to date there is little work on the effects of migration in intermediate countries. This paper fills that gap.

[28]See for example Card (1990) who uses annual data and who finds no effects of migration on employment and wages of native workers. Hunt (1992) uses 1962 and 1968 Census data and finds close to negligible effects on wages and employment of natives.

3 The Data

We derive labor market and demographic information from the restricted version of the Italian Quarterly Labor Force Survey (Lfs). This survey collects information on about 70,000 households in 1,246 Italian municipalities for a total of 175,000 individuals representing 1.2% of the overall Italian population. The reference population consists of all household members residing in Italy. Immigrants who are granted a resident permit valid for at least one year are allowed to register as residents.

Consistent with the timing of the uprisings, we restrict our analysis to the years 2009-2012. This provides us with a total of sixteen quarters of data. The analysis is conducted at the regional level[29]. Starting from micro level data we derive the employment rate of natives[30] in each one of the 20 Italian regions, for each quarter and industry. We restrict our analysis to the sample of natives between 15 and 64 years old. We use the two digits SIC code information contained in the Lfs, to classify employed workers into 12 industries[31]. Table B.1 in the online Appendix shows descriptive statistics on regional employment of natives by sector. Following the same aggregation procedure, we construct an extensive set of regional controls. Table 1 shows descriptive statistics on the complete list of the controls used throughout the analysis[32]. Since our analysis is centered around the Arab Spring induced migration, we restrict our attention to the immigrants born in either Egypt, Libya, Tunisia or Yemen. These are the countries in which the government was overthrown by the rebels causing considerable disorders and the political instability that induced people to migrate. For each region and quarter we derive the change in the total number of immigrants from the Arab Spring countries relative to the native population. In between the last quarter of 2010 and the first six months of 2011 (i.e. the peak

[29]The Lfs is representative of the population at the Italian regional level.

[30]In our baseline model we define natives as Italian citizens. In Section 5.2 we also consider a specification of the empirical model in which natives are defined as individuals born in Italy.

[31]More details on the industry classification can be found in the online Appendix A. In aggregating individual level data to the regional and sectoral level, we use the individual weights provided by Istat, The National institute of Italian Statistics.

[32]We use the same procedure used on employment to derive average earnings of native workers (Appendix Table B.2).

of the Arab Spring), the average share of legal immigrants from these countries increased by 0.05%. This is equivalent to an inflow of around 1,000 individuals in the average region. There is variation in the size of migration flows across regions with some regions experiencing relative inflows ten times larger than the average[33] (Table 1).

We use Istat data on the number of Egyptian, Libyan, Tunisian or Yemenite citizens residing in Italy in 2003, to construct past shares of Arab Spring immigrants living in each region[34]. The 2003 shares of resident immigrants widely vary across regions with some of the regions showing shares more than 9 times smaller than the average (Table 1). This variation is important to the estimation strategy described in Section 4. As part of the instrumental variable approach that we develop, we use Frontex[35] data on the *number of illegal border crossing detections* through the Central Mediterranean route net of arrivals on Maltese lands[36]. The Central Mediterranean route refers to irregular migration flows from northern Africa towards Italy and Malta through the Mediterranean sea. Due to a mix of political[37] and geographical reasons[38], this is the route that channeled most of the illegal migration associated with the uprisings.

In analyzing the effects of migration on the housing market, we use data on the number of residential property sales from *Agenzia delle Entrate- Osservatorio del mercato immobiliare*. The data are collected on a quarterly basis and they cover all major Italian cities (*capoluoghi di provincia*) and surrounding counties (*province*). We use data on house prices and rents in regional capital cities from the database *Quotazioni Immobiliari*[39]. The data are available on a semiannual basis. We derive data on house prices and rents in 4 zones in each regional capital city[40]. Only for the most central zone (zone A) we differentiate between prices and rents of

[33]This point is discussed also in Section 4.

[34]The data can be accessed through *I.stat* - "Foreign resident population on the 1st January - focus on citizenship". 2003 is the earliest year for which data on residents by nationality are made freely available by Istat on line.

[35]This is the agency that coordinates and develops the European border management.

[36]The data on illegal entries are collected by Frontex and provided by the 30 FRAN (Frontex Risk Analysis Network) border control authorities of the member states.

[37]The temporary disruption of border patrol activities in Tunisia (see also Section 4).

[38]Italy and Malta are closer to Tunisia than any other European country (Section 2).

[39]The data are made available by *Agenzia delle Entrate- Osservatorio del mercato immobiliare*.

[40]Figure B.1 in the online Appendix provides a graphical example of the 4 zones.

more expensive versus less expensive housing units[41].

Table 2 compares demographic and socioeconomic characteristics of natives and immigrants from the Arab Spring countries. Only for immigrants, we also differentiate between the pre and post Arab Spring period. More than 60% of the immigrants in our database are males. Most of them are from Tunisia, the closest country, and Egypt, the most populated country. Even if immigrants show educational attainments similar to natives, the former are much more likely to work in agriculture, construction, hotels and restaurants. This descriptive evidence is generally consistent with that part of the literature that shows that similarly educated immigrants and natives often work in very different industries (Steinhardt (2011)) or perform different tasks (Peri and Sparber (2009)). More generally Table 2 highlights the importance of analyzing the effects of migration differentiating across industries. Being the Arab Spring immigrants unevenly distributed across sectors, we would expect some industries to be more affected than others. The comparison between statistics on the pre and post Arab Spring period suggests that the immigrants moved by the uprisings are more likely to be males, Tunisians, young and less educated than the immigrants from the Arab Spring countries who used to live in Italy prior to the revolts. This is generally consistent with the available information on the characteristics of the immigrants moved by the uprisings[42].

4 The Empirical Strategy

To estimate the effects of the Arab Spring migration on employment we exploit the variation of migration flows across Italian regions. The estimating equation takes the following form:

$$\Delta y_{rt} = \alpha_1 + \alpha_2 \Delta Im_{rt}^{AS} + \alpha_3 \Delta X_{rt} + \gamma_y + \gamma_t + \Delta \epsilon_{rt} \quad (1)$$

[41]The Appendix Table B.3 shows descriptive statistics on house sales, house prices and rents. The online Appendix A describes the construction of house prices and rents into more details.

[42]In particular, the quarterly reports from Frontex *Fran* Q1 2011 and Q2 2011 document the abnormal migration of Tunisians during the uprisings. *Fran* Q2 2012 describes the Tunisians arriving in Italy as "[..]young (18-35 years) unmarried males with primary level of education[..]".

where Δy_{rt} is the change in employment of native workers in region r from time $t-1$ to time t relative to the working age native population in region r at time $t-1$. ΔIm_{rt}^{AS} is the change in the number of legal immigrants from the Arab Spring countries in region r relative to the lagged value of the working age native population in the same region. X_{rt} is a set of region specific controls[43], while γ_y and γ_t are respectively year and quarter fixed effects. To account for heterogeneous effects of migration across industries, we estimate model (1) separately for employment of natives in 12 different sectors[44].

In this empirical model, the identification of the effects of migration on employment hinges on two conditions. First, there must be variation in migration flows across Italian regions. Second, migration flows to each given region need to be uncorrelated with unobserved factors driving contemporaneous changes in native employment.

For what concerns the first condition, Figure 2 shows the distribution of legal migration flows across regions at the peak of the Arab Spring migration. The figure highlights a substantial heterogeneity, with the northern regions experiencing larger relative inflows. Presumably because of their proximity to the countries affected by the uprisings, some regions in the south, such as Sicily and Apulia, also experienced moderately large flows[45]. Turning to the second condition, Figure 2 suggests that this is unlikely to be satisfied in this setting. The figure shows that the Arab Spring immigrants moved to the richer regions in the north. These regions were also more likely to experience higher employment growth. This suggests that there might be a positive spurious correlation between migration flows to a given region and employment changes. This would bias upwards the estimated effects of migration on employment.

To deal with the endogenous settlement of immigrants across regions, we propose an instrument that uses the distribution of immigrants from the Arab Spring countries across Italian regions in 2003 to allocate a share of the Arab Spring induced migration flows to each region. We

[43]This includes: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates.

[44]In practice, this is done by using the change in native employment in each sector as dependent variable in estimating equation (1). We thus estimate a separate regression for each sector. The set of controls in each regression (i.e. the right hand side of equation (1)) is the same in all sectoral regressions.

[45]Immigrants on a pending or refugee status are legally allowed to freely move within the Italian territory.

measure the migration flows induced by the Arab Spring using quarterly data on illegal entries into Italy through the Central Mediterranean route between 2009 and 2012. The instrument takes the following form:

$$\left(\frac{Im^{AS}_{r2003}}{Im^{AS}_{2003}}\right) \times \left(\frac{\Delta Illegal_t}{pop_{rt-1}}\right)$$

where $\Delta Illegal_t$ is the quarterly change in the illegal entries through the Central Mediterranean route and pop_{rt-1} is the lagged value of the working age native population in region r. Im^{AS}_{r2003} is the number of immigrants from Egypt, Lybia, Tunisia and Yemen (i.e. the Arab Spring countries) living in region r in 2003. Im^{AS}_{2003} is the total number of immigrants from the Arab Spring countries living in Italy in 2003[46].

The relevance of the instrument relies on the fact that immigrants tend to move to those regions that host large communities of immigrants from the same countries of origin. This is usually the case because older immigrants can provide new arrivals with primary help while integrating them into existing networks that offer higher chances of finding a job (Munshi (2003))[47].

The validity of the instrument requires three conditions to be satisfied. First, the unobserved factors that contribute to determine the variation of the native employment need to be uncorrelated to the determinants of settlement choices in 2003. Second, the flow of illegal entries through the Central Mediterranean route needs to be uncorrelated with the unobserved part of the variation of the native employment in each Italian region. Third, the instrument affects the changes in employment of natives only through migration changes (i.e. the exclusion restriction).

[46] One alternative way of instrumenting migration flows would be to use the breakdown on single nationalities. Unfortunately when migration flows to each region in each quarter are broken down by nationality, the number of observations we are left with for some regions is very small. The resulting quarter to quarter changes in migration flows are thus much more volatile and the instrument misses the precision to perform reliable analyses. Similarly, when estimating the effect of migration on employment at the industry level we use the same instrument for all sectors. The number of industry-quarter-region observations in fact, is too small to construct a reliable sector level instrument. In addition to this, data on 2003 regional shares of immigrants by sector of employment are not available.

[47] This regularity was at first noticed in Bartel (1989) and then used in Altonji and Card (1991) to estimate the effects of migration on employment and wages across Metropolitan Statistical Areas in the U.S.

For what concerns the first condition, most of the studies that look at the effects of migration on local labor market outcomes make similar types of assumptions (e.g. Altonji and Card (1991), Card (2001)). The main threat to the validity of this assumption is the existence of unobserved regional factors that drive employment growth and that persistently affect the settlement of immigrants overtime. In order to reduce these concerns, we add region fixed effects to the baseline specification. In Section 5.2 we then present an exhaustive set of robustness checks and we show that the results are robust to the use of a different instrument. Turning to the second condition necessary for validity, we see the spike in illegal entries observed in the first six months of 2011 as determined by the disruption of the border patrol activities on the Tunisian shores. This was one of the unintended consequences of the revolts. Following the fall of Ben Ali's regime in fact, part of the domestic security forces (e.g. police, national guards) deserted the policy stations as they had become targets of violent attacks during the revolution. For weeks, the Tunisian army remained the main law enforcement body operating on the entire Tunisian territory. This resulted in loosened border patrol activities and thus in massive departure of illegal immigrants from Tunisia towards Italy[48] (Boubakri (2013)). For this reason we see the flow of illegals as uncorrelated with the unobserved part of native employment changes in local labor markets in Italy[49]. Finally, regarding the third condition for validity, we might worry that the revolts had disruptive effects on the trade flows between Italy and the Arab Spring countries. If the regions where immigrants move are also those that maintain closer trade relations with the Arab Spring countries, then the existence of trade effects might violate the exclusion restriction. The Arab Spring in fact, might affect native employment through trade and not only through migration. In Section 5 we show that most of the employment effects that we find involve sectors that produce nontraded goods. This suggests that these concerns do not play a major role in the setting analyzed by our study[50].

[48]For more details see also the report *Fran* Q1 2011 and Q2 2011 (Frontex).

[49]To measure migration flows from the Arab Spring we might have used the national flows of legal immigrants to Italy (similar to Cortes (2008)). We believe that illegal flows better capture the exogenous part of the Arab Spring induced migration.

[50]The instrument that we propose can not distinguish between the effects of legal and illegal migration. The estimated effects have to be interpreted as combined effects of regular and irregular migration on employment.

5 Results

Panel A in Table 3 shows the results of the first stage regression. The instrument is relevant and its predictive power is robust to the inclusion of region fixed effects. Based on these estimates, a rise of 1% in illegal border crossing detections increases the number of legal immigrants from the Arab Spring countries by 0.27% into the average (in terms of 2003 shares) region[51]. This is generally in line with the statistics on asylum acceptance rates in Italy. In 2011 in fact, around 30% of the asylum applications in Italy were accepted in first instance decisions[52].

Panel B in Table 3 shows the coefficients estimated from equation (1). Focusing on the IV estimates, we find no evidence of significant effects of the Arab Spring migration on overall native employment (*All sectors*). The aggregate results, however, hide significant differences across industries. When we estimate the effects at the sector level in fact, we find evidence of negative and significant effects on employment in mining, wholesale trade, hotels and restaurants. In these sectors a 1% increase in the number of Arab Spring immigrants reduces employment by respectively 0.15%, 1.7% and 1.2%. These negative effects are countered by the positive effects in construction and educational services. We find that a 1% increase in migration flows into a region increases native employment by 1.17% and 1.76% in construction and educational services respectively. The OLS estimates are generally larger than the corresponding IV estimates. This is consistent with the descriptive evidence from Figure 2 showing that immigrants moved to richer regions in northern Italy.

Table 4 shows the estimated changes in the number of native workers employed in industries in which migration significantly impacted. The Arab Spring migration induced around 1,000 new immigrants to enter the average region[53]. With the exception of mining, this inflow induced

[51]The average 2003 share across regions is 0.1669. 0.27 is obtained as the product of 0.1669 and the estimate coefficient (i.e. 1.590).

[52]In particular, the Italian authorities received 24165 asylum applications, 17010 of them were accepted. We here only consider first instance acceptance rates because first instance decisions are thought as more likely to happen within 3 months. The data on asylum applications are available from Eurostat as *First instance decisions on applications by type of decision - annual aggregated data.*

[53]Here the average region is defined as the region that experienced average migration flows during the peak of the Arab Spring migration. For more details see the footnotes on Table 4.

non negligible average effects on native employment in all the other sectors affected.

While the main focus of this analysis is on employment, Table B.4 in the online Appendix shows the estimated effects of the Arab Spring migration on average earnings. These were obtained from the same estimation strategy discussed in Section 4, except using changes in average earnings rather than employment as the dependent variable. We find the effects on earnings to be small. In particular, we only find average earnings in construction to be negatively affected by the Arab Spring migration. This is consistent with the institutionalized nature of the Italian labor market. Reduced flexibility into the labor market in fact, can amplify the negative effects of migration on employment (Angrist and Kugler (2003)). Other studies on the effects of migration in Europe find similar evidence[54].

5.1 Discussion of the results

The findings of the previous section suggest that, on a quarterly basis, migration has sizable effects on local labor markets. The unique characteristics of the Arab Spring migration towards Italy and the use of quarterly data for the analysis in fact, allow us to isolate the short-term effects from the longer-term adjustments that migration induces (Section 2.1). This is in line with Figure 3, which plots the coefficients obtained while estimating the effects of the Arab Spring migration on employment using data at different frequencies. As data at progressively lower frequencies are used, the estimated effects monotonically converge to zero. In particular, the average estimated effects of migration decrease by 50% at a semiannual frequencies and by 75% at annual frequencies when they become insignificant[55] (see also Table 5). This is generally in line with other studies in the literature that find the effects of migration to decrease over wider time horizons (Campos Vazquez (2008), Monras (2013)). The convergence towards zero is however much faster in Italy where the effects of the Arab Spring migration vanish within 1

[54]In particular, Glitz (2012) finds evidence of employment being more reactive to migration than wages in Germany, a country characterized by institutionalized local labor markets.

[55]Figure 3 and Table 5 are obtained using rolling panels for all frequencies but the quarterly one. In doing so, I keep the observation window fixed (2009-2012). As an alternative approach, one might keep the number of observations fixed. The results obtained while using the latter approach are very similar to those shown in Figure 3 and Table 5.

year[56]. This can be explained by the temporary nature of the shock. In the case of the Arab Spring migration in fact, most of the immigrants left Italy within one year from their arrival thus making the adjustments to the pre-Arab Spring levels of employment faster. Even if it happened faster, the size of the adjustments that we estimate while moving from quarterly to annual frequencies (i.e. 75%) is generally in line with previous studies in the literature. Those estimate migration to induce response that can absorb between 40 and 80% of the effects (Borjas (2006), Lewis (2003)).

While we do not observe the number of Arab Spring immigrants who were hired in each industry, we use cross-sectional data relative to the post-Arab Spring period[57] on the labor market participation and the distribution of the immigrants across sectors to obtain the displacement effect of migration[58]. We estimate that on a quarterly basis, in those sectors negatively affected by the Arab Spring migration, on average around 0.78 natives are displaced for each immigrant who is hired[59]. Among the studies that find a displacement effect of migration, Glitz (2012) estimate an annual displacement rate of about 0.3 to 1 in Germany. Using establishment-level data on German workers, Campos Vazquez (2008) finds a similar displacement of 0.3 displaced natives to 1 immigrant hired over a 1-2 year horizon. Federman et al. (2006) focus on Californian manicurists estimating that, depending on the model specification, 10 new Vietnamese displace 4 to 5 non-Vietnamese manicurists on a yearly basis. Consistent with our findings capturing the short-term effects of migration, the displacement rate that we obtain is significantly larger than those estimated in the literature. In particular, the quarterly displacement effect that we estimate is around 2.6 times as large as the annual displacement estimated by

[56]Campos Vazquez (2008) and Monras (2013) find the effects of migration to vanish within 2 to 5 years.

[57]This consists of the years 2011 and 2012.

[58]The average employment rate of immigrants from the Arab Spring countries over the period 2011-2012 is 57.29%. The distribution of employed immigrants across the industries in which the employment of natives was negatively affected is reported in Table 2.

[59]Using Lfs data we obtain that 788 working age immigrants entered the average region over the period 2010Q4-2011Q2. 451 of them are assumed to be employed (0.5729*788). Those 451 immigrants are then distributed across industries following Table 2. Namely 0.13% of them are employed in mining, 2.76% of them are employed in wholesale trade and 17.56% of them are employed in hotels and restaurants. The resulting total inflow in those 3 sectors is thus of around 92 immigrants. Based on Table 4, this inflow displaced a total of 72 immigrants. This is the sum of the negative effects in mining (0.12), wholesale trade (41.83), hotels and restaurants (30.56). The ratio of displaced natives over hired immigrants is thus 0.78.

Campos Vazquez (2008) and Glitz (2012) in Germany, and around 1.6 times larger than the displacement estimated in California by Federman et al. (2006)[60].

The sharp difference between short and long-term effects of migration can provide one possible explanation for why most of the studies that exploit the geographical distribution of immigrants to estimate the effects of migration on labor markets find little or no effects[61]. Our findings suggest in fact, that a substantial part of the effects of migration on local labor markets takes place in the very short run. Most of the existing studies focus on longer migration waves using data at annual or lower frequency. In doing so, they measure the medium and long-term effects of migration that might thus only capture a small part of the action that migration actually induces on local labor markets.

We find that migration has positive effects on employment in construction (Table 3). Table 4 suggests one possible explanation for those effects. The bottom part of the table shows that we fail to reject the null hypothesis that the positive effects on employment in construction are equal to the sum of the negative effects in the other sectors. This suggests that the Arab Spring migration likely induced the displaced workers to find a new job in construction. To further investigate this possibility, Table 6 shows the results obtained while using the instrumental variable approach described in Section 4 to estimate the effects of migration on the fraction of workers moving from the sectors negatively affected into construction[62]. The results show that migration induced a higher fraction of workers to find a job in construction. In particular we estimate that the arrival of 1,000 new immigrants induced around 48 native workers to move from mining, wholesale trade, hotels and restaurants into construction (Panel B). The magnitude of the effects is generally consistent with the estimated average effects from Table 4. These

[60] 2.6 is obtained as the ratio of 0.78 (i.e. the displacement rate that we estimate) and 0.3 (i.e. the displacement in Campos Vazquez (2008) and Glitz (2012)) while 1.6 is the ratio of 0.78 and 0.5 (i.e. the displacement in Federman et al. (2006)).

[61] See for example Altonji and Card (1991), Card (1990), Card (2005), Card and Lewis (2007) on the U.S., Hunt (1992) on France, Pischke and Velling (1997) on Germany, Dustmann et al. (2005) on the UK, Gonzlez and Ortega (2011) on Spain.

[62] That is, we use the change in the regional flows of natives between the sectors negatively affected and construction as dependent variable in equation (1). We deal with the endogenous settlement of immigrants using the IV approach described in Section 4.

findings however, need to be interpreted with caution as measuring the flows to construction on a quarterly basis using Italian Lfs data, requires assumptions on the timing of the shift from one sector to the other[63].

This interpretation of the results is also in line with the descriptive evidence from Table 2 that shows how in the post Arab Spring period relatively larger shares of immigrants from the Arab Spring countries are found to work in mining, wholesale trade, hotels and restaurants if compared to the years prior to the uprisings. This is not the case in construction where the relative fraction of immigrants went slightly down from the pre to the post Arab Spring period. This is consistent with the sectoral shift hypothesis as it provides descriptive evidence of Arab Spring immigrants entering those sectors in which natives are displaced. The sectoral shift hypothesis can also help explain why earnings in construction are negatively affected by migration (Table B.4 in the online Appendix). In heavily institutionalized local labor markets such as the Italian ones, we would expect wages not to respond to migration. Within the sectoral shift hypothesis however, the decrease in earnings can be seen as due to a compositional change of the labor force in construction[64]. The workers hired in construction were possibly less productive[65] or less trained to work in construction and thus more likely to accept lower wages.

The sectoral shift hypothesis implies that the newly arrived immigrants did not find, or they preferred not to find, employment in construction. There are multiple reasons why this might be the case. First, based on the short-term nature of the migration, immigrants were probably more interested in finding short-term jobs. This can explain why they preferred hotels and restaurants to construction as jobs in the former industry are more likely to be short (Table 7). Second, jobs in construction might require a more technical training and thus a better Italian knowledge. This might favor native workers over immigrants[66]. Consistent with this, while the

[63] In particular, we assume that the individuals who shifted to construction, did it in the same quarter of the year prior to the interview. See the online Appendix A for more details.

[64] We do not find significant effects of migration on hours worked in construction (Table B.5 in the online Appendix). We thus see the effects on earnings as due to changes in (hourly) wages.

[65] Average earnings in the pre-Arab Spring period in hotels and restaurants and wholesale trade are lower than in construction (Table 7). Lower wages can reflect lower productivity. As an effect of migration, less productive workers might have moved to construction driving down average earnings.

[66] If we are willing to assume that jobs in the construction industry involve more interactive tasks (training in Italian can be seen as one of those), then our findings are generally consistent with those of Peri and Sparber

fraction of Italian workers who participate in training activities is similar in hotels, restaurants and in construction, the corresponding fraction of foreigners is much lower in construction than in hotels and restaurants[67] (Table 7). A similar type of reasoning can be applied to the comparison between wholesale trade and construction. Third, construction is more institutionalized than other sectors. Working in construction is also more dangerous than working in any other industry[68]. For these reasons, native workers might be preferred to immigrants, especially if the former can not work legally. Consistent with this, the relative fraction of illegal workers, that is also used as a sector level measure of collective labor agreement coverage, is lower in construction than in hotels and restaurants (Table 7).

The sectoral shift hypothesis also implies that the construction industry could expand over the Arab Spring period so to absorb the extra supply of native workers. Several studies in the literature show that migration has positive effects on the demand for housing (e.g. Saiz (2003), Saiz (2007)). One possible reason for the expansion of the construction industry might thus be the rise in the demand and thus in the supply of housing caused by the Arab Spring migration. We explore this possibility in Section 6.

Our results show that migration had a positive effect on employment in educational services (Table 3). The rise can be linked to the increased demand for educational services from the immigrants. Based on Lfs data in fact, in the first six months of 2011 around 9,000 legal immigrants younger than 15 entered Italy. When we compare the average regional inflow of young immigrants with the estimated effects from Table 4, we obtain that for every 3.5 young immigrants entering the average region 1 native worker was hired in educational services[69]. The

(2009) in the U.S. and D'Amuri and Peri (2011) in Europe.

[67]Table 7 shows descriptive evidence so it needs to be interpreted with caution. There might be differences in the composition of the Italian and foreigner population across sectors that might be driving those results. In particular, the skill composition of the two groups might be different in different sectors. As a partial check for this, when we breakdown these statistics by educational attainments we find similar results.

[68]Based the latest available data, in between 1998 and 2007 on average 6,767 workers per 100,000 employees had an accident at work in construction. This compares to an average of 2,334 in retail and wholesale trade and 3,283 in hotels and restaurants (Source: *INAIL - Infortuni sul lavoro (ESAW) fino al 2007 - Tav. 15*). The higher risk involved by jobs in construction might deter employers from hiring illegal workers.

[69]Based on Lfs data, the average regional number of young immigrants went up by 240. This is divided by the increase in employment in educational services from Table 4 (i.e. 67) to obtain a ratio of 3.5.

large magnitude of the estimated effects, however, suggests that there might be other factors that contributed to the growth in employment of this sector[70]. The educational services sector for example, likely served as channel for the governmental aids to the refugees. This probably contributed to its short-term expansion[71].

As already mentioned in Section 4, most of the sectors that we find to be affected by the Arab Spring migration produce nontraded goods or services. This suggests that the instrumental variable does not capture the effect of the uprisings on trade relations between Italy and the affected countries. Mining may be seen as the sole exception to this. The uprisings in Libya in fact, had big effects on the supply of oil. This likely affected the employment of Italians in mining. The effects in mining that we find are, however, very small and play a minor role in our findings (Table 4). We do not find significant effects on employment in finance, insurance, real estate or manufacturing. Since these industries were heavily hit by the European debt crisis, we also exclude the possibility that the instrument captures the effects of the financial crisis on employment.

The existing literature on the effects of migration on labor market outcomes of Italian workers finds no evidence of negative effects and some evidence of positive effects on employment (Venturini and Villosio (2006), Giuntella (2012)) and wages (Gavosto et al. (1999), Staffolani and Valentini (2010)). The positive effects are generally interpreted as evidence of complementary in production between immigrants and native workers. Most of these studies use different identification strategies, they all refer to a different time period and they do not show the detailed

[70]The average ratio of students to teaching staff in primary school in the OECD countries was 14 in 2012. In Italian primary and secondary schools the 2012 ratio was 12 (Source: Education at a Glance 2014 - OECD Indicators). When we consider all immigrants rather than just those younger than 15, the ratio immigrants-natives employed goes up to 14. This is closer to the statistics from the OECD countries mentioned above. The ratio is obtained dividing average regional inflow (i.e. 917) and the estimated effects on employment (i.e. 67).

[71]We do not exclude the possibility that other factors played a role. We find the effect to be driven by female workers (Appendix Table B.6). Based on this, one concurrent explanation might be that migration had positive effects on the labor supply of female workers as in Cortes and Tessada (2011). One other possibility is that female workers were induced to enter the educational services sector to compensate for the loss of income at the household level deriving from the displacement of male workers in the other industries (Mincer (1960), Mincer (1962)). We find in fact, most of the displacement effects to be concentrated on males (Appendix Table B.6). While those channels can explain an increase in the supply of labor by female workers, they can not explain why there was an excess demand for labor in the educational services sector at the time of the uprisings.

industry breakdown that we show. The magnitude of the effects in these studies is thus difficult to be compared with our results. Similar to this literature however, we also find positive effects on employment in some of the industries (i.e. construction and educational services). Differently from the previous studies, we propose explanations of the positive effects that move away from the hypothesis of complementary in production. This is mainly because we do not find evidence of the Arab Spring immigrants entering those sectors in which we estimate positive employment effects[72]. We also do not find significant effects of migration on earnings in educational services while we find significant and negative effects on earnings in construction. These results are difficult to reconcile with the standard complementarity arguments[73].

5.2 Robustness checks

To control for region specific effects that change over-time, we add to the empirical model year times region fixed effects and regional trends[74]. We also include quarter times year fixed effects to control for unobserved factors specific of a given quarter-year. Finally we control for the stock of immigrants in the previous period and we instrument for it using 2003 shares of immigrants from the Arab Spring countries. This is done to control for lagged effects of migration that might change the interpretation of the coefficients estimated in the baseline model[75]. The results are shown in Table 8. The baseline findings are robust to those robustness checks.

Table 9 shows the results of a falsification test in which we restrict the sample used for the analysis to the pre Arab spring period (2009Q1-2010Q3). If the instrument only captures the flows of immigrants from the Arab Spring, we do not expect to find significant effects in the pre-Arab Spring period. The instrument remains relevant despite the lower number of observations (Panel A). The magnitude of the coefficients in the first stage is now larger than in Table

[72]On average, we observe around 21,900 immigrants employed in construction in the pre-Arab Spring period and 21,700 in the post-Arab Spring period. Similarly in educational services, there were around 1,600 immigrants employed prior to the uprisings and 900 after.

[73]In the standard labor market model, if natives and immigrants are complements in production wages and employment of native workers are positively linked to the supply of labor from immigrants.

[74]We only show results on linear trends. We obtain similar results using higher order trends.

[75]In case migration has lagged effects on employment, the coefficients might capture the effects of past rather than contemporaneous migration.

3 because the number of illegal entries is lower if compared to the legal flows. Turning to the second stage regressions, we find no evidence of significant effects on total or industry specific employment (Panel B).

In the baseline specifications the standard errors are clustered at the regional level to account for serial correlation. The limited number of regions however[76], can cause the estimated standard errors to be biased toward zero (Bertrand et al. (2004), Cameron et al. (2008)). To check that the significance of the estimated effects does not entirely depend on the limited number of clusters, we use the wild bootstrap procedure to derive new p-values on the estimated coefficients[77] (Cameron et al. (2008)). The results are reported in Table 10. As expected, the p-values obtained from the wild bootstrap are greater than those from the baseline specification. With the exception of the effects on employment in mining however, the coefficients that are significant in the baseline specification remain significant in the wild bootstrap[78].

Other studies in the literature use 1995 shares of resident permits as an instrument for the endogenous settlement of immigrants across regions (e.g. Barone and Mocetti (2011), Giuntella (2012), Bratti and Conti (2014)). Table B.9 in the online Appendix reports the results obtained using those earlier shares. Panel A shows that the instrument obtained from the 1995 shares is weak. The estimated coefficients of the second stage regression are however, very similar to those estimated in the baseline model. Overall, we take this as evidence of our results being robust to the use of the 1995 in place of the 2003 shares. We thus prefer to use 2003 shares in the baseline model because they have greater predictive power.

In deriving the baseline estimates we do not distinguish between immigrants in and out of the working age. Old or very young immigrants, however, are arguably less likely to participate into the labor market. Table B.10 in the online Appendix shows the results obtained while using the flow of working age immigrants as dependent variable in the first stage regressions. As expected, the magnitude of the (second stage) effects on employment is now larger. This is because we better measure the relevant migration flow. The overall results however, are very

[76]In Italy there are 20 regions.

[77]In doing wild bootstrap on IV regressions, we follow Davidson and MacKinnon (2010).

[78]We reach similar conclusions when we do not cluster the standard errors (Appendix Table B.8).

similar to those obtained from the baseline model.

The existing literature provides evidence of negative effects of migration on labor market outcomes of older immigrants (e.g. Cortes (2008)). To investigate whether the affects are driven by older immigrants, we redefine native workers as Italian born[79]. The results obtained while using this alternative definition are reported in Table B.11 in the Appendix. The effects are very similar to those of the baseline model. We thus infer that most of the effects that we find are on Italian born workers.

As discussed in Section 2.1, mobility can equalize labor market outcomes across regions (Borjas (2006)). In the Table B.12 and B.13 in the Appendix, we use the instrumental variable approach described in Section 4 to estimate the effects of the Arab Spring migration on the regional outflow and inflow of natives and other immigrants[80]. We also estimate the effect of migration on inflow rates in those industries in which we find significant employment effects[81]. We fail to find significant effects of the Arab Spring migration on regional migration inflows or outflows. Moving from one region to the other in fact, is costly and it is thus less likely to happen in the very short run. The absence of particular migration flows argues in favor of the effects discussed in Section 5.1 as capturing the short-term effects of migration. The results, however, need to be interpreted with caution, as the construction of quarterly outflow/inflow rates using Lfs data requires assumptions on the timing of the migration from one region to the other[82].

Finally, in Table B.14 in the online Appendix we show the results obtained while using the average population and the population in the first quarter of 2009 as denominator in constructing changes in migration flows (independent variable) and changes in employment of natives (dependent variable) in equation (1). The results are very similar to those of the baseline

[79] In the baseline model we define natives as Italian citizens.

[80] The results are obtained using changes in inflows/outflows as dependent variables in (1). Other immigrants include all immigrants with the exception of those born in the Arab Spring countries or in any other African country.

[81] Due to a change of the industry classification used in the Lfs across time, we can not derive regional outflow rates at the industry level that are consistent overtime. For more details see Appendix A.

[82] See the online Appendix A for more details.

model[83].

6 The effect of the Arab Spring migration on the housing market

In this section we investigate the effects of the Arab Spring migration on house sales, house prices and rents in Italy. Evidence of positive effects would suggest that migration caused a rise in the demand for housing. The increased demand for housing provides a possible explanation for the expansion of the construction sector over the Arab Spring period (Section 5). Ideally, we would measure the effects of migration on the supply of housing. The supply effects in fact, would provide a more direct link between the rise of employment in construction and the dynamics prevailing in the housing market. Unfortunately however, we do not dispose of a measure of housing supply. We thus focus on prices, sales and rents.

Similar to what done in past studies (e.g. Saiz (2007)), we estimate the housing market effects of migration using an empirical model similar to the one described in Section 4. The IV approach in this case is meant to deal with the problems that originate from the possible existence of a spurious correlation between housing costs and the settlement of immigrants. In the analysis that follows we use a set of controls different from those used in the previous sections. The different controls capture the different determinants of the outcome variables of interest. In particular, we include lagged values of the regional employment rate and average income as independent variables in equation (1). These variables are known to be important determinants of rents and house prices (Jud et al. (1996)). Unfortunately we do not dispose of data on region or city specific amenities or other characteristics. We do, however, specify every regression in first difference and we control for region fixed effects as an attempt to deal with those unobservables.

Table 11 shows the final results of this analysis. Focusing on the effects on residential property

[83]This type of robustness checks also reduces the concerns relative to existence of measurement errors in the population that might be source of *denominator bias* (Angrist and Krueger (1999)).

sales at first, we find that the Arab Spring migration had considerable positive effects on the number of sales in regional capital cities. It is estimated that a 1% increase in the fraction of immigrants caused about 19% more house sales. Relative to the magnitude of the Arab Spring migration, the estimated effects translate into an average of 23 more transactions[84]. Table B.15 in the online Appendix, shows the estimated effects on other relevant housing markets within a region. When we consider the number of transactions in the entire region, we do not find migration to have significant effects (*Entire region* in the table). Similarly, we do not find effects in the other main cities of the regions (*Provinces* in the table). Migration has however significant and smaller effects on house sales in the counties surrounding the capital cities. From this analysis we can conclude that there is evidence of effects of migration on the housing market of the regional capital cities. This is generally consistent with the well-established fact that immigrants tend to be much more spatially concentrated than natives (Bartel (1989),Saiz (2007)).

Turning to the effect on house prices and rents, due to the high degree of heterogeneity across local housing markets, we perform separate analyses on narrowly defined markets. Based on the results of the previous paragraph, we restrict the following analysis to the regional capital cities only[85]. Within each one of those cities we then identify four zones. We label the most central zone "zone A" (the red zone in the Appendix Figure B.1). Moving away from the city center the remaining 3 zones (the yellow, blue and violet zone in the figure) are labeled respectively as zone B, C and D. We thus estimate the effects of migration on house prices and rents in each one of those four zones. Table 11 shows the results obtained while focusing on zone A only. The complete set of results is shown in Table B.16 and B.17 in the online Appendix. Unfortunately, data on prices and rents are only available at semiannual frequency. This drastically reduces the number of available observations. The limited number of observations, lowers the power of the instrument (Panel A and C in Table 11) and it contributes to generate noisier second stage

[84]The estimated average change in the number of transactions is derived as the product of the average number of transactions in the pre-Arab Spring period (2,346.6), the estimated coefficient (0.1859) and the average change in the percentage of immigrants from the Arab Spring countries (0.0529).

[85]While performing the same type of analysis on the counties surrounding the capital cities, we fail to find significant effects. The results of this analysis are not reported in the paper.

estimates. Despite the low power of the instrument, Panel B in Table 11, shows a positive and significant (at 10% level) effect of migration on house prices in the most central zone (zone A) of the regional capital cities. It is estimated that a 1% increase in the fraction of immigrants living in the region drives prices up by around 3.5%. The magnitude of the estimated effects is in line with the existing literature. Saiz (2007), estimates the elasticity of house prices to migration in U.S. metropolitan areas to be in between 2.8 and 3.4. We do not find significant effects on prices in less central zones (i.e. zone B,C and D) of the capital cities (Appendix Table B.16). The most central neighborhoods in fact, are those in which immigrants from the Arab Spring countries are more likely to work[86].

When we break down the effects on prices by type of property (Panel D in Table 11), we find suggestive evidence of the effects being driven by rents and prices of less expensive properties. Those findings are generally consistent with the existing literature that finds rents on cheaper housing units to be more affected by migration (Saiz (2003)).

Migration can be thought to rise the demand of housing either because immigrants bid up rental prices or because they buy properties. Due to the temporary nature of the Arab Spring migration, it is unlikely that immigrants directly bought properties. The positive effect on prices might thus reflect the consequence of a rise in rents that made it more expensive to lease residential units and more convenient to rent them out. This might have pushed the housing demand and thus prices up. Based on the results of the previous paragraph, we would thus expect to find positive effects on rents in the most central zone of the regional capital cities. Unfortunately, the limited number of observations does not allow to obtain precise second stage estimates. The estimated coefficients on rents are thus insignificant (Table 11 and Appendix Table B.17). Despite the big standard errors, the point estimates are not zero either. In particular, the elasticity of rents to migration in zone A is estimated to be in between 0.89 and 1.4 depending on the specification (Appendix Table B.17). This is in line with the existing literature on the U.S. In a study on the effects of the Mariel boatlift on rents in Miami, Saiz

[86]Hotels and restaurants, for example, are concentrated in central neighborhoods.

(2003) estimates the rent elasticity to be in between 0.89 and 1.2[87]. In a following study on the effects of migration on rents in the U.S. metropolitan areas, Saiz (2007) obtains estimates of the elasticity that range in between 0.89 and 1.02.

To conclude, in this section we provide evidence of a positive effect of migration on house sales in regional capital cities and house prices in the most central zone of the regional capital cities. We also show suggestive evidence of rents being driven up by migration. We find the effect on prices to be driven by less expensive housing units. Overall we take the results of this section as suggestive of the fact that the Arab Spring migration induced a rise of the housing demand in regional capital cities. Such a rise might have induced an expansion of the housing supply and thus of the employment in the construction industry.

7 Conclusions

The temporary, unanticipated and exogenous migration induced by the Arab Spring provides an ideal setting to estimate the short-term effects of migration. While focusing on the short-term, migration is found to have a considerable effect on employment of native workers. We estimate a quarterly displacement around 2.6 times lager than the annual displacement estimated by other studies in the European literature. We show that, using data at annual frequency, would only capture around 1/4 of the effects of the Arab Spring migration that can be obtained using data at quarterly frequency. The evidence of substantial short-term effects that quickly dissipate overtime, helps to reconcile the predictions on the effects of migration from the standard labor market model and the existing empirical evidence of little or no effects of migration in the medium and long-term. It suggests, in fact, that, as predicted by the standard labor market model model, migration affects employment of natives. Most of the effects however, concentrate in the very short run.

We find migration to have both positive and negative effects on employment of native work-

[87]Saiz (2003) estimates a rent differential between Miami and the comparison cities of 8-11%. The increase in the population due to the Mariel boatlift is estimated to be 9%. Thus the estimated elasticity ranges in between 0.89 and 1.2.

ers. In particular, we find evidence of displacement effects in mining, hotels, restaurants and wholesale trade and positive effects on employment in construction and educational services. We show evidence in favor of migration inducing a short-term shift of displaced workers to construction that would be neglected while focusing on the longer-term effects of migration. We explain the rise of employment in construction and educational services as driven by the increased demand from immigrants rather than by the complementarity between immigrants and natives in production. Consistent with this interpretation, we find migration to have positive effects on house prices and house sales. This evidence supports the hypothesis that migration not only affects the supply, but can also change the demand for labor in local labor markets. The effects of migration on the demand for labor surely deserve further work.

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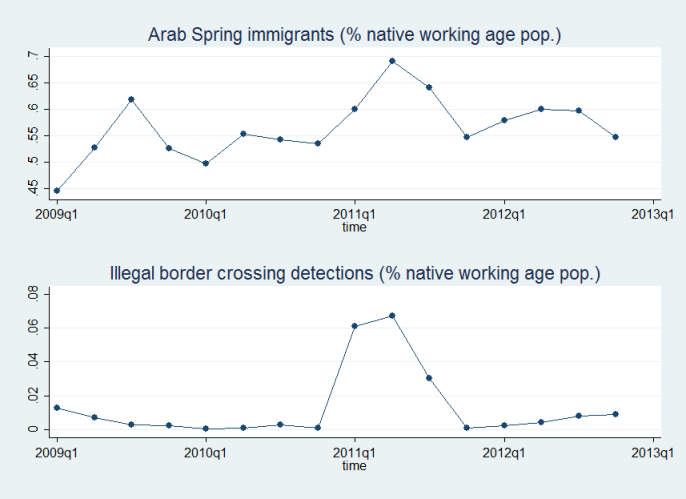
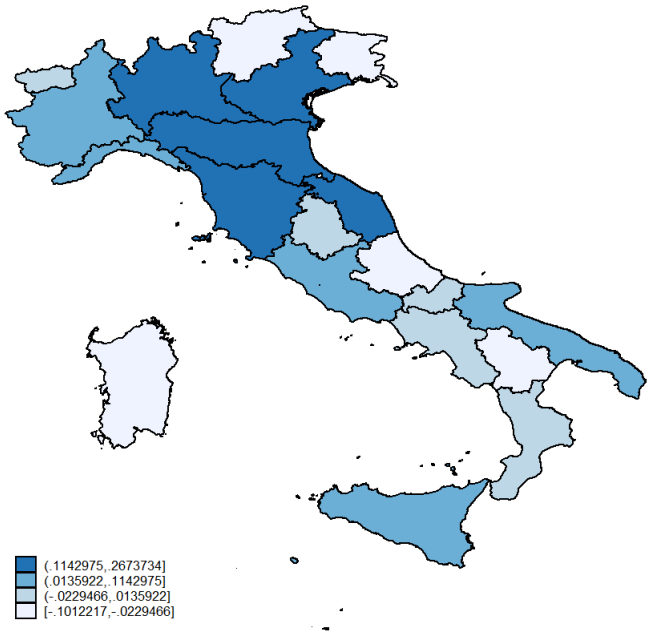
Figure 1: The Arab Spring Migration



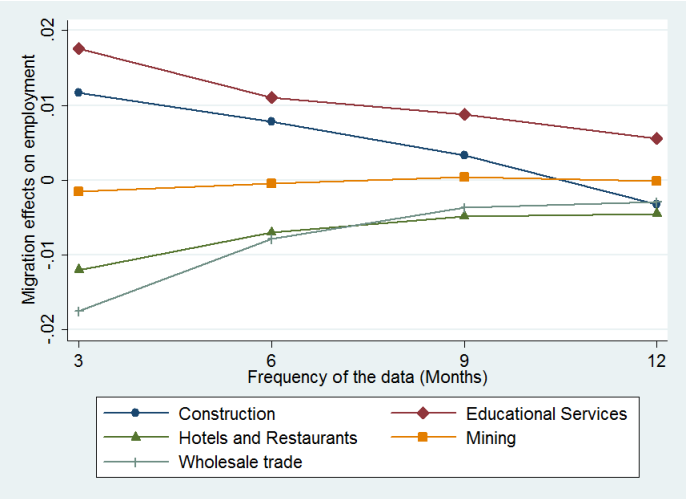
Source: Top panel - Italian Labor Force Survey (Istat),
Bottom panel - Frontex and Frontex Malta

Figure 2: Average change in immigrants from the Arab Spring countries (% native working age population) - 2011Q1-2011Q2



Source: Italian Labor Force Survey - Istat

Figure 3: Short versus longer-term effects on employment of natives



Notes: Figure based on coefficients from Table 5

Table 1: Descriptive Statistics - Explanatory Variables

	Obs.	Mean	Std. Dev.	Min	Max
Change immig. from Arab Spring countries (% native pop.)	300	0.006	0.185	-0.761	0.722
Change immig. from Arab Spring countries 10Q4-11Q2 (% native pop.)	60	0.050	0.187	-0.402	0.534
2003 share of AS imm. (fraction of national AS imm.)	20	0.167	0.129	0.018	0.383
Illegal border crossing dectections (number of people)	16	4783	7635	87	24193
Illegal border crossing dectections (number of people) 10Q1-11Q3	3	19029	7129.936	10894	24193
Males (% working age pop.)	320	45.694	1.768	42.934	49.842
Average Age	320	41.012	1.098	38.758	42.994
Elementary school or less (% working age pop.)	320	47.467	6.237	33.935	60.924
High school diploma (% working age pop.)	320	32.422	2.839	24.781	39.793
College degree or more (% working age pop.)	320	11.415	1.706	7.128	15.725
Tenured workers (% native workers)	320	64.900	3.733	53.883	71.762
Full-Time workers (% native workers)	320	85.599	1.870	78.631	91.426
White collars (% native workers)	320	43.063	4.534	30.897	53.412
Working age population	320	1977665	1603703	82801.4	6512507
Native working age population	320	1807053	1444980	75273	5775852
Total Population	320	3008085	2424482	125980.6	9967758

Sources: Italian Labor Force Survey Data - Istat, I.Stat - Istat, Frontex and FrontexWatch Malta
Regional observations are weighted by the corresponding population shares. AS stands for Arab Spring.
Elementary school is defined as primary (grade 1 to 5) and middle school (grade 6 to 8).
High school follows middle school. It can consist of 3 or 5 years of schooling depending on the field of study.
College or more is defined as any type of degree issued by a university, independently of its length.

Table 2: Immigrants versus Natives - Descriptive Statistics

	Immigrants from Arab Spirng Countries		Natives
	Pre-Arab Spring	**Post-Arab Spring**	
Demographics			
Males (%total)	61.52	62.66	48.59
Mean Age	45	44	43
Number of individuals (thousand)	192.86	215.50	60215.19
Observations (unweighted)	3416	3786	2424758
Educational attainments (%total)			
Elementary school or less	52.29	56.84	54.99
High School	33.67	33.00	33.95
College or more	14.04	10.16	11.06
Observations (unweighted)	3209	3563	2113357
Country of Origin (% total)			
Egypt	40.37	38.80	
Tunisia	40.76	44.07	
Lybia	18.38	16.92	
Yemen	0.48	0.21	
Observations (unweighted)	3416	3786	
Distribution of workers across sectors (% total)			
Agriculture, Forestry and Fishing	6.51	6.85	3.66
Mining	0.05	0.13	0.16
Construction	25.59	22.03	7.43
Manufacturing	17.36	15.67	18.75
Transportation, Communications, Electric, Gas and Sanitary Services	7.47	5.43	8.86
Wholesale Trade	2.38	2.77	4.29
Retail Trade	5.43	7.43	8.88
Finance, Insurance and Real Estate	2.20	1.19	3.75
Hotels and Restaurants	12.72	17.57	4.93
Public Administration	2.06	1.98	6.76
Educational Services	1.88	0.92	7.29
Other Services	16.34	18.03	25.25
Observations (unweighted)	1386	1548	822282

Source: Italian Labor Force Survey-Istat. Each observation is weighted by its relative population weight. "Number of individuals" refers to the average number per quarter. Elementary school is defined as primary (grade 1 to 5) and middle school (grade 6 to 8). High school follows middle school. It can consist of 3 or 5 years of schooling depending on the field of study. College or more is defined as any type of degree issued by a university, independently of its length. Natives are defined as Italian citizens. The pre-Arab Spring period consists of the years 2009 and 2010. The years 2011 and 2012 belong to the post-Arab Spring period.

Table 3: The effects of the Arab Spring migration on employment

Panel A: First stage regressions **Change in immigrants from Arab Spring countries (% native working age pop.)**			
	(1)	**(2)**	**Obs.**
Instrument	1.587***	1.590***	300
	(0.195)	(0.202)	
R-squared	0.133	0.136	

Panel B: Second stage regressions **Native employment change (share of native working age pop.)**					
	(1) **IV**	**(1)** **OLS**	**(2)** **IV**	**(2)** **OLS**	**Obs.**
All sectors	-0.0034	0.0031	-0.0032	0.0032	300
	(0.0202)	(0.0030)	(0.0209)	(0.0031)	
Agriculture, Forestry and Fishing	0.0074	0.0016	0.0074	0.0016	300
	(0.0066)	(0.0013)	(0.0068)	(0.0014)	
Mining	-0.0015*	-0.0002	-0.0015*	-0.0002	300
	(0.0007)	(0.0004)	(0.0007)	(0.0004)	
Construction	0.0117**	0.0009	0.0117**	0.0009	300
	(0.0041)	(0.0025)	(0.0044)	(0.0026)	
Manufacturing	-0.0003	-0.0041	-0.0003	-0.0042	300
	(0.0113)	(0.0054)	(0.0119)	(0.0056)	
Transportation, Communications,	-0.0004	0.0011	-0.0004	0.0011	300
Electric, Gas and Sanitary Services	(0.0099)	(0.0020)	(0.0103)	(0.0021)	
Wholesale Trade	-0.0174***	0.0020*	-0.0175***	0.0020*	300
	(0.0043)	(0.0010)	(0.0046)	(0.0011)	
Retail Trade	-0.0008	-0.0023	-0.0005	-0.0023	300
	(0.0090)	(0.0023)	(0.0092)	(0.0024)	
Finance, Insurance and Real Estate	-0.0067	-0.0021**	-0.0067	-0.0021**	300
	(0.0055)	(0.0009)	(0.0055)	(0.0009)	
Hotels and Restaurants	-0.0121***	0.0023	-0.0120***	0.0023	300
	(0.0034)	(0.0022)	(0.0036)	(0.0023)	
Public Administration	-0.0048	0.0026	-0.0048	0.0026	300
	(0.0043)	(0.0017)	(0.0044)	(0.0018)	
Educational Services	0.0176***	0.0004	0.0176***	0.0005	300
	(0.0059)	(0.0010)	(0.0061)	(0.0011)	
Other Services	0.0039	0.0008	0.0036	0.0009	300
	(0.0138)	(0.0034)	(0.0142)	(0.0035)	
Quarter and year fixed effects	YES	YES	YES	YES	
Region fixed effects	NO	NO	YES	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. Panel B only shows the coefficients relative to migration flows.
Standard errors in parentheses. Observations are weighted by quarter specific population shares.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table 4: The employment effects of the Arab Spring migration: number of workers

Average inflow of Immigrants 10Q4-11Q2 (number of individuals)	917				
	Mining	**Construction**	**Wholesale Trade**	**Hotels and Restaurants**	**Educational Services**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Estimated change in native employment (number of workers)	-0.12*	47.56**	-42.06***	-30.20***	67.50***
	(0.0587)	(17.97)	(11.00)	(8.954)	(23.35)
Quarter, year and region fixed effects	YES	YES	YES	YES	YES
Test of equality					
H_0: (1)+ (2) + (3)+(4)=0					
F-stat	1.46				
P-value	0.24				

Standard errors in parentheses. The average inflow of immigrants is derived as the product of the average change in migration flows at the peak of the Arab Spring induced migration (0.05%) and the average native working age population in the pre Arab Spring period (1819755).
The estimated change in native employment is derived by multiplying the coefficients of Table 3
by the average change in migration flows (0.05%) and the average pre Arab Spring number of workers employed in each industry.

Table 5: Shorter versus longer term changes in employment

Panel A:First stage regressions **Change in Arab Spring immigrants (% native working age pop.)**				
	3 months change	**6 monts change**	**9 moths change**	**Annual changes**
Instrument	1.590***	1.827***	1.633***	1.604***
	(0.202)	(0.296)	(0.523)	(0.312)
Obs.	300	280	260	240
R-squared	0.136	0.195	0.225	0.306
Panel B: Second stage Regressions **Employment change (share of native working age pop.)**				
	3 months change	**6 monts change**	**9 moths change**	**Annual changes**
Mining	-0.0015*	-0.0004	0.0004	-0.0001
	(0.0007)	(0.0007)	(0.0007)	(0.0008)
Construction	0.0117**	0.0078**	0.0033	-0.0033
	(0.0044)	(0.0030)	(0.0047)	(0.0044)
Wholesale trade	-0.0175***	-0.0078**	-0.0037	-0.0029
	(0.0046)	(0.0036)	(0.0052)	(0.0042)
Hotels and Restaurants	-0.0120***	-0.0070**	-0.0048	-0.0045
	(0.0036)	(0.0033)	(0.0038)	(0.0028)
Educational Services	0.0176***	0.0110***	0.0088*	0.0055
	(0.0061)	(0.0037)	(0.0047)	(0.0049)
Obs	300	280	240	220
Quarter, year and region fixed effects	YES	YES	YES	YES

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates.
Panel B only shows the coefficients relative to migration flows. Observations are weighted by quarter specific population shares.
Standard errors in parentheses. Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table 6: Sectoral shift of employment

Panel A: First stage regression **Change in Arab Spring immigrants (%native working age pop.)**				
	(1)	**Obs.**	**(2)**	**Obs.**
Instrument	1.8533***	220	1.8690***	220
	(0.3866)		(0.4177)	
R-squared	0.178		0.178	
Panel B: Second stage regression **Inflow into construction from mining, wholesale trade, hotels and restaurants** **(share of native working age pop.)**				
	(1)	**Obs.**	**(2)**	**Obs.**
Arab Spring immigrants change (%)	0.0487*	220	0.0491*	220
	(0.0254)		(0.0273)	
Quarter and year f.e.	YES		YES	
Region f. e.	NO		YES	

Panel A and B: Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares. Standard errors in parentheses.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table 7: Descriptive Statistics on Sectors

	Average earning pre-Arab Spring period Elementary School at most	**Illegal workers (% total) Av. 2005-2009**	**Training**		**Share of short term contracts (less than 6 months) (% total emp.)**
			Italians (% total Italians)	**Foreigners (% total foreigners)**	
Agriculture, Forestry and Fishing	992.04	23.55	1.54	0.79	11.68
Mining	1304.13	4.87	3.98	0.35	2.66
Construction	1181.15	10.63	2.21	0.97	2.24
Manufacturing	1162.57	3.94	3.10	1.15	2.21
Transportation, Communications, Electric, Gas and Sanitary Services	1303.04	28.26	4.85	2.18	2.34
Wholesale Trade	1140.03	7.25	3.79	2.60	1.56
Retail Trade	984.48	7.25	2.44	0.76	2.48
Finance, Insurance and Real Estate	1326.57	9.04	9.87	7.10	0.90
Hotels and Restaurants	886.90	31.26	2.17	1.86	6.85
Public Administration	1346.72		5.37	0.66	1.14
Educational Services	972.88	6.74	8.61	5.55	2.24
Other Services	938.37	12.59	7.25	2.09	2.29

Source: Data on illegal workers from *La misura dell'occupazione non regolare nelle stime di contabilitá nazionale* - Istat.

All the remaining statistics are from the Italian Labor Force survey data - Istat.

The training variable is constructed looking at the number of workers who have attended at least one job training activity in the 4 weeks prior to the interview.

Elementary school is defined as primary (grade 1 to 5) and middle school (grade 6 to 8).

Table 8: Employment effects - Robustness checks

Second stage regression **Employment change (share of native working age pop.)**					
	(1)	**(2)**	**(3)**	**(4)**	**Obs.**
All sectors	-0.0042	-0.0049	-0.0114	-0.0035	300
	(0.0222)	(0.0230)	(0.0243)	(0.0174)	
Agriculture, Forestry and Fishing	0.0073	0.0070	0.0164	0.0057	300
	(0.0074)	(0.0076)	(0.0099)	(0.0058)	
Mining	-0.0015*	-0.0015	-0.0024*	-0.0015**	300
	(0.0008)	(0.0009)	(0.0013)	(0.0007)	
Construction	0.0118**	0.0120**	0.0143*	0.0101***	300
	(0.0046)	(0.0050)	(0.0079)	(0.0037)	
Manufacturing	-0.0007	-0.0008	-0.0096	0.0015	300
	(0.0128)	(0.0135)	(0.0146)	(0.0103)	
Transportation, Communications,	-0.0004	-0.0006	-0.0079	-0.0001	300
Electric, Gas and Sanitary Services	(0.0113)	(0.0117)	(0.0132)	(0.0089)	
Wholesale Trade	-0.0176***	-0.0177***	-0.0141**	-0.0163***	300
	(0.0050)	(0.0053)	(0.0065)	(0.0036)	
Retail Trade	-0.0008	-0.0010	-0.0009	-0.0012	300
	(0.0100)	(0.0104)	(0.0110)	(0.0084)	
Finance, Insurance and Real Estate	-0.0067	-0.0067	-0.0067	-0.0067	300
	(0.0055)	(0.0055)	(0.0055)	(0.0049)	
Hotels and Restaurants	-0.0116***	-0.0115**	-0.0235**	-0.0116***	300
	(0.0039)	(0.0043)	(0.0090)	(0.0033)	
Public Administration	-0.0052	-0.0053	0.0039	-0.0027	300
	(0.0051)	(0.0052)	(0.0075)	(0.0040)	
Educational Services	0.0173**	0.0174**	0.0223**	0.0163***	300
	(0.0064)	(0.0067)	(0.0102)	(0.0055)	
Other Services	0.0034	0.0036	-0.0071	0.0029	300
	(0.0154)	(0.0162)	(0.0204)	(0.0126)	
Year f.e.	YES	YES	YES	YES	
Quarter f.e.	YES	YES	NO	YES	
Region times year f.e.	YES	YES	YES	NO	
Regional time trends	NO	YES	YES	NO	
Quarter times year f.e.	NO	NO	YES	NO	
Region f.e.	NO	NO	NO	NO	
Stock of immigrants at t-1	NO	NO	NO	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares. Estimates in (4) are based on 280 obs. The table only shows the coefficients relative to migration flows.
Table B.7 in the online Appendix shows the first stage regressions. Standard errors in parentheses.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table 9: Placebo Test - Pre-Arab Spring period only (09Q1-10Q3)

Panel A: First stage regressions		
Change in Arab Spring immigrants (% native working age pop.)		
		Observations
Instrument	-19.279***	120
	(3.459)	
R-squared	0.285	
Panel B: Second stage regressions		
Native employment change (share of native working age pop.)		
		Observations
All sectors	-0.0103	120
	(0.019)	
Agriculture, Forestry and Fishing	0.0020	120
	(0.005)	
Mining	-0.0004	120
	(0.001)	
Construction	0.0104	120
	(0.007)	
Manufacturing	-0.0045	120
	(0.010)	
Transportation, Communications,	-0.0022	120
Electric, Gas and Sanitary Services	(0.005)	
Wholesale Trade	0.0069	120
	(0.009)	
Retail Trade	-0.0092	120
	(0.008)	
Finance, Insurance and Real Estate	-0.0028	120
	(0.003)	
Hotels and Restaurants	0.0024	120
	(0.004)	
Public Administration	0.0073	120
	(0.005)	
Educational Services	-0.0089	120
	(0.007)	
Other Services	-0.0112	120
	(0.013)	
Quarter and year f. e.	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares.
Panel B only shows the coefficients relative to migration flows. Standard errors in parentheses.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table 10: Wild bootstrap versus clustered standard errors

Second stage regressions **Native employment change (share of native working age pop.)**			
	(1)	**(2)**	
	Clustered s.e.	**Wild bootstrap**	**Observations**
Mining	-0.0015*	-0.0015	300
(p-value)	(0.0546)	(0.3442)	
Construction	0.0117**	0.0117**	300
(p-value)	(0.0107)	(0.0374)	
Wholesale Trade	-0.0174***	-0.0174**	300
(p-value)	(0.0007)	(0.0226)	
Hotels and Restaurants	-0.0121***	-0.0121***	300
(p-value)	(0.0019)	(0.0026)	
Educational Services	0.0176***	0.0176*	300
(p-value)	(0.0076)	(0.063)	
Quarter, year f.e.	YES	YES	

Each cell is a different regression. Each regression contains the following controls:
average age, the fraction of males, the regional population, the fraction of full-time workers,
the fraction of white collar and tenured workers, the fraction of high school and college graduates.
Observations are weighted by quarter specific population shares.
The table only shows the coefficients relative to migration flows.
Wild bootstrap performed as in Davidson and MacKinnon (2010). Results obtained from 999 repetitions.
Standard errors in parentheses. *, ** and *** are 10, 5 and 1 percent significance levels.

Table 11: The effect of migration on the Italian housing market

Panel A: First stage regressions for Panel B			
Change in Arab Spring immigrants (%native working age pop.)			
Instrument	2.0145***	0.8932**	0.8932**
	(0.3818)	(0.3892)	(0.3892)
Obs.	270	133	133
R-squared	0.331	0.231	0.231
Panel B: Second stage regressions			
Regional capital city only			
	Change Number of transactions	**Price change Zone A**	**Rental price change Zone A**
Arab Spring immigrants	0.1859***	0.0355*	0.0140
change (%)	(0.0567)	(0.0186)	(0.0242)
Obs.	270	133	133
Year f.e.	YES	YES	YES
Quarter f.e.	YES	NO	NO
Semester f.e.	NO	YES	YES
Panel C: First stage regressions for Panel D			
Change in Arab Spring immigrants (%native working age pop.)			
Instrument	0.7238**		0.8932**
	(0.3113)		(0.3892)
Obs.	120		133
R-squared	0.239		0.231
Panel D: Second stage regressions			
Regional capital city only			
	Price change less expensive hous. units Zone A		**Price change more expensive hous. units Zone A**
Arab Spring immigrants	0.0482*		0.0133
change (%)	(0.0253)		(0.0145)
Obs.	120		133
Year and Semester f.e.	YES		YES

Each cell is a different regression. Each regression contains the following controls: average age, one period lagged employment, one period lagged (log)average earnings, the regional population, the fraction of white collars and tenured workers,the fraction of college graduates. Prices and rents are measured in euros per square meters. Observations are weighted by quarter specific transaction shares. Standard errors in parentheses. Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Online Appendix

"The Effects of a Temporary Migration Shock: Evidence from the Arab Spring Migration towards Italy"

by Claudio Labanca

Abstract

In this study we estimate the short-term effects of migration on employment of native workers. We do so by exploiting the exogenous, unanticipated and temporary migration induced by the Arab Spring on local labor markets in Italy. We find the effects to vary significantly in magnitude and sign across industries. In negatively affected sectors, we estimate the quarterly displacement effect to be 2.6 times as large as the annual displacement estimated by other European studies. Consistent with a rise in sectoral employment operating through increased demand from immigrants, we find that the Arab Spring migration had positive effects on employment in construction while driving up house sales and house prices.

JEL Classification: F22, J43, J61, R23, R58

A Appendix A: Additional information on the dataset

The industry classification- The classification of industry that we use follows the division classification of the US department of labor *www.osha.gov/pls/imis/*. We slightly depart from that classification in considering Hotels and Restaurants and Education Services separately from Services. We do that because the Arab Spring migration more strongly affected employment in

those two industries. They thus deserve a separate treatment. The two digit classification in the Italian Lfs doesn't allow to distinguish between Wholesale and Retail trade of automotive dealer and mechanics. The distinction between retail and wholesale trade will turn out to be important for the analysis. For this reason we don't consider the Italian automotive dealer and mechanic sector in our analysis.

Illegal border crossing detections- The total number of illegal border crossing detections through the Central Mediterranean route was made available by Frontex upon request. To this we subtract the number illegal entries in Malta. Apart from Italy, Malta is the only other country on the Central Mediterranean route. Data on illegal entries in Malta can be found online from FrontexWatch Malta. We only consider the number of individuals alive upon arrival on Maltese lands.

Housing market data- The database *Quotazioni Immobiliari* provided by *Agenzia delle Entrate- Osservatorio del mercato immobiliare* provides information on the 95% confidence intervals on prices and rents of a given type of building (called *tipologia*) in a given micro-area (called *zona OMI*) for each town in Italy. We restrict our sample to the set of regional capital cities. The 95% confidence interval is based on the mean and the standard deviation that result from a representative sample[1] of housing units and it is defined using a t-student distribution. The type of building is defined by looking at the reported characteristics and the scope of each given building. We only focus on residential units. Conditional on being assigned to a given typology, the location of the unit sampled determines the micro-area. Micro-areas can be aggregated into larger areas. Those are referred as *fasce* in the original database and here labeled as Zones A to D. For each micro-area and typology of building we derive the average price defined as the center of the 95% interval described above. We then take the average of those prices across micro-areas and type of building within the each zone (A to D). From this we obtain a price and a rental value for each zone, in each semester and in each regional capital city. We thus use this information to construct the dependent variables in table 11 Panel B, Table B.16 and Table B.17. In Table 11 Panel C and Table B.18 we differentiate between more and less expensive types of buildings bases on the reported typology (*tipologia*). In particular

[1]This sample must contain a minimum of 5 housing units.

we define as less expensive the residential units classified as *Abitazioni di tipo economico* and *Abitazioni tipiche dei luoghi*. We classified as more expensive *Ville e Villini, abitazioni civili and abitazioni signorili*. This classification is based on the description of each typology that can be found on the users guide (i.e. *Manuale della Banca dati dell'osservatorio del marcato immobiliare*) available on line from *Agenzia delle Entrate*.

Throughout the housing market analysis, we do not consider data from *Abruzzo*. This is because this region was heavily hit by an earthquake in 2010. This caused huge damage to properties. In analyzing the effects on house sales we also do not dispose of data on *Trentino Alto Adige*. Finally we do not have data on cheap house in Rome. This explains why, when we only look at cheap housing units, we have fewer observations (Table 11 Panel C and Table B.18).

Inflows into construction from mining, wholesale trade and hotels and restaurants- For each region and in each quarter we count the weighted number of workers who were employed into either mining, hotels and restaurants or wholesale trade the year prior to the survey and that are employed into construction at the time of the survey. We thus derive the change in the number of native workers who moved in construction from wave $t-1$ to wave t of the data. Taking the difference we restrict the possible timing of migration into construction to be either in between t and $t-1$ or $t-4$ and $t-5$. We assume that workers move into construction in between $t-4$ and $t-5$. Accordingly we make such a change relative to the population at $t-5$.

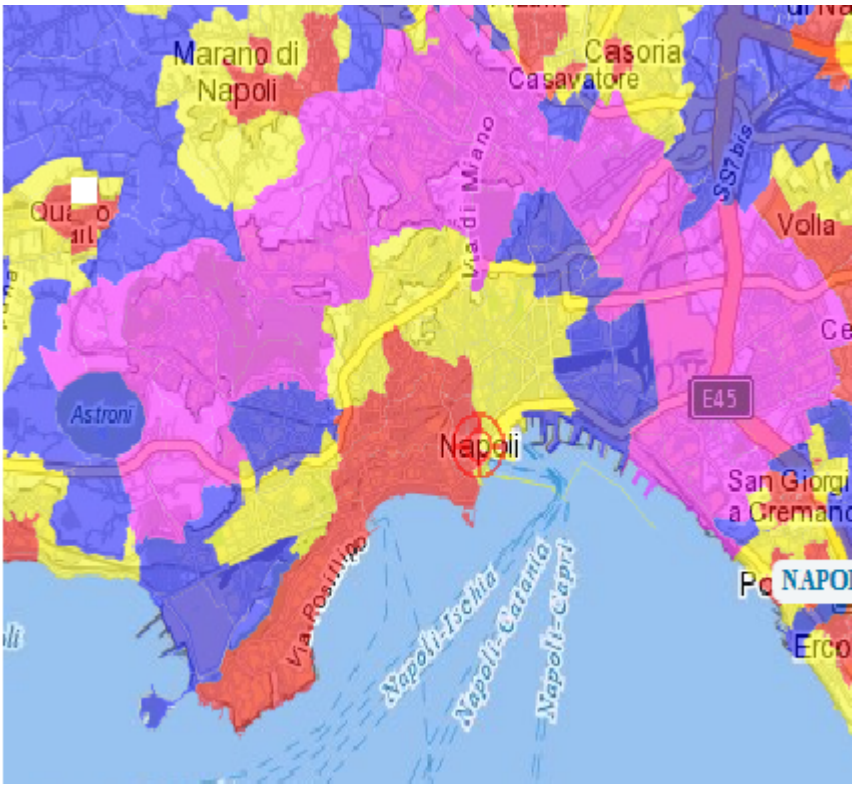
Inflows of natives/immigrants - For each region we count the weighted number of workers who used to live in a different region one year prior to the interview. We do it in each quarter and we then take the first difference in inflows to each region between consecutive waves of data. As for the *Inflows into construction from mining, wholesale trade and hotels and restaurants*, we assume that the workers who moved into a given region did it in between $t-4$ and $t-5$. We make such a change relative to the population at $t-5$.

Outflows of natives/immigrants - For each region we count the weighted number of workers who used to live in that region one year prior to the interview and who live in a different region at the time of the interview. We do it in each quarter and we then take the first difference in outflows to each region between consecutive waves of data. We then assume that the workers

who moved out of the region did it in between $t-4$ and $t-5$. We make such a change relative to the population at $t-5$. The change in the industry classification that occurred in 2011, makes it impossible to construct series of outflow rates for each industry that are consistent overtime. This is because there is no available bridge between old and and new industry classification on past employment (variable "ate2de"). This is why for outflow rates we only report total outflows.

B Appendix B: Supplmentary Tables and Figures

Figure B.1: Example of zones within a city - Naples



Notes: The red zone is Zone A, the yellow is Zone B.
The blue zone is Zone C, the violet is Zone D.

Table B.1: Descriptive Statistics: Employment of natives by sector

Native Employment (% native pop.)					
	Obs.	**Mean**	**Std. Dev.**	**Min**	**Max**
All sectors	320	57.07	10.47	38.39	70.29
Agriculture, Forestry and Fishing	320	1.93	1.01	0.59	5.94
Mining	320	0.09	0.06	0.00	0.33
Construction	320	4.21	0.65	2.62	8.42
Manufacturing	320	10.92	5.81	2.56	20.91
Transportation, Communications, Electric, Gas and Sanitary Services	320	5.11	1.49	2.61	8.80
Wholesale Trade	320	2.45	0.88	0.58	4.47
Retail Trade	320	5.01	0.67	3.44	7.88
Finance, Insurance and Real Estate	320	2.16	0.96	0.41	3.96
Hotels and Restaurants	320	2.81	0.72	1.15	7.18
Public Administration	320	3.85	1.28	1.98	8.69
Educational Services	320	4.15	0.51	2.67	7.24
Other Services	320	14.37	2.99	8.52	19.82

Sources: Italian Labor Force Survey Data

Regional observations are weighted by the corresponding population shares

Table B.2: Descriptive Statistics: Average Monthly Earnings

Average monthly earnings (euros)					
	Obs.	**Mean**	**Std. Dev.**	**Min**	**Max**
All sectors	320	1256.16	71.21	1103.06	1387.96
Agriculture, Forestry and Fishing	319	1014.43	183.71	576.40	2000.00
Mining	286	1424.43	356.14	541.44	3000.00
Construction	320	1219.41	101.00	968.35	1485.97
Manufacturing	320	1262.90	100.47	966.23	1489.86
Transportation, Communications, Electric, Gas and Sanitary Services	320	1382.85	91.68	1168.33	1614.83
Wholesale Trade	320	1224.46	133.58	893.50	1876.35
Retail Trade	320	1009.14	76.73	810.21	1197.85
Finance, Insurance and Real Estate	320	1639.39	127.46	1245.44	1970.78
Hotels and Restaurants	320	918.21	84.87	662.16	1183.16
Public Administration	320	1474.24	75.89	1245.16	1669.46
Educational Services	320	1358.40	59.02	1218.90	1603.06
Other Services	320	1179.98	75.18	964.08	1361.75

Sources: Italian Labor Force Survey Data - Istat

Regional observations are weighted by the corresponding population shares

Table B.3: Descriptive Statistics - Housing market variables

	Obs.	Mean	Std. Dev.	Min	Max
			House sales		
Entire Region	288	7678.36	6965.20	335	35869
Provinces	288	1036.37	975.48	0	4311
Capital City County	288	3226.52	3571.68	335	15243
Capital City	288	1356.37	1900.08	60	9636
			House Prices (euros/square meter)		
Zone A	152	3116.51	1493.69	1293.75	7024.24
Zone B	136	2499.13	858.55	1183.75	4219.92
Zone C	144	2084.24	735.03	969.17	3813.80
Zone D	128	1834.81	714.18	658.75	3143.75
Less expensive housing units	138	2359.42	1082.75	1204.64	4917.50
More expensive housing units	152	3349.04	1541.96	1362.50	7024.24
			Rents (euros/square meter)		
Zone A	152	10.30	5.16	4.36	27.29
Zone B	136	8.16	2.88	4.40	16.69
Zone C	144	6.61	2.75	0.00	13.82
Zone D	128	6.00	3.10	0.00	11.70

We label the most central zone "zone A" (the red zone in Figure B.1). Moving away from the city center the remaining 3 zones (the yellow, blue and violet zone in Figure B.1) are labeled respectively as zone B, C and D. Provinces refers to the main cities (*Province*) of each Italian region.

Table B.4: The effects of the Arab Spring migration on average earnings

	Second stage regressions (Log) Average monthly earnings change				
	(1) IV	**(1) OLS**	**(2) IV**	**(2) OLS**	**Number of Observations**
All sectors	-0.0041	-0.0053	-0.0037	-0.0053	300
	(0.0156)	(0.0037)	(0.0162)	(0.0039)	
Agriculture, Forestry and Fishing	-0.0281	-0.0061	-0.0293	-0.0059	298
	(0.1041)	(0.0304)	(0.1061)	(0.0313)	
Mining	0.2380	0.1636	0.2099	0.1695	247
	(0.4400)	(0.1086)	(0.4589)	(0.1150)	
Construction	-0.1491***	-0.0365**	-0.1479***	-0.0370**	300
	(0.0413)	(0.0136)	(0.0422)	(0.0142)	
Manufacturing	0.0675	0.0052	0.0676	0.0051	300
	(0.0459)	(0.0117)	(0.0476)	(0.0121)	
Transportation, Communications,	0.0547	-0.0151*	0.0548	-0.0152*	300
Electric, Gas and Sanitary Services	(0.0559)	(0.0085)	(0.0582)	(0.0087)	
Wholesale Trade	0.0058	-0.0210	0.0040	-0.0210	300
	(0.0507)	(0.0170)	(0.0523)	(0.0178)	
Retail Trade	0.0075	0.0124	0.0084	0.0121	300
	(0.0503)	(0.0146)	(0.0518)	(0.0151)	
Finance, Insurance and Real Estate	0.0227	0.0183	0.0231	0.0184	300
	(0.0794)	(0.0243)	(0.0823)	(0.0252)	
Hotels and Restaurants	-0.0086	-0.0504**	-0.0119	-0.0506**	300
	(0.0831)	(0.0222)	(0.0868)	(0.0233)	
Public Administration	0.0146	-0.0097	0.0147	-0.0095	300
	(0.0774)	(0.0136)	(0.0802)	(0.0142)	
Educational Services	-0.0416	-0.0063	-0.0412	-0.0064	300
	(0.0283)	(0.0127)	(0.0295)	(0.0130)	
Other Services	0.0066	0.0109	0.0073	0.0111	300
	(0.0394)	(0.0155)	(0.0411)	(0.0161)	
Quarter and year fixed effects	YES	YES	YES	YES	
Region fixed effects	NO	NO	YES	YES	
Estimated change	-9.046				
in monthly earnings (euros)	(2.504)				

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males,the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates.
The Table only shows the coefficients relative to migration flows. Observations are weighted by quarter specific population shares.
Standard errors in parentheses. Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.
The estimated change in monthly earnings in construction is obtained as the product of the estimated coefficient (-0.1491), the average percentage change in immigrants from the Arab Spring countries in the fist six months of 2011 (0.05%) and the average Pre-Arab Spring earnings in construction (1202.832 euros)

Table B.5: The effects of the Arab Spring migration on hours worked

Second stage regressions (Log) Average hours worked change			
	(1)	**(2)**	**Obs.**
	IV	**IV**	
All sectors	0.0049	0.0050	300
	(0.0093)	(0.0096)	
Agriculture, Forestry and Fishing	0.2417**	0.2403**	300
	(0.1018)	(0.1043)	
Mining	-0.0202	-0.0132	262
	(0.1229)	(0.1237)	
Construction	-0.0515	-0.0516	300
	(0.0325)	(0.0331)	
Manufacturing	0.0340	0.0346	300
	(0.0228)	(0.0240)	
Transportation, Communications,	0.0281	0.0278	300
Electric, Gas and Sanitary Services	(0.0276)	(0.0282)	
Wholesale Trade	0.0039	0.0036	300
	(0.0480)	(0.0495)	
Retail Trade	-0.0331	-0.0321	300
	(0.0210)	(0.0215)	
Finance, Insurance and Real Estate	0.0202	0.0205	300
	(0.0438)	(0.0456)	
Hotels and Restaurants	-0.0294	-0.0298	300
	(0.1386)	(0.1436)	
Public Administration	-0.0197	-0.0198	300
	(0.0331)	(0.0344)	
Educational Services	0.0714	0.0716	300
	(0.0462)	(0.0474)	
Other Services	0.0478*	0.0477*	300
	(0.0231)	(0.0241)	
Quarter and year fixed effects	YES	YES	
Region fixed effects	NO	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. The table only shows the coefficients relative to migration flows.
Standard errors in parentheses. Observations are weighted by quarter specific population shares.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.6: Breakdown of the employment effects by sex and educational attainments

Second Stage Regressions Employment change (share of native working age pop.)					
	Baseline	**Males**	**Females**	**Elementary school**	**High school diploma**
Mining	-0.0015*	-0.0016*		-0.0012**	-0.0004
	(0.0007)	(0.0009)		(0.0005)	(0.0003)
Construction	0.0117**	0.0046	0.0071*	0.0057	0.0058
	(0.0041)	(0.0037)	(0.0034)	(0.0039)	(0.0054)
Wholesale trade	-0.0174***	-0.0095***	-0.0080**	-0.0068**	-0.0080***
	(0.0043)	(0.0030)	(0.0033)	(0.0024)	(0.0022)
Hotels and Restaurants	-0.0121***	-0.0064	-0.0056*	-0.0068***	-0.0028
	(0.0034)	(0.0048)	(0.0030)	(0.0021)	(0.0034)
Educational Services	0.0176***	0.0045*	0.0132**	0.0036**	0.0146***
	(0.0059)	(0.0024)	(0.0050)	(0.0013)	(0.0029)
Quarter, year and region fixed effects	YES	YES	YES	YES	YES

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares. The Table only shows the coefficients relative to migration flows. Elementary school is defined as primary (grade 1 to 5) and middle school (grade 6 to 8). High school follows middle school. It can consist of 3 or 5 years of schooling depending on the field of study. Standard errors in parentheses are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.7: Robustness checks - First stage regressions

	Immigrants from AS countries change (%)	**Immigrants from AS countries change (%)**	**Immigrants from AS countries change (%)**	**Immigrants from AS countries change (%)**	**Stock of immigr. from AS countriesat t-1**
	(1)	**(2)**	**(3)**	**(4)**	**(4)**
Instrument	1.588***	1.590***	1.961***	1.6705***	-0.0093**
	(0.228)	(0.239)	(0.402)	(0.2038)	(0.0039)
2003 Shares				0.0148	0.0259***
				(0.0215)	(0.0036)
F (exclud. inst.)	6.973	6.667	4.878	41.49	26.13
Obs.	300	300	300	280	280
R-squared	0.173	0.182	0.216	0.136	0.741
Year f.e.	YES	YES	YES	YES	YES
Quarter f.e.	YES	YES	NO	YES	YES
Region times year f.e.	YES	YES	YES	NO	NO
Regional time trends	NO	YES	YES	NO	NO
Quarter times year f.e.	NO	NO	YES	NO	NO
Region f.e.	NO	NO	NO	NO	NO
Stock of immigrants at t-1	NO	NO	NO	YES	YES

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates.
Observations are weighted by quarter specific population shares. Standard errors in parentheses. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.8: Unclustred versus clustered standard errors

Panel A: First stage regressions			
Change in Arab Spring immigrants (% native working age pop.)			
	(1)	**(2)**	
	Clustered s.e.	**Unclustered s.e.**	**Observations**
Instrument	1.590***	1.587***	300
	(0.202)	(0.611)	
R-squared	0.117	0.133	

Panel B: Second stage regressions						
	Native employment change (share of native working age pop.)			**(Log) Av. monthly earnings change**		
	(1)	**(2)**		**(1)**	**(2)**	
	Clustered s.e.	**Unclustered s.e.**	**Observations**	**Clustered s.e.**	**Unclustered s.e.**	**Observations**
All sectors	-0.0034	-0.0034	300	-0.0041	-0.0041	300
	(0.0202)	(0.0153)		(0.0156)	(0.0146)	
Agriculture, Forestry and Fishing	0.0074	0.0074	300	-0.0281	-0.0281	300
	(0.0066)	(0.0047)		(0.1041)	(0.2114)	
Mining	-0.0015*	-0.0015*	300	0.2380	0.2380	300
	(0.0007)	(0.0009)		(0.4400)	(0.3650)	
Construction	0.0117**	0.0117*	300	-0.1491***	-0.1491**	300
	(0.0041)	(0.0064)		(0.0413)	(0.0633)	
Manufacturing	-0.0003	-0.0003	300	0.0675	0.0675	300
	(0.0113)	(0.0103)		(0.0459)	(0.0493)	
Transportation, Communications,	-0.0004	-0.0004	300	0.0547	0.0547	300
Electric, Gas and Sanitary Services	(0.0099)	(0.0083)		(0.0559)	(0.0775)	
Wholesale Trade	-0.0174***	-0.0174**	300	0.0058	0.0058	300
	(0.0043)	(0.0068)		(0.0507)	(0.1013)	
Retail Trade	-0.0008	-0.0008	300	0.0075	0.0075	300
	(0.0090)	(0.0064)		(0.0503)	(0.0652)	
Finance, Insurance and Real Estate	-0.0067	-0.0067	300	0.0227	0.0227	300
	(0.0055)	(0.0046)		(0.0794)	(0.0872)	
Hotels and Restaurants	-0.0121***	-0.0121	300	-0.0086	-0.0086	300
	(0.0034)	(0.0113)		(0.0831)	(0.1775)	
Public Administration	-0.0048	-0.0048	300	0.0146	0.0146	300
	(0.0043)	(0.0077)		(0.0774)	(0.0816)	
Educational Services	0.0176***	0.0176**	300	-0.0416	-0.0416	300
	(0.0059)	(0.0084)		(0.0283)	(0.0338)	
Other Services	0.0039	0.0039	300	0.0066	0.0066	300
	(0.0138)	(0.0173)		(0.0394)	(0.0462)	
Quarter, year f.e.	YES	YES		YES	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates. Panel B only shows the coefficients relative to migration flows. Observations are weighted by quarter specific population shares. Standard errors in parentheses. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.9: The effect of the Arab Spring migration using 1995 shares

Panel A: First stage regressions			
Change in Arab Spring immigrants (% native working age pop.)			
	(1)	**(2)**	
	2003 shares	**1995 shares**	**Observations**
Instrument	1.590***	1.227**	300
	(0.202)	(0.505)	
R-squared	0.117	0.120	

Panel B: Second stage regressions						
	Native employment change (share of native working age pop.)			**(Log) Av. monthly earnings change**		
	(1)	**(2)**		**(1)**	**(2)**	
	2003 shares	**1995 shares**	**Observations**	**2003 shares**	**1995 shares**	**Observations**
All sectors	-0.0034	0.0142	300	-0.0041	-0.0172	300
	(0.0202)	(0.0342)		(0.0156)	(0.0279)	
Agriculture, Forestry and Fishing	0.0074	0.0107	300	-0.0281	-0.0502	300
	(0.0066)	(0.0108)		(0.1041)	(0.1338)	
Mining	-0.0015*	-0.0015	300	0.2380	0.1175	300
	(0.0007)	(0.0009)		(0.4400)	(0.5314)	
Construction	0.0117**	0.0113*	300	-0.1491***	-0.0986	300
	(0.0041)	(0.0065)		(0.0413)	(0.1391)	
Manufacturing	-0.0003	0.0136	300	0.0675	0.0723	300
	(0.0113)	(0.0209)		(0.0459)	(0.0886)	
Transportation, Communications,	-0.0004	0.0049	300	0.0547	0.0560	300
Electric, Gas and Sanitary Services	(0.0099)	(0.0162)		(0.0559)	(0.0809)	
Wholesale Trade	-0.0174***	-0.0191**	300	0.0058	-0.0849	300
	(0.0043)	(0.0078)		(0.0507)	(0.1450)	
Retail Trade	-0.0008	-0.0051	300	0.0075	0.0661	300
	(0.0090)	(0.0134)		(0.0503)	(0.1293)	
Finance, Insurance and Real Estate	-0.0067	-0.0085	300	0.0227	0.0671	300
	(0.0055)	(0.0076)		(0.0794)	(0.1181)	
Hotels and Restaurants	-0.0121***	-0.0151**	300	-0.0086	-0.0653	300
	(0.0034)	(0.0062)		(0.0831)	(0.1301)	
Public Administration	-0.0048	-0.0139	300	0.0146	0.0076	300
	(0.0043)	(0.0115)		(0.0774)	(0.0917)	
Educational Services	0.0176***	0.0249**	300	-0.0416	-0.0454	300
	(0.0059)	(0.0111)		(0.0283)	(0.0446)	
Other Services	0.0039	0.0119	300	0.0066	-0.0294	300
	(0.0138)	(0.0183)		(0.0394)	(0.0872)	
Quarter, year f.e.	YES	YES		YES	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates.
Panel B only shows the coefficients relative to migration flows. Observations are weighted by quarter specific population shares.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.10: The labor market effects of working age immigrants

Panel A: First stage regressions **Change in Arab Spring immigrants (% native working age pop.)**			
	Baseline	**Work. Age**	**Obs.**
Instrument	1.590***	1.312***	300
	(0.202)	(0.164)	
R-squared	0.136	0.113	

Panel B: Second stage regressions						
	Native employment change (share of native working age pop.)			**(Log) Av. monthly earnings change**		
	(1)	**(2)**		**(1)**	**(2)**	
	Baseline	**Work. Age**	**Obs.**	**Baseline**	**Work. Age**	**Obs.**
All sectors	-0.0032	-0.0039	300	-0.0037	-0.0045	300
	(0.0209)	(0.0255)		(0.0162)	(0.0194)	
Agriculture, Forestry and Fishing	0.0074	0.0090	300	-0.0293	-0.0355	298
	(0.0068)	(0.0083)		(0.1061)	(0.1309)	
Mining	-0.0015*	-0.0018*	300	0.2099	0.2550	247
	(0.0007)	(0.0010)		(0.4589)	(0.5709)	
Construction	0.0117**	0.0142**	300	-0.1479***	-0.1792***	300
	(0.0044)	(0.0050)		(0.0422)	(0.0587)	
Manufacturing	-0.0003	-0.0004	300	0.0676	0.0819	300
	(0.0119)	(0.0144)		(0.0476)	(0.0573)	
Transportation, Communications,	-0.0004	-0.0005	300	0.0548	0.0664	300
Electric, Gas and Sanitary Services	(0.0103)	(0.0125)		(0.0582)	(0.0722)	
Wholesale Trade	-0.0175***	-0.0212***	300	0.0040	0.0048	300
	(0.0046)	(0.0047)		(0.0523)	(0.0637)	
Retail Trade	-0.0005	-0.0006	300	0.0084	0.0102	300
	(0.0092)	(0.0111)		(0.0518)	(0.0624)	
Finance, Insurance and Real Estate	-0.0067	-0.0082	300	0.0231	0.0279	300
	(0.0055)	(0.0065)		(0.0823)	(0.0998)	
Hotels and Restaurants	-0.0120***	-0.0145***	300	-0.0119	-0.0145	300
	(0.0036)	(0.0043)		(0.0868)	(0.1046)	
Public Administration	-0.0048	-0.0058	300	0.0147	0.0179	300
	(0.0044)	(0.0051)		(0.0802)	(0.0968)	
Educational Services	0.0176***	0.0214***	300	-0.0412	-0.0500	300
	(0.0061)	(0.0074)		(0.0295)	(0.0351)	
Other Services	0.0036	0.0044	300	0.0073	0.0088	300
	(0.0142)	(0.0170)		(0.0411)	(0.0502)	
Quarter, year and region f. e.	YES	YES		YES	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates.
Panel B only shows the coefficients relative to migration flows. Observations are weighted by quarter specific population shares.
Standard errors in parentheses. Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.11: The effect of the Arab Spring migration on employment and earnings of Italian born

Second stage regressions						
	Native employment change (share of native working age pop.)			**(Log) Av. monthly earnings change**		
	(1)	**(2)**		**(1)**	**(2)**	
	Baseline	**Italian born**	**Observations (2)**	**Baseline**	**Italian born**	**Observations (2)**
All sectors	-0.0032	-0.0032	300	-0.0037	-0.0042	300
	(0.0209)	(0.0209)		(0.0162)	(0.0183)	
Agriculture, Forestry and Fishing	0.0074	0.0081	300	-0.0293	-0.0258	298
	(0.0068)	(0.0068)		(0.1061)	(0.0939)	
Mining	-0.0015*	-0.0015*	300	0.2099	0.3707	245
	(0.0007)	(0.0007)		(0.4589)	(0.3348)	
Construction	0.0117**	0.0094**	300	-0.1479***	-0.1266***	300
	(0.0044)	(0.0043)		(0.0422)	(0.0431)	
Manufacturing	-0.0003	-0.0028	300	0.0676	0.0551	300
	(0.0119)	(0.0122)		(0.0476)	(0.0435)	
Transportation, Communications,	-0.0004	0.0004	300	0.0548	0.0475	300
Electric, Gas and Sanitary Services	(0.0103)	(0.0106)		(0.0582)	(0.0581)	
Wholesale Trade	-0.0175***	-0.0176***	300	0.0040	0.0152	300
	(0.0046)	(0.0045)		(0.0523)	(0.0497)	
Retail Trade	-0.0005	-0.0009	300	0.0084	-0.0131	300
	(0.0092)	(0.0101)		(0.0518)	(0.0522)	
Finance, Insurance and Real Estate	-0.0067	-0.0063	300	0.0231	0.0287	300
	(0.0055)	(0.0055)		(0.0823)	(0.0908)	
Hotels and Restaurants	-0.0120***	-0.0132***	300	-0.0119	-0.0206	300
	(0.0036)	(0.0033)		(0.0868)	(0.0971)	
Public Administration	-0.0048	-0.0057	300	0.0147	0.0167	300
	(0.0044)	(0.0047)		(0.0802)	(0.0838)	
Educational Services	0.0176***	0.0169**	300	-0.0412	-0.0423	300
	(0.0061)	(0.0060)		(0.0295)	(0.0298)	
Other Services	0.0036	0.0010	300	0.0073	0.0131	300
	(0.0142)	(0.0116)		(0.0411)	(0.0430)	
Quarter, year and region f. e.	YES	YES		YES	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, the fraction of white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares.
The Table only shows the coefficients relative to migration flows. Observations are weighted by quarter specific population shares.
Standard errors in parentheses. Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.12: The effect of migration on mobility - Outflow rates

Panel A: First stage regression				
Change in Arab Spring immigrants (% native working age pop.)				
	(1)	**Observations**	**(2)**	**Observations**
Instrument	1.7553***	200	1.6820***	200
	(0.4426)		(0.4542)	
R-squared	0.235		0.240	
Panel B: Second stage regression				
Regional outflow of Italians (share of native working age pop.)				
	(1)	**Observations**	**(2)**	**Observations**
Arab Spring immigrants	-0.1090	200	-0.1094	200
change (%)	(0.1384)		(0.1494)	
Panel C: Second stage regression				
Regional outflow of other immigrants (share of native working age pop.)				
	(1)	**Observations**	**(2)**	**Observations**
Arab Spring immigrants	-0.0644	200	-0.0723	200
change (%)	(0.0443)		(0.0523)	
Quarter and year f.e.	YES		YES	
Region f. e.	NO		YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates, current, one and two periods lagged employment and average earnings.
Observations are weighted by quarter specific population shares. Standard errors in parentheses.
Other immigrants include all the individuals who are born abroad except those who are born in Africa.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.13: The effect of migration on mobility - Inflow rates

Panel A: First stage regression				
Change in Arab Spring immigrants (% native working age pop.)				
	(1)	**Observations**	**(2)**	**Observations**
Instrument	1.6820***	200	1.6733***	200
	(0.4542)		(0.5074)	
R-squared	0.240		0.248	
Panel B: Second stage regression				
Regional inflows of Italians (share of native working age pop.)				
	(1)	**Observations**	**(2)**	**Observations**
All sectors	-0.3159	200	-0.3558	200
	(0.3688)		(0.3893)	
Construction	-0.0040	200	-0.0031	200
	(0.0238)		(0.0246)	
Wholesale trade	0.0400**	200	0.0371*	200
	(0.0156)		(0.0183)	
Hotels and Restaurants	0.0233	200	0.0240	200
	(0.0232)		(0.0250)	
Educational Services	-0.0256	200	-0.0259	200
	(0.0939)		(0.0990)	
Quarter and year f.e.	YES		YES	
Region f. e.	NO		YES	
Panel C: Second stage regression				
Regional inflows of other immigrants (share of native working age pop.)				
	(1)	**Observations**	**(2)**	**Observations**
All sectors	-0.0045	200	-0.0083	200
	(0.0472)		(0.0503)	
Construction	-0.0079	200	-0.0083	200
	(0.0169)		(0.0177)	
Wholesale trade	-0.0000	200	0.0000	200
	(0.0004)		(0.0004)	
Hotels and Restaurants	-0.0299**	200	-0.0286**	200
	(0.0114)		(0.0124)	
Educational Services	0.0008	200	0.0009	200
	(0.0010)		(0.0012)	
Quarter and year f.e.	YES		YES	
Region f. e.	NO		YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates, current, one and two periods lagged employment and average earnings.
Panel B and Panel C only show the coefficients relative to migration flows.
Observations are weighted by quarter specific population shares.Standard errors in parentheses.
Other immigrants include all the individuals who are born abroad except those who are born in Africa.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.14: Migration and employement - Robustness checks on pupulation

Panel A: First stage regressions **Change in Arab Spring immigrants (% native working age pop.)**				
	Baseline	**Average population**	**2009Q1 opulation**	**Obs.**
Instrument	1.590***	1.588***	1.586***	300
	(0.202)	(0.203)	(0.205)	
R-squared	0.136	0.136	0.136	
Panel B: Second stage regressions **Native employment change (share of native working age pop.)**				
	Baseline	**Average population**	**2009Q1 opulation**	**Obs.**
All sectors	-0.0032	-0.0032	-0.0032	300
	(0.0209)	(0.0209)	(0.0209)	
Agriculture, Forestry and Fishing	0.0074	0.0075	0.0076	300
	(0.0068)	(0.0068)	(0.0068)	
Mining	-0.0015*	-0.0015*	-0.0015*	300
	(0.0007)	(0.0007)	(0.0007)	
Construction	0.0117**	0.0118**	0.0118**	300
	(0.0044)	(0.0044)	(0.0044)	
Manufacturing	-0.0003	-0.0004	-0.0004	300
	(0.0119)	(0.0118)	(0.0118)	
Transportation, Communications,	-0.0004	-0.0005	-0.0005	300
Electric, Gas and Sanitary Services	(0.0103)	(0.0103)	(0.0102)	
Wholesale Trade	-0.0175***	-0.0175***	-0.0176***	300
	(0.0046)	(0.0046)	(0.0047)	
Retail Trade	-0.0005	-0.0004	-0.0005	300
	(0.0092)	(0.0092)	(0.0092)	
Finance, Insurance and Real Estate	-0.0067	-0.0067	-0.0066	300
	(0.0055)	(0.0057)	(0.0057)	
Hotels and Restaurants	-0.0120***	-0.0119***	-0.0119***	300
	(0.0036)	(0.0036)	(0.0036)	
Public Administration	-0.0048	-0.0048	-0.0048	300
	(0.0044)	(0.0044)	(0.0044)	
Educational Services	0.0176***	0.0178***	0.0178***	300
	(0.0061)	(0.0061)	(0.0062)	
Other Services	0.0036	0.0035	0.0034	300
	(0.0142)	(0.0142)	(0.0142)	
Quarter, year and region f. e.	YES	YES	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates, current, one and two periods lagged employment and average earnings.
Panel B only shows the coefficients relative to migration flows.
Observations are weighted by quarter specific population shares.Standard errors in parentheses.
Other immigrants include all the individuals who are born abroad except those who are born in Africa.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.15: The effect of migration on the number of transactions in the housing market

	Panel A: First stage regression **Change in Arab Spring immigrants (%native working age pop.)**							
	Entire region		**Provinces**		**Capital city county**		**Capital city only**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrument	1.6120***	1.6084***	1.7171***	1.7303***	1.9162***	1.8447***	2.0145***	1.9265***
	(0.2949)	(0.2421)	(0.3661)	(0.2926)	(0.3341)	(0.2774)	(0.3818)	(0.2999)
Obs.	270	270	255	255	270	270	270	270
R-squared	0.159	0.178	0.206	0.230	0.221	0.240	0.310	0.331
	Panel B: Second stage regression **Change in the number of transactions**							
	Entire region		**Provinces**		**Capital city county**		**Capital city only**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Arab Spring immigrants	0.0562	0.0575	0.2386	0.2395	0.1099**	0.1099*	0.1859***	0.1985***
change (%)	(0.0573)	(0.0657)	(0.1535)	(0.1783)	(0.0473)	(0.0554)	(0.0567)	(0.0622)
Obs.	270	270	255	255	270	270	270	270
R-squared	0.921	0.922	0.796	0.803	0.899	0.901	0.821	0.824
Estimated average change					32.64	32.67	23.10	24.66
number of transactions					(14.04)	(16.46)	(7.046)	(7.726)
Quarter and year f.e.	YES	YES	YES	YES	YES	YES	YES	YES
Region f. e.	NO	YES	NO	YES	NO	YES	NO	YES

Each cell is a different regression. Each regression contains the following controls: average age, one period lagged employment, one period lagged (log)average earnings, the regional population, the fraction of white collar and tenured workers,the fraction of college graduates. Observations are weighted by quarter specific transaction shares. Standard errors in parentheses.

Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Entire region consists of all main cities and surrounding counties in a region. Provinces consists of all main cities in a region except the region capital city.

The estimated average change in the number of transactions is derived as the product of the average number of transactions in the pre Arab Spring period, the estimated coefficient and the average change in the percentage of immigrants from the Arab Spring countries.

Table B.16: The effect of migration on house prices

Panel A: First stage regression **Change in Arab Spring immigrants (%native working age pop.)**								
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrument	0.8646**	1.0055**	0.9713**	1.0895**	0.9726**	1.0768**	0.8932**	1.0249**
	(0.4045)	(0.4326)	(0.4001)	(0.4173)	(0.4046)	(0.4215)	(0.3892)	(0.4127)
Obs.	112	112	126	126	119	119	133	133
R-squared	0.254	0.339	0.214	0.303	0.229	0.309	0.231	0.320

Panel B: Second stage regression **Change in price per square-meter**								
	D zone		**C zone**		**B zone**			**A zone**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Arab Spring immigrants	-0.0042	-0.0025	0.0115	0.0100	0.0050	0.0101	0.0355*	0.0356*
change (%)	(0.0168)	(0.0109)	(0.0101)	(0.0093)	(0.0149)	(0.0124)	(0.0186)	(0.0185)
Obs.	112	112	126	126	119	119	133	133
R-squared	0.147	0.342	0.192	0.423	0.198	0.405	0.134	0.324
Semester and year f.e.	YES	YES	YES	YES	YES	YES	YES	YES
Region f. e.	NO	YES	NO	YES	NO	YES	NO	YES

Each cell is a different regression. Each regression contains the following controls: average age, one period lagged employment, one period lagged (log)average earnings, the regional population, the fraction of white collar and tenured workers, the fraction of college graduates. Observations are weighted by quarter specific population shares. Standard errors in parentheses.

Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

A zone is the most central zone of the city. D zone is the most peripheral one.

Table B.17: The effect of migration on rents

Panel A: First stage regression								
Change in Arab Spring immigrants (%native working age pop.)								
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Instrument	0.8736*	1.0177**	0.9739**	1.0934**	0.9726**	1.0768**	0.8932**	1.0249**
	(0.4114)	(0.4399)	(0.4041)	(0.4231)	(0.4046)	(0.4215)	(0.3892)	(0.4127)
Obs.	105	105	121	121	119	119	133	133
R-squared	0.256	0.344	0.215	0.305	0.229	0.309	0.231	0.320
Panel B: Second stage regression								
Change in rent per square-meter								
	D zone		**C zone**		**B zone**			**A zone**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Arab Spring immigrants	-0.0224	-0.0187	-0.0030	-0.0013	-0.0127	-0.0117	0.0140	0.0089
change (%)	(0.0229)	(0.0209)	(0.0115)	(0.0122)	(0.0130)	(0.0139)	(0.0242)	(0.0261)
Obs.	105	105	121	121	119	119	133	133
R-squared	0.127	0.242	0.130	0.292	0.142	0.236	0.106	0.238
Semester and year f.e.	YES	YES	YES	YES	YES	YES	YES	YES
Region f. e.	NO	YES	NO	YES	NO	YES	NO	YES

Each cell is a different regression. Each regression contains the following controls: average age, one period lagged employment, one period lagged (log)average earnings, the regional population, the fraction of white collar and tenured workers, the fraction of college graduates. Observations are weighted by quarter specific population shares. Standard errors in parentheses.

Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

A zone is the most central zone of the city. D zone is the most peripheral one.

Table B.18: The effect of migration: cheap versus expensive houses

Panel A: First stage regression						
Change in Arab Spring immigrants (%native working age pop.)						
	More expensive			**Less expensive**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Instrument	0.8997**	0.8932**	1.0249**	0.7345**	0.7238**	0.8230**
	(0.3815)	(0.3892)	(0.4127)	(0.3130)	(0.3113)	(0.3379)
Obs.	133	133	133	120	120	120
R-squared	0.223	0.231	0.320	0.237	0.239	0.361
Panel B1: Second stage regression						
Change in price per square-meter						
	More expensive			**Less expensive**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Arab Spring immigrants	0.0153	0.0133	0.0132	0.0508**	0.0482*	0.0472
change (%)	(0.0161)	(0.0145)	(0.0115)	(0.0236)	(0.0253)	(0.0318)
Obs.	133	133	133	120	120	120
R-squared	0.0829	0.158	0.376	0.0725	0.119	0.277
Panel B2: Second stage regression						
Change in rent per square-meter						
	More expensive			**Less expensive**		
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Arab Spring immigrants	-0.0228	-0.0327	-0.0307	0.0967*	0.1070	0.0886
change (%)	(0.0206)	(0.0251)	(0.0276)	(0.0550)	(0.0652)	(0.0621)
Obs.	133	133	133	120	120	120
R-squared	0.0519	0.0719	0.196	0.0543	0.104	0.270
Semester f.e.	YES	YES	YES	YES	YES	YES
Semester and year f.e.	NO	YES	YES	NO	YES	YES
Region f. e.	NO	NO	YES	NO	NO	YES

Each cell is a different regression. Each regression contains the following controls: average age, one period lagged employment, one period lagged (log)average earnings, the regional population, the fraction of white collars and tenured workers, the fraction of college graduates.
Observations are weighted by quarter specific population shares. Standard errors in parentheses.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.
A zone is the most central zone of the city. D zone is the most peripheral one.

Table B.19: The effects of migration on earnings: robustness checks

Second stage regressions (Log) Average monthly earnings change					
	(1)	**(2)**	**(3)**	**(4)**	**Obs.**
All sectors	-0.0035	-0.0033	0.0259	-0.0075	300
	(0.0173)	(0.0179)	(0.0190)	(0.0143)	
Agriculture, Forestry and Fishing	-0.0425	-0.0449	-0.0379	-0.0555	298
	(0.1104)	(0.1151)	(0.1659)	(0.0835)	
Mining	0.1598	0.1892	0.5664	0.1847	247
	(0.5529)	(0.5682)	(0.7793)	(0.4076)	
Construction	-0.1474***	-0.1464***	-0.1767**	-0.1375***	300
	(0.0477)	(0.0493)	(0.0635)	(0.0358)	
Manufacturing	0.0718	0.0714	0.0472	0.0469	300
	(0.0518)	(0.0533)	(0.0601)	(0.0417)	
Transportation, Communications,	0.0550	0.0570	0.1363	0.0450	300
Electric, Gas and Sanitary Services	(0.0622)	(0.0646)	(0.1066)	(0.0500)	
Wholesale Trade	0.0064	0.0043	-0.0586	-0.0058	300
	(0.0584)	(0.0621)	(0.1038)	(0.0473)	
Retail Trade	0.0100	0.0117	-0.0928	0.0094	300
	(0.0601)	(0.0631)	(0.0984)	(0.0451)	
Finance, Insurance and Real Estate	0.0227	0.0227	0.0227	0.0191	300
	(0.0794)	(0.0794)	(0.0794)	(0.0656)	
Hotels and Restaurants	-0.0212	-0.0263	0.0252	-0.0218	300
	(0.0951)	(0.1006)	(0.1693)	(0.0824)	
Public Administration	0.0197	0.0169	0.0347	-0.0018	300
	(0.0906)	(0.0944)	(0.1094)	(0.0748)	
Educational Services	-0.0406	-0.0393	0.0106	-0.0371	300
	(0.0308)	(0.0317)	(0.0383)	(0.0278)	
Other Services	0.0062	0.0065	0.0790	0.0104	300
	(0.0449)	(0.0471)	(0.0553)	(0.0327)	
Year f.e.	YES	YES	YES	YES	
Quarter f.e.	YES	YES	NO	YES	
Region times year f.e.	YES	YES	YES	NO	
Regional time trends	NO	YES	YES	NO	
Quarter times year f.e.	NO	NO	YES	NO	
Region f.e.	NO	NO	NO	NO	
Stock of immigrants at t-1	NO	NO	NO	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares. Specification (4) is based on 280 observations for all sectors except Agriculture (279 obs.) and Mining (230 obs.). The Table only shows the coefficients relative to migration flows. Table B.7 shows the first stage regressions. Standard errors in parentheses. Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.20: Placebo Test-Pre-Arab Spring period only (09Q1-10Q3)- Earnings

Panel A: First stage regressions		
Change in Arab Spring immigrants (% native working age pop.)		
		Observations
Instrument	-19.279***	120
	(3.459)	
R-squared	0.285	
Panel B: Second stage regressions		
(Log) Average earnings change		
		Observations
All sectors	0.004	120
	(0.013)	
Agriculture, Forestry and Fishing	0.086	120
	(0.136)	
Mining	0.768	118
	(0.687)	
Construction	0.016	100
	(0.065)	
Manufacturing	0.059	120
	(0.034)	
Transportation, Communications,	-0.065	120
Electric, Gas and Sanitary Services	(0.050)	
Wholesale Trade	-0.203**	120
	(0.087)	
Retail Trade	-0.038	120
	(0.093)	
Finance, Insurance and Real Estate	-0.135	120
	(0.128)	
Hotels and Restaurants	-0.137	120
	(0.131)	
Public Administration	0.038	120
	(0.066)	
Educational Services	-0.016	120
	(0.045)	
Other Services	0.069	120
	(0.060)	
Quarter and year f. e.	YES	

Each cell is a different regression. Each regression contains the following controls: average age, the fraction of males, the regional population, the fraction of full-time workers, white collar and tenured workers, the fraction of high school and college graduates. Observations are weighted by quarter specific population shares.
Panel B only shows the coefficients relative to migration flows. Standard errors in parentheses.
Standard errors are clustered at the regional level. *, ** and *** are 10, 5 and 1 percent significance levels.

Table B.21: Wild bootstrap versus clustered standard errors

	Second stage regressions (Log) Av. monthly earnings change		
	(1)	**(2)**	
	Clustered s.e.	**Wild bootstrap**	**Observations**
Mining	0.2380	0.2380	247
(p-value)	(0.5949)	(0.9389)	
Construction	-0.1491***	-0.1491***	300
(p-value)	(0.0018)	(0.002)	
Wholesale Trade	0.0058	0.0058	300
(p-value)	(0.9105)	(0.9609)	
Hotels and Restaurants	-0.0086	-0.0086	300
(p-value)	(0.9186)	(0.8328)	
Educational Services	-0.0416	-0.0416	300
(p-value)	(0.1581)	(0.4264)	
Quarter, year f.e.	YES	YES	

Each cell is a different regression. Each regression contains the following controls:
average age, the fraction of males, the regional population, the fraction of full-time workers,
the fraction of white collar and tenured workers, the fraction of high school and college graduates.
The Table only shows the coefficients relative to migration flows.
Wild bootstrap performed as in Davidson and MacKinnon (2010). Results obtained from 999 repetitions.
Observations are weighted by quarter specific population shares.
Standard errors in parentheses. *, ** and *** are 10, 5 and 1 percent significance levels.