Syrian Refugees and the Migration Dynamics of Jordanians: Moving in or Moving out?*

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Abstract

This paper examines the impact of massive refugee inflows on the internal mobility of the host's country population. We rely on panel data from before and after the Syrian war and exploit the geographical distribution of Syrians across Jordanian subdistricts. Using Difference-in-Differences, we find that the Syrian inflows increased Jordanian residential mobility. In particular, native outflows of the camp hosting areas increased by 27%. The increased residential mobility out of the camp areas seems to be triggered by an increase in rents and a crowding out of Jordanian students by Syrians in schools. Our results also show that the Syrian presence increased Jordanians' job location mobility into the camp areas. These findings are robust to controlling for refugees' locational sorting using instrumental variables, while auxiliary placebo regressions confirm that pre-existing trends in outcomes are not driving the results. We also provide a thorough discussion on the impact of refugees versus broader impacts of the Syrian war.

Keywords: internal migration, job mobility, forced displacement, refugees, Jordan.
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1 Introduction

Wars and humanitarian crises have displaced millions of people across borders in recent years. The United Nations High Commissioner for Refugees (UNHCR) estimates the total number of refugees worldwide to be 26 million and in 2019 alone asylum seekers submitted 2 million new claims (UNHCR, 2019b). Importantly, the majority of these refugees (85%) are hosted in developing countries (UNHCR, 2019b). Syria has been the main country of origin for refugees since 2014 and the total number of Syrian refugees currently stands at 6.6 million (UNHCR, 2018, 2019b). While large numbers of Syrian refugees have reached Europe, the majority are living in neighboring countries, primarily in Turkey, Jordan, and Lebanon.

In recent years, host countries have become increasingly concerned about the impact of Syrian refugees on their economies. A key focus of the literature has been on the impact of refugees on the labor market of the hosting nation and whether refugees displace national citizens. For example, Ruiz and Vargas-Silva (2016) examine the labor market effects of refugee inflows from Burundi and Rwanda in Tanzania. Several studies focus on the impact of the Syrian refugee inflows on the labor market in Turkey, Akgündüz, Van den Berg, and Hassink (2015), Del Carpio and Wagner (2015), Tumen (2016), Ceritoglu, Yunculer, Torun, and Tumen (2017), and Aksu, Erzan, and Kırdar (2019), while and Fallah, Krafft, and Wahba (2019) study the impact in Jordan.[1] Also a few papers examine firm entry and performance in Turkey following the Syrian refugee shock (Akgündüz, Van den Berg, & Hassink, 2018; Altındağ, Bakis, & Rozo, 2020). Another strand of this fast evolving literature has examined the impact of refugees on the well-being of the host communities; for example on housing (Balkan, Tok, Torun, & Tumen, 2018; Rozo & Sviatschi, 2021), on food and prices (Alix-Garcia & Saah, 2010; Balkan & Tumen, 2016), and on the educational outcomes of native children and youth (Assaad, Ginn, & Saleh, 2018; Tumen, 2021).[2]

An interesting, yet understudied aspect of hosting refugees is the impact on the mobility dynamics of national citizens. Indeed, there are competing forces in action that could lead us to predict changes in native mobility patterns in opposite directions. On one hand, it is possible that areas where refugees are hosted, in particular where camps are located, become less attractive to nationals. The refugee inflows could therefore lead to increased outward mobility from the refugee hosting areas due to several

[1] Card (1990), Borjas and Monras (2017), Clemens and Hunt (2019), and Peri and Yasenov (2019) study the labor market effects of the Mariel Boatlift in Miami, while Mayda, Parsons, Peri, and Wagner (2017) who examine the long-term impact of refugees on the U.S. labor market, exploiting the exogenous assignment of refugees without ties across commuting zones. On the other hand, Bahar, Özgüzel, Hauptmann, and Rapoport (2019) examine the effect of returning refugees in the Former Yugoslavia on export performance.

[2] While the above-mentioned literature has mostly focused on economic outcomes, Dustmann, Vasiljeva, and Damm (2019) have examined the effect of refugee migration on voting outcomes in Denmark, and Ibanez, Rozo, and Urbina (2020) study the impact of the forced Venezuelan migration on the spread of infectious diseases in Colombia.

reasons, such as the potential negative impact on the labor market; an increase in the price of services and housing; or congestion and competition in access to services. The crowding out of national citizens by immigrants in cities is not new. There is a sizeable literature—including the works of Card and DiNardo (2000), Boustan (2010), Mocetti and Porello (2010), Accetturo, Manaresi, Mocetti, and Olivieri (2014), and Moraga, Ferrer-i Carbonell, and Saiz (2019)—focusing on what is known as the "native flight" or "white flight," whereby immigration leads to internal mobility of natives who move out of city centers and urban areas into suburbs. The literature provides evidence on this phenomenon for many developed countries. For example, Borjas (2006) found that immigration leads to simultaneous higher exit rates and lower entry rates into immigrant-targeted states by the native population in the United States. Moreover, Pischke and Velling (1997) found similar patterns for Germany. While refugee migration could lead to higher native outflows from the refugee hosting areas, the refugee shock could likewise increase demand, creating jobs and attracting humanitarian resources to the refugee recipient areas—which could lead us to predict changes in job mobility patterns, and possibly greater native worker inflows. For instance, Alix-Garcia and Saah (2010) and Ruiz and Vargas-Silva (2015), document that a forced migration shock could lead natives to engage in different businesses and enterprises in response to a swell in population and consequent greater demand in the goods markets. Del Carpio, Özden, Testaverde, and Wagner (2015) also provide evidence from Malaysia suggesting that immigration could lead to native labor relocation. Indeed, the authors find that immigration in a state leads to an inward flow of both employed and out of labor force native population.

While the literature on "native/white flight" has focused on the impact of immigration shocks, there is very little evidence when it comes to the impact of refugee migration. An exception is Akgündüz, Van den Berg, and Hassink (2015) who examine the impact of the Syrian refugee inflows on the labor market and housing prices in Turkey but also investigate the impact on internal migration rates. However, they rely on spatial/aggregate regional level analysis and find that entry rates were lower, while exit rates were unchanged in regions that experienced inflows of Syrian refugees in Turkey. As opposed to the paper by Akgündüz, Van den Berg, and Hassink (2015), we use individual level data rather than aggregate regional level data and we are able to examine residential mobility patterns in Jordan at the locality level, which is the most disaggregated geographical level in Jordan (fourth administrative level). Another exception is a recent paper by Andersson, Berg, and Dahlberg (2021) who examine the internal migration behavior of natives in Sweden in response to refugee migration and find evidence on "native flight" only among homeowners. Instead, we focus on a developing country, Jordan, as the majority of refugees (85%) are indeed hosted in developing countries (UNHCR, 2019b). We provide a more comprehensive analysis by examining the impact of refugee inflows on both residential mobility and job mobil-

ity. This allows us to better assess the various competing forces pertaining to native mobility patterns as highlighted above.

Unlike previous studies on the impact of immigration on "native/white flight" in developed countries, we contribute to the rather sparse literature that examines the impact of refugee shocks on native migration in Jordan. There are many reasons why Jordan is an interesting case. For one, Jordan is facing one of the largest per capita migration shocks in the world. In 2015, according to the Jordanian Department of Statistics (DOS, 2015), Jordan was hosting 1.3 million Syrians, while its population stood at approximately 7 million inhabitants prior to the refugee shock. Furthermore, there are additional factors—in conjunction with this major increase in Jordan's population size—that makes the case of Jordan more appealing and relevant to study. Indeed, Syrian refugees are mostly hosted in local communities near the three main refugee camps, to benefit from access to services provided to refugees. This makes the case of Jordan unique compared to other studies on the impact of refugee inflows, where refugees are mostly confined to camps. Furthermore, in our case Syrians share with Jordanians the same language, culture, and ethnicity. Therefore, unlike in earlier studies where "native flight" is due to preferences for homogeneous neighborhoods, and less ethnic diversity, we would expect differential results both in terms of magnitude and also in terms of the underlying channels. "Native flight" in Jordan is likely to be driven by congestion and crowding out of natives, rather than by preferences for homogeneous neighborhoods due to the cultural and linguistic proximity between natives and the refugee population. Finally, Jordan received considerable foreign aid that might have ameliorated potential congestion in access to services, and competition in the labor market, in particular, given its large informal sector. Hence, studying the impact of the refugee shock in Jordan provides an interesting case given the potential ambiguous theoretical predictions and the lack of previous empirical evidence.

In this paper, we examine the impact of the Syrian refugee influx on the internal mobility of Jordanians, focusing on residential mobility, job location mobility, and commuting. We use unique data from the Jordan Labor Market Panel Survey (JLMPS) in 2016 to construct individual panel data relying on retrospective information on Jordanians' geographical mobility. Our panel data allows us to compare Jordanian mobility between 2011 and 2016 (after the beginning of the Syrian war), with the period between 2005 and 2010 (before the Syrian war). Following the established literature on refugee migration that considers refugee inflows as exogenous immigration shocks, in our case due to the outbreak of the Syrian war—Card (1990), Friedberg (2001), Foged and Peri (2016), Tumen (2016), Fallah, Krafft, and Wahba (2019)—the empirical analysis relies on a Difference-in-Differences specification that accounts for observed and unobserved individual level heterogeneity through fixed effects estimation. Our identification strategy relies on the fact that Syrian refugees in Jordan disproportionately located in areas close to the main refugee camps, that the construction of these camps

was the result of the exogenous refugee inflows, and that their location was primarily driven by land availability and topographic factors.

Relying on Census data, our treatment variable captures the geographical distribution of Syrians across Jordanian sub-districts, the third administrative level.[3] Therefore, our specification allows for variable treatment intensity according to the individual's location of residence. Even though the Syrian influx was mostly an exogenous shock, we also use an IV Difference-in-Differences specification to address the potential bias from refugees' location choices. Moreover, our Difference-in-Differences specification only accounts for time-invariant heterogeneity, while the refugee shock may have generated time-varying unobserved responses that could potentially lead to refugees' self-selection into locations. To address these challenges, we employ a shift-share instrument commonly used in the literature—see for instance Basso and Peri (2015), Mayda, Parsons, Peri, and Wagner (2017), Amuedo-Dorantes, Bansak, and Pozo (2021), and Dehos (2021). The rationale behind using this instrument is that refugees tend to locate together, often in areas with pre-existing networks of Syrians and other immigrant groups since these networks facilitate the refugees' placement. Indeed, the role of migration networks as a determinant of migration decisions and locational choices has also been well documented in the literature—McKenzie and Rapoport (2010), Beine, Docquier, and Özden (2015), Giulietti, Wahba, and Zenou (2018), and Bredtmann, Nowotny, and Otten (2020).[4]

We also provide a thorough discussion on the impact of the Syrian refugee inflows versus other broader impacts associated with the war and the crisis including the potential for violence spillovers in Jordan and the disruption of Jordan's trade routes through Syria, as highlighted in Young, Stebbins, Frederick, and Al-Shahery (2014) and a recent report on forcibly displaced by the World Bank (2017). Moreover, we perform a number of tests to address potential confounding factors. First, we show that our results are robust to controlling for the distance between Jordanian districts' centroids and Aleppo's, to potentially capture violence spillovers. Furthermore, we show that our findings are robust to controlling for the sectorial composition of the labor force and in particular, to controlling for the labor force's engagement in trade related economic activities. Finally, our results are also robust to excluding bordering sub-districts with Syria, as well as to excluding the sub-districts that directly contain the refugee camps since they are likely to be the most affected by the various disruptions associated with the crisis in Syria. Although we attempt to address these various confounding factors and show that our results are not driven by the border sub-districts (i.e. proximity to the Syrian war), we acknowledge that the war in Syria might have had wider impacts

[3] Jordan is divided into twelve governorates (first administrative level), 51 districts (second administrative level), 89 sub-districts (third administrative level) and 958 localities (fourth administrative level).

[4] Also see Fafchamps (2012) on the role of agglomeration effects and labor market institutions in shaping migration flows.

in Jordan beyond the refugee inflows.

The results of this paper suggest that the Syrian refugee inflows significantly affected the internal migration patterns of Jordanians. Indeed, we find that the Syrian influx led to a 17% increase in the probability of internal migration, in particular among the most educated (those with secondary education and above) for whom we estimate an increase in residential mobility by 48%. Considering the probabilities of moving in or out of the camp areas, i.e. areas where the most important refugee camps are located, we find that the Syrian presence increases native outflows by 27%. Our sub-district level regressions also highlight that the increased residential mobility out of the camp areas seems to be triggered by an increase in rents and a crowding out of Jordanian students by Syrians in schools. We estimate an increase in rents by 5% due to the refugee shock, and a two-fold increase in both the share of Syrian students per teacher and the share of Syrian students per classroom.

On the other hand, our results show that the Syrian refugee inflows significantly increase the probability of changing job location among the less educated (those without any education or with primary and preparatory education) by 50% and in particular, the probability of moving into the camp areas for work by 58%. Indeed, we find that job movers work as employers or are otherwise self-employed in the private sector and are significantly more likely to engage in economic activities such as construction; wholesale and retail trade; and health, education, and social services. While we find that the residential movers and the job movers are two distinct groups, some individuals among both groups commute to their work location. The increased residential and job location mobility appears to also coincide with a reduction, although small in magnitude, in the probability of commuting at the district level. These findings are robust to several checks, including using different geographical levels, pooled cross-sectional data, alternative definitions of internal migration, and an alternative definition of the pre-period. A thorough comparison of treated and untreated districts provides support to the parallel trends assumption, while auxiliary placebo regressions confirm that pre-existing trends in outcomes are not driving the results.

The results of this paper carry implications that go beyond Jordan. The paper assesses the impact of a massive refugee shock on the host country's mobility dynamics, highlighting how a high concentration of refugees might increase the probability that natives move into these areas for work. On the other hand, the refugee presence might also lead to congestion and competition for public services, pushing natives to move out for residence. The rest of this paper is organized as follows. Section 2 provides a brief description of the Syrian refugee crisis and the data used in our analysis. Section 3 describes our empirical strategy. Section 4 presents the results. Section 5 discusses the validity of the empirical strategy. Section 6 presents robustness checks, while Section 7 concludes.

2 Background Information and the Data

2.1 The Syrian Refugee Inflows

The outbreak of the conflict in Syria in 2011 has led to the displacement of half of the Syrian population either across borders or within their own country (UNHCR, 2016a). According to the UNHCR, in 2016, nearly 5 million Syrians were displaced to neighboring countries and beyond and 6.5 million were internally displaced, making Syria the only country in which the experience of forced displacement affected the majority of the population.

In 2015, Jordan was hosting 1.3 million Syrians, of whom 630,000 were registered as refugees with the UNHCR (DOS, 2015). For a small country like Jordan of approximately 7 million inhabitants in 2010, the Syrian refugee influx represents a major increase to its population. In Jordan, approximately 80% of the Syrian refugees live outside refugee camps (UNHCR, 2019a). Yet the distribution of Syrian refugees in Jordan tends to be highly concentrated in particular localities; that are either close to or hosting the refugee camps.

Figure 1 shows the location of the most important refugee camps across Jordanian governorates in sub-figure (a). The construction of the refugee camps in Jordan was the result of the exogenous Syrian refugee immigration shocks. As for their location, it was primarily driven by land availability, following the UNHCR Handbook for emergencies, which is the principal guide around the world to construct, develop, and manage refugee camps.[5] Zaatari is the first and largest refugee camp in Jordan and is located near the Syrian border, in Mafraq governorate in northern Jordan. It was opened in July 2012 to host Syrian refugees fleeing the violence of the Syrian civil war, that erupted in March 2011, and is jointly administered by the Syrian Refugee Affairs Directorate and the UNHCR. As a response to the limited capacity of Zaatari refugee camp and the continuous overflow of Syrian refugees, in April 2013, the Mrajeeb Al Fhood camp, also known as the Emirati Jordanian camp, was constructed by the Jordanian government, in cooperation with the United Arab Emirates. As shown in Figure 1, the Mrajeeb Al Fhood camp is located in the governorate of Zarqa, east of Amman. It is funded by the United Arab Emirates and run by the United Arab Red Crescent Society. Following the Azraq refugee camp, which was opened in April 2014 and is also located in the governorate of Zarqa, the Mrajeeb Al Fhood is the third largest refugee camp in Jordan. As of 2016, Zaatari, Azraq, and Mrajeeb Al

[5] For instance, the Zaatari camp was built on land from an old military base (Huynh, 2015). Site-selection also accounts for various factors defined by the UNHCR Handbook for emergencies. Some of these factors that are taken into consideration when selecting a refugee camp's location include water supply availability, plot size depending on the potential number of beneficiaries, land topography including drainage and soil conditions, as well as climatic and environmental conditions. To effectively and appropriately accommodate the Syrian refugees, refugee camps' site-selection in Jordan was dictated by land availability, while accounting for the factors determined by the UNHCR.

Fhood camps hosted 79,326, 51,736, and 7,410 refugees, respectively (UNHCR, 2016b, 2019a).[6]

Figure 1 also features the geographical distribution of Syrians at the district level in Jordan in sub-figure (b).[7] It presents the number of Syrians to Jordanian population, relying on data from the 2015 Jordanian Census. As shown in this figure, Syrians in Jordan seem to disproportionately locate in the districts that are close to the main refugee camps and are geographically more concentrated in the Northern region, close to the Syrian border. The highest share of Syrians is in the district of *Badiah Shamaliyah Gharbiyah* (in the governorate of Mafraq), where the number of Syrians to Jordanians in 2015 is about 1.5 times higher.

The proximity of the Syrian war likely had negative spillover impacts on Jordan. Global Risk Insights (2019) highlights that while there were no major upheavals in Jordan in the aftermath of the Syrian war, there were disruptions associated with the war in Syria. On one hand, the influx of refugees in Jordan exerted pressure on Jordan's labor market, public sector services, and healthcare infrastructure. On the other hand, the war in Syria disrupted Jordanian trade. For instance, the Jordanian transit trade through Syria—to reach farther markets such as Turkey, Lebanon, and Europe—was particularly damaged. This transit trade route accounts for approximately 30% of imports and 11% of exports for Jordan, according to Global Risk Insights (2019). Furthermore, Jordanian exporters had to find alternative trade routes due to the disruption of Syria's Motorway System multi-lane highway that connected Jordan to Aleppo, Tartus and Latakia—Syria's port cities—and even Lebanon.

2.2 Data and Descriptive Statistics

We use data from the Jordan Labor Market Panel Survey (JLMPS) in 2016. The JLMPS 2016 was carried out by the Economic Research Forum (ERF) in cooperation with the Jordanian Department of Statistics (DOS). The survey was fielded between December 2016 and April 2017 and was carried out on a nationally representative sample of 31,753 individuals corresponding to 6,841 households. The JLMPS interviews Jordanians, non-Jordanian nationals, as well as Syrian refugees and has detailed data on demographics, labor market dynamics, as well as retrospective information on residential and job mobility.[8]

The JLMPS has rich retrospective information on all types of mobility. Regarding internal migration, we rely on retrospective data on changes in the geographical location of residence. Individuals were asked if they moved from their place of birth,

[6] There are also two other smaller refugee camps located in Mafraq governorate, Rukban and Hadallat.

[7] The district level is the smallest geographical unit for which shape files exist.

[8] See OAMDI (2016) for data documentation and Krafft and Assaad (2018) for details on the JLMPS 2016 data including sample design, attrition, sample weights, and validation of the JLMPS 2016 against other data sources.

whether the move was inside or outside Jordan, the destination governorate, district, sub-district, and locality, as well as the year corresponding to each move. Individuals could report as many moves as occurred and the maximum number of moves reported in the JLMPS 2016 is equal to 9 geographical moves.[9] Similarly, workers were asked about their job location (governorate and district), as well as the year of change in job location, on which we rely to examine job location mobility.

Based on this retrospective information, we construct a panel dataset accounting for the periods before and after the Syrian war in 2011.[10] The survey being conducted in 2016, the period following the beginning of the Syrian war corresponds to the years between 2011 and 2016, inclusive, whereas the period preceding the Syrian war is of equal length of 6 years and corresponds to the period between 2005 to 2010, inclusive. For these time periods (2005-2010 and 2011-2016), we are able to track any individual mobility whether it is residential or job mobility. Therefore, we construct our dependent variables as dummy variable indicators capturing internal mobility or job location mobility for the two periods under consideration.

In Table A.1 in the Online Appendix, we consider all types of moves within Jordan, at the locality, sub-district, district or governorate levels. We present the number of residential movers according to these various definitions of mobility, as well as the probability of moving for those who moved between 2005-2010 and 2011-2016. While changing the governorate of residence is necessarily associated with a change in the sub-district, district, and locality of residence, changing the locality of residence does not necessarily imply a change in the sub-district, district or governorate of residence.[11] Therefore the number of movers at the locality level is the highest and decreases progressively when using a smaller administrative unit (sub-district, district or governorate). Interestingly, we find that both the number of movers and the probability of moving are strikingly higher in 2011-2016 compared to the period between 2005-2010 and that the differences are statistically significant. For instance, we find that the probability of moving at the locality level increased by 50% for the 2011-2016 period compared to 2005-2010, while the probability of moving at the sub-district level increased by 44% and the probabilities of moving at the district and governorate levels each increased by 33%.

Whereas in the Online Appendix Table A.1 we consider all types of moves, Table 1 features the characteristics of Jordanian internal migrants at the locality level, which is the smallest administrative unit in Jordan. Movers are split into those who moved between 2005 and 2010 and those who moved between 2011 and 2016. Internal mi-

[9] It is important to note that very few individuals engage in more than two moves (less than 2% of the movers engage in 3 moves, and less than 0.3% engage in 4 moves or more).

[10] We were also able to check the reliability of the retrospective information provided in the JLMPS 2016 by tracking individuals who were interviewed in 2016 and in 2010 and checking their responses in the 2010 survey round of the JLMPS.

[11] A mover who changed their locality of residence could still be living in the same sub-district or district within the same governorate.

gration is defined with respect to the previous locality of residence. In other words, for each period under consideration (2005-2010 or 2011-2016), an internal migrant is an individual who changed their locality of residence during that period compared to their previous locality of residence. We find that the 2011-2016 internal migrants are significantly more educated; the incidence of secondary education is 11 percentage points higher among the latter compared to the 2005-2010 movers. Although the two groups of movers seem comparable in terms of overall housing characteristics,[12] the incidence of dwelling ownership for the 2011-2016 movers is 18 percentage points lower compared to the 2005-2010 movers. In terms of job characteristics, the job tenure is significantly lower among the 2011-2016 movers compared to the 2005-2010 internal migrants, as well as the probability of employment in agriculture or manufacturing.

In Table A.2 in the Online Appendix, we present internal migration matrices for the 2005-2010 residential movers (Panel A) and the 2011-2016 residential movers (Panel B), between the region preceding the move and the region following the move. We find that the share of Jordanians moving into the Northern region for residence had decreased from 39% to 34% between 2011-2016, while the corresponding figure for the 2005-2010 movers had increased from 32% to 36%. Table A.2 also features the mobility matrices for job movers for the periods between 2005-2010 and 2011-2016, in Panel C and Panel D, respectively. In both periods, we find an increase in the percentage of individuals moving into the Northern region for work. However, in the period between 2005-2010, we find that the percentage of Jordanians moving into the north for work increased by only 15% (from 27% to 31%), while the percentage of Jordanians moving into the Northern region for work increased by 79% (from 24% to 43%) between 2011-2016. Overall, we find evidence on opposite mobility dynamics when it comes to residence versus work purposes. Indeed, our findings show an increase in residential mobility out of the Northern region and at the same time an increase in job mobility, with a greater number of Jordanians moving into the North in the period between 2011-2016. We test below whether these patterns hold after controlling for individual fixed effects and check the robustness of these findings with respect to the potential sorting of refugees.

[12] The housing characteristics include: the number of rooms, the dwelling area in squared meters, a dummy variable indicator for owned dwelling versus rent, free of charge or work housing, a dummy variable indicator for the floor material being tiles/ceramic or wood versus having a cement, steel/zinc or dirt floor, a dummy variable indicator for the external walls being made of either bricks or concrete (reinforced or not) versus being made of clay, corrugated panels, wood, zinc or tarp/cloth, a dummy variable indicator for the roof being made of reinforced concrete versus being made of iron, corrugated roofing, wood or tarp/cloth, a dummy variable indicator for the main source of water being public water versus water tank, rainwater well, artesian water, channel, dam, pond water or spring, a dummy variable indicator for the main source of lighting being public/general electric network versus private generator, gas or kerosene and a dummy variable indicator for public sewage system versus hole/ground absorbency or no sewage system.

3 Empirical Strategy

Using retrospective information on Jordanians' residential location from the JLMPS 2016, we construct our panel data at the individual level. The two time periods under consideration correspond to 2005-2010 (before the Syrian war) and 2011-2016 (after the beginning of the Syrian war). Using panel data from before and after the Syrian war, we investigate the impact of the Syrian refugee inflows on Jordanian residential mobility, job location change, and commuting of Jordanians. We employ the following Difference-in-Differences specification:

$$Y_{it} = \alpha_1 \, Syrians_s \times \; T_{2011-2016} + \alpha_2 \; X_{it-1} \times \; T_{2011-2016} + \alpha_3 \; X_{gt-1} \times \; T_{2011-2016} + \alpha_4 \; Latitude_d \times \; T_{2011-2016} + \alpha_5 \; \beta_i + \alpha_6 \; T_{2011-2016} + \varepsilon_{it} \quad (1)$$

We estimate the impact of the Syrian refugee influx on various outcomes: (i) the probability of internal migration, (ii) the probability of job location change, and (iii) the probability of commuting. Internal migration is defined according to the locality of residence. We define an internal migrant as an individual who changed their locality between the years considered (2005-2010 or 2011-2016) compared to the preceding locality of residence. We define the probability of job location change as a dummy variable equal one if the individual changed their job location at the district level in the period under consideration compared to the preceding district of work. As for the probability of commuting, it is a dummy variable equal one if an individual is working in a district that is different from their district of residence, for any given year during the period under consideration.[13]

$Syrians_s$ is our treatment variable. We use two alternative definitions to capture the distribution of Syrians across Jordanian sub-districts (s). The first measure captures the total number of Syrians derived from the 2015 Jordanian Census, normalized by the total number of Jordanians prior to the refugee inflows (from the 2004 Jordanian Census). The second measure corresponds to the total number of Syrians from the 2015 Jordanian Census, normalized by the total population in Jordan pre-Syrian war (derived from the 2004 Jordanian Census). In our analysis, Jordanians are therefore exposed to variable treatment intensity according to their geographical location (sub-district of residence). $T_{2011-2016}$ is a dummy variable equal to 1 for the period between 2011 and 2016 (after the beginning of the Syrian war) and 0 for the period between 2005-2010 (before the war). β_i and $T_{2011-2016}$ are individual and year fixed effects. The individual fixed effects absorb the non-interacted term $Syrians_s$. In all the regressions, the standard errors are clustered at the sub-district level and we report

[13] In the analysis, we rely on the most disaggregated geographical unit. For the residential mobility, the JLMPS provides information on the locality of residence, whereas in the job mobility section the JLMPS only provides information on the district of work. Since commuting, as an outcome, combines the information on residence location and work location, we also compute the probability of commuting at the district level.

the number of clusters in each regression table.

All our control variables are pre-determined, i.e. measured prior to the outbreak of the Syrian war. To condition on the time-varying effects of the controls, we interact the vector of pre-determined individual controls X_{it-1} and the vector of pre-determined governorate controls X_{gt-1} with the year dummy. The pre-determined individual controls include four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The vector of pre-determined governorate level covariates is derived from the 2004 Jordanian Census and it includes the percent of individuals who own their dwelling, the percent of individuals with electricity access, the percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate, and female labor force participation rate. We also incorporate districts' latitude ($Latitude_d$) interacted with the year dummy in all our regressions, to potentially capture the differential spillovers associated with the outbreak of the war in Syria in districts located closer or further away from the Syrian border.[14] The main coefficient of interest is the parameter α_1. It allows identifying the effect of the Syrian refugee inflows on the mobility patterns of Jordanians between the two periods of interest.

4 Empirical Findings

4.1 Internal Migration: Moving in or Moving out?

In this section, we examine the effect of the Syrian inflows on the internal migration patterns of Jordanians, using individual level data. Internal migration is defined with respect to the previous locality of residence. For each period under consideration (2005-2010 or 2011-2016), an internal migrant is defined as an individual who changed their locality of residence compared to the preceding one.[15] We have a balanced panel that allows us to track the same individuals in the two time periods. We report the results in Table 2 for the full sample of individuals in column (1), for the less educated (those with no education or with primary and preparatory education) in column (2), and for the more educated (those with secondary and above secondary education) in column (3). In Panel A, our main variable of interest is the share of Syrians to Jordanians at the sub-district level, while in Panel B, we rely on the sub-district level share of

[14] The district level is the smallest geographical level for which GPS coordinates are available.

[15] In Section 6.2, in the robustness checks, we also rely on an alternative definition of internal migration. Instead of considering the mobility with respect to the previous locality of residence, an internal migrant is defined as an individual who changed his place of residence in the period under consideration (2005-2010 and 2011-2016) with respect to his place of birth. This alternative definition of internal migration also addresses potential concerns relative to recall bias when relying on retrospective mobility information.

Syrians to total population. The results on the full sample suggest that the Syrian refugee inflows led to an increase in the probability of internal migration by 17%, using a standard deviation increase in the share of Syrians to Jordanians and evaluating the effects at the mean of the dependent variable in the pre-period.[16] Examining the effects by levels of education in columns (2) and (3), we find that the Syrian refugee inflows increased the internal mobility of the highly educated by 48%, while it did not affect the residential mobility of the less educated.

Whereas in columns (1) to (3) in Table 2, internal migration is defined with respect to the locality of residence, in columns (4) and (5), we distinguish between movers in and movers out of the camp hosting areas. As highlighted in Section 2.1, the most important refugee camps in Jordan are Zaatari and Azraq, located in the governorates of Mafraq and Zarqa, respectively. To identify whether individuals are moving closer or further away from the camp hosting areas, we compare the distance between individual sub-districts of residence's centroids and the refugee camps, before and after the move for each period. An individual moved into (out of) the camp hosting areas if the maximum distance between an individual's sub-district of residence and the most important refugee camps (Zaatari and Azraq) following the move is smaller (greater) than the distance prior to the move.[17] In column (4), the dependent variable is a dummy variable indicator equal 1 for Jordanians who moved into the camp hosting areas and zero for non-movers, while the dependent variable in column (5) is a dummy variable for individuals who moved out of the camp hosting areas and zero for non-movers. Relying on a standard deviation increase in the treatment variable and evaluating the effects at the mean of the dependent variable in the pre-period, we find that the Syrian presence led to an increase in the probability of moving out of the camp hosting areas by 24% to 27%, depending on the definition of the treatment in Panel A and Panel B.

4.2 Job Mobility and Commuting

Apart from examining the impact of the Syrian refugee inflows on the internal migration dynamics of Jordanians and particularly, on residential mobility, in this section, we also examine the impact of the Syrian presence on Jordanians' job location mobility and on commuting. Relying on retrospective information from the job mobility section, we are able to track Jordanians' jobs between 2005 and 2010 and between

[16] The variable Syrians to Jordanians has a standard deviation of 0.806, and the variable Syrians to population has a standard deviation of 0.731. Throughout our analysis, we evaluate the effects using a standard deviation increase in the share of Syrians, relative to the mean of the dependent variable of interest in the pre-period (2005-2010) as reported in the last row of each table. For instance, in column (1), a standard deviation increase in the variable Syrians to Jordanians (0.806) leads to an increase by 17% in the probability of internal migration, relative to the mean of the dependent variable ($0.003 \times 0.806/0.014$).

[17] For example, if the distance between an individual's location of residence and the most distant refugee camp is 100 km prior to the move and this distance becomes 50 km following the move, then the individual is moving into the camp hosting areas and vice-versa.

2011 and 2016. We are also able to identify the job locations at the district level and if any job location changes occurred in each period. We focus on Jordanians of working age (15 to 64 years old) who were currently working in 2016, according to the market definition of labor force participation.[18]

In Table 3, we estimate the effect of the Syrian refugee inflows on the probability of changing job location for the full sample in column (1), for the less educated in column (2), and for the more educated in column (3). Our dependent variable is a dummy variable indicator equal one if the individual changed their job location, at the district level, in the period under consideration compared to the preceding job location. In Panel A, we report the results from a regression specification in which the share of Syrians to Jordanian population constitutes our main independent variable of interest, while in Panel B, we report the Syrians to population impacts. Indeed, we find that the Syrian refugee inflows increased the probability of job location changes for Jordanians by 27% to 29% using a standard deviation increase in the share of Syrians and evaluating the effects at the mean of the dependent variable. While the increase in residential mobility seems to be mostly driven by the most educated, the increase in job mobility seems to be driven by the least educated. Indeed, we estimate an increase in the probability of changing job location by 50% among the less educated.

We also investigate whether job movers are moving closer or further away from the camp hosting areas in Table 3. To do so, we compare the distance between an individual's district of work and the most important refugee camps prior to the move to the distance following the move. An individual moved into (out of) the camp hosting areas for work if the maximum distance between an individual's district of work and the refugee camps (Zaatari and Azraq) is smaller (greater) than the distance prior to the move. In column (4), the dependent variable is a dummy variable indicator equal one if the individual moved into the camp hosting areas for work and zero for non-movers, while the dependent variable in column (5) is a dummy variable indicator equal one if the individual moved out of the camp areas for work and zero for non-movers. The results suggest that the Syrian presence increases the probability of Jordanians moving into the camp hosting areas for work. A standard deviation increase in the share of Syrians increases the probability of moving into the camp areas by 58% to 63%, evaluated at the mean of the dependent variable in the pre-period, while it does not significantly affect the probability of moving out of the camp areas for work.

Following the Syrian refugee inflows, Jordanians are found to be increasingly more mobile in terms of residential location but also in terms of job location. However, the question remains as to what extent the Syrian refugee inflows affected commuting patterns. In Table 3, we examine the impact of the Syrian presence on the probability of commuting for Jordanians in column (6). We define a commuter as an individual

[18] The market definition of labor force participation includes all market economic activities and excludes non-market (subsistence) economic activities.

who is working in a district that is different from their district of residence, for any given year during the period under consideration. The results suggest that the Syrian presence led to a reduction, although small in magnitude, in the probability of commuting at the district level. Using a standard deviation increase in our measures of Syrian presence leads to a one percent decrease in the probability of commuting relative to the mean of the dependent variable in the pre-period.

Our results on the impact of the Syrian refugee inflows on residential and job mobility point to differential treatment effects depending on whether Jordanian nationals belong to the lower or upper end of the educational distribution. As we show in Section 4.1, the increase in residential mobility seems to be mostly driven by the highly educated, while the results, presented in this section, show that the less educated are likely driving the increase in job mobility in the aftermath of the Syrian refugee influx. In Table 4, we formally test whether these differences by education are significant by introducing in our benchmark model an interaction term with individual's education. We report the results using the share of Syrians to Jordanians as our main treatment variable. In columns (1) and (2), our dependent variables are dummy variable indicators for the probability of internal migration, while the dependent variable in columns (3) and (4) are dummy variable indicators for the probability of changing job location. We estimate our models by including an interaction term with the "less educated" dummy in columns (1) and (3) and "more educated" dummy in columns (2) and (4). In the last row in Table 4, we report the P-value from a test of whether the sum of the two reported coefficients in each column is different from zero. Indeed, for residential mobility, we find that, in column (1), the sum of the two estimated coefficients is not significant for the less educated (P-value=0.102), while we consistently find, in column (2), that the results are significant among the highly educated individuals (P-value=0.006). On the other hand, our results in columns (3) and (4) consistently show that the impact of the Syrian refugee inflows on job mobility is driven by the less educated (P-value=0.002), while the results are not significant among the more educated (P-value=0.902).

4.3 Who Are the Movers?

To further understand these various mobility dynamics, we investigate, in a descriptive fashion, whether those who change their residence location also change their job location, whether the commuters change their residence location or whether the commuters change their job location. Table A.3 in the Online Appendix presents a two-way frequencies table for the various mobility indicators for the period between 2011 and 2016. In Panel A, we report frequencies (and % of the total sample size) for the probability of internal migration and the probability of changing job location. In Panel B, we report two-way frequencies (and % of the total sample size) for the probability of

commuting and the probability of internal migration. In Panel C, we report two-way frequencies (and % of the total sample size) for the probability of commuting and the probability of changing job location. Indeed, we find that the two groups of movers, Jordanians who changed their location of residence and those who changed their job location constitute two distinct groups of movers. However, we find that the majority of the movers, both residential and job movers, commute to their work location. Indeed, in Panel B, we find that 85% (99/117) of the residential movers still commute to their place of work, while the results in Panel C suggest that 93% (117/126) of the job movers commute to work. These results might explain the small reduction in the probability of commuting presented in Table 3.

These findings raise the question as to what type of work are the recent Jordanian job movers engaged in. In Table A.4 in the Online Appendix, we investigate the differences in terms of employment status, sector of employment, economic activity, job stability, and the incidence of work contract and social security between the 2005-2010 job movers and the 2011-2016 job movers. Whereas, overall the two groups of movers seem to be comparable, the 2011-2016 job movers seem to be less likely to work in public administration and more likely to be employed in health, education, and social services compared to the 2005-2010 job movers. Another important difference is that the 2011-2016 job movers are significantly less likely to have permanent work contracts and more likely to be engaged in temporary, seasonal or intermittent jobs compared to the 2005-2010 job movers. In Table A.5 in the Online Appendix, we further investigate the differences in job characteristics between the job that preceded the move and the new job following the move for the 2011-2016 job movers. Interestingly, we find that the 2011-2016 movers are increasingly more likely to work as employers or are otherwise self-employed, compared to being wage-workers in the job preceding the move. In their new job in 2011-2016, the job movers were also found to be more likely to work in construction and utilities, wholesale and retail trade, and health, education and social services, and less likely to work in public administration compared to their previous job. The 2011-2016 job movers are also significantly more likely to work in the private sector and to work as temporary, seasonal or intermittent workers without having a work contract.[19]

[19] We also checked the employment and job characteristics of the new labor market entrants in the period between 2005-2010 and the period between 2011-2016, focusing on Jordanian nationals. Those who first entered the job market in the period between 2011 and 2016 are found to be significantly less likely to work as employers and significantly more likely to work in the private sector (by 14 percentage points). In terms of economic activities, we find that those who first entered the job market in the period between 2011 and 2016 are significantly more likely to work in manufacturing, wholesale and retail trade, health, education and social services, and significantly less likely to work in public administration. Finally, we also find that the new entrants in the 2011-2016 period are significantly less likely to have a permanent work contract (by 7 percentage points) and significantly less likely to have social security (by 5 percentage points).

4.4 Underlying Mechanisms

Why are Jordanians moving out of the camp areas for residence? In this section, we investigate several mechanisms that could act as push factors for Jordanian citizens including housing prices and congestion in schools. We rely on sub-district level regressions controlling for the same set of pre-determined controls presented in Section 3.[20] Table 5 reports the results on underlying mechanisms. In Panel A, we report the results from a regression specification in which the sub-district level share of Syrians to Jordanians constitute the main variable of interest, while in Panel B, our treatment variable is the share of Syrians to total population at the sub-district level. First, in columns (1) to (4), we rely on data from the JLMPS 2016 to examine the impact of the Syrian refugee influx on rents at the sub-district level. In column (1), the dependent variable is the logarithm of rents paid by all citizens, while in column (2), the dependent variable is the logarithm of rents paid by Jordanians. Indeed, we find that the Syrian presence increases the rents paid by all citizens by 4%, using a standard deviation increase in the share of Syrians. We also find that a standard deviation increase in the share of Syrians increases the rents paid by Jordanians by 5%.[21] In columns (3) and (4), we estimate the effect on rents relative to average sub-district level income. The dependent variables correspond to the logarithm of total monthly rents relative to average monthly income. Indeed, we find that the increase in rents paid by Jordanians corresponds to an increase by 11% when computed relative to average monthly income.

We also make use the Education Management Information System database for the year 2016/2017 (EMIS 2016), which provides unique information on the number of classrooms, teachers, and students at the school level, by nationality. We aggregate this data at the sub-district level and examine the impact of the Syrian refugee inflows on school congestion in Jordan using several indicators. In Table 5, we focus on the impact of the Syrian presence on the ratio of Syrian to Jordanian students in column (5). We find that a standard deviation increase in the share of Syrians leads to a threefold increase in the ratio of Syrian to Jordanian students, compared to the mean of the dependent variable. In column (6) to column (9), we investigate the effect of the Syrian inflows on the number of Syrian and Jordanian students per teacher and per

[20] The pre-determined sub-district controls are derived from the JLMPS 2016 and they include: the sub-district level percent of individuals whose highest level of educational attainment prior to 2011 is no education, basic education, secondary education, or above secondary education, and the sub-district level shares of individuals born in the different regions (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate, and female labor force participation rate.

[21] We also estimate the effect of the Syrian presence on the logarithm of rents paid by Syrians and we do not find any significant effect. However, this result should be interpreted cautiously as the sample size is rather small.

classroom. Indeed, we find that an increase in the share of Syrians at the sub-district level significantly increases the number of Syrian students per teacher and classroom, while it leads to a decline in the number of Jordanians per teacher. Using a standard deviation increase in the share of Syrians and evaluating the effects at the mean of the dependent variable, we find that the Syrian presence leads to a twofold increase in the number of Syrians per teacher and per classroom, and to an 11% decrease in the number of Jordanians students per teacher.

In Table 5, we also examine the effect of the Syrian refugee inflows on the ratio of teachers to students in column (10), while the dependent variable in column (11) corresponds to class size computed as the number of Syrian and Jordanian students divided by the number of classrooms. We find that the Syrian presence is associated with a 3% decline in the ratio of teachers to students and to a 20% increase in classroom size, with respect to the respective means of the dependent variables. These results highlight a crowding out effect in schools due to the Syrian refugee inflows. Along with an increase in rents, these two effects can act as push factors for Jordanians and could potentially explain the increase in the probability of moving out of the camp hosting areas for residence. As shown in Table 1, we also find that the 2011-2016 residential movers have a significantly lower likelihood of owning their own dwelling (18 percentage points) relative to the movers in the reference period. This supports the finding that an increase in rents might be explaining the increased residential mobility associated with the Syrian inflows.[22]

4.5 Discussion

Comparing our findings to previous studies, Table 6 summarizes the main results of selected papers. Previous studies examining the "native flight" phenomenon found that in the United States for every ten immigrants who enter a state, 2.1 fewer native workers (on net) move to that state; and that for every ten immigrants who move to a U.S. metropolitan area, 6.1 fewer native workers choose to reside there (Borjas, 2006). Similarly, Accetturo, Manaresi, Mocetti, and Olivieri (2014) find that for Italy's

[22] We acknowledge that it is difficult to directly assess the effect of the increase in rents on mobility patterns. This is because we cannot control for rents when estimating the effect of the Syrian refugee inflows on mobility patterns since it would be considered as a bad control (Angrist & Pischke, 2008). A potential issue would be if absent the war people would have stayed in the same area and dealt with the rise in rents. However, one could argue that Jordanian bordering sub-districts with Syria are those more likely to be affected by the outbreak of the war in Syria and the potential spillover impacts of the war. As we show in Section 5.3, our results are robust to excluding border sub-districts and still point to a significant increase in internal mobility in Jordan. In Table A.6 in the Online Appendix, we find that a standard deviation increase in the Syrian presence is associated with 19% increase in the probability of internal migration, which is slightly larger than our benchmark results presented in Table 2 (17%). In unreported regressions, we also show that the results on rents hold even after excluding border sub-districts. This suggests that the refugee presence is indeed associated with greater internal migration and with an increase in rents, even after excluding sub-districts that are potentially more likely to be affected by the war.

20 largest cities, for every ten additional immigrants who arrive in a district, six natives resettle in other areas of the city, whereas in Spain for every three immigrants entering a neighborhood, one native moves out of it (Moraga, Ferrer-i Carbonell, & Saiz, 2019). Furthermore, Mocetti and Porello (2010) show the differential response by education in Italy. A 1% increase in the incidence of immigration leads to a 0.9% increase in low-educated native outflows and to a 0.6% decrease in their inflows, while for highly-educated natives, a 1% increase in the incidence of immigration leads to a 1.1% increase in inflows. On the other hand, Andersson, Berg, and Dahlberg (2021), who study refugee migration in Sweden, find no evidence of "native flight" for the entire population. However, when focusing on native homeowners, they show that when a neighborhood receives one more immigrant than average, 0.35 additional natives move out, and when taking into account not only home-ownership but also restricting the sample to natives who have native born parents, one more refugee into the neighborhood increases annual average numbers of native movers by 0.8%.

While the various papers we cite above rely on different measures of immigrant or refugee presence and examine native mobility patterns at various geographical levels (state, neighborhood, district, or city) that are different from those we rely upon in this paper, it is still interesting to contrast and compare our results with the existing literature. Throughout our analysis, we use a standard deviation increase in our treatment variable in order to compute the magnitude of our results with respect to the mean of the dependent variable in the pre-period. However, the estimated magnitudes presented in Section 4.1 are not easily compared with most of the previous studies due to the different quantification techniques employed. To contrast our results with the previous literature, we follow a similar methodology as the one employed by Borjas (2006). The estimated coefficient of the share of Syrians variable in the migration outflows regression in Table 2 is -0.002, while the estimated coefficient in the worker inflows regression in Table 3 is 0.005. The coefficients are interpreted by multiplying them by 0.806 (one standard deviation), indicating that for every 1,000 refugees who enter a sub-district in Jordan, 2 fewer natives move away from the refugee hosting areas, while 4 additional native workers move closer to these areas.

These figures are lower than the native mobility responses to immigration in the United States (Borjas, 2006) and other high-income countries like Italy (Accetturo, Manaresi, Mocetti, & Olivieri, 2014), Spain (Moraga, Ferrer-i Carbonell, & Saiz, 2019) or Sweden (Andersson, Berg, & Dahlberg, 2021). There are several potential explanations for these differences. For one, residential migration in Jordan compared to high-income countries is rather low by international standards. For instance, in our sample, the average internal migration rate among natives in the pre-period stands at only 1.4%. Comparing the magnitude of the estimated coefficients with respect to the mean of the dependent variable actually results in quite substantial increases in mobility patterns in Jordan. Indeed, the increases in residential mobility relative to

the mean is 17% for the full sample and 48% for the most educated individuals, while the increases in worker inflows relative to the mean is 27% for the full sample and 50% for the less educated. Second, the impact of refugee inflows on native mobility might be different from the impact of settled immigrants—which has been the main focus of the literature we cite above—possibly due to the perception that refugees might return to their home country once the war or political instability winds down.[23] Finally, preferences for homogeneous neighborhoods in Jordan might be less binding than in other countries and contexts due to the cultural and linguistic proximity between the refugees and the native population, which might be another explanation for the smaller magnitude of our results with respect to previous studies on Western countries.

Looking at the underlying mechanisms, our estimates on housing suggest that one standard deviation increase in the share of Syrians is associated with a 5% increase in rents based on the JLPMS, which corresponds to an increase by 11% in rents when computed relative to average monthly income. This is similar to the findings by Rozo and Sviatschi (2021) who use the Household Expenditure and Income Survey (HEIS) data for Jordan and also find that one standard deviation closer to refugee camps in distance is associated with an increase in housing expenditures by 3.8% and in rental property income by 5.8%. Using a Difference-in-Differences approach, Alhawarin, Assaad, and Elsayed (2021) find that one standard deviation increase in the change in Syrian households increases real rents by 13% in Jordan, also relying on HEIS data. Our results are also comparable with those found in the case of Turkey, where Balkan, Tok, Torun, and Tumen (2018) show that housing rents increased in the order of 2% to 5% in the refugee hosting regions. Moreover, Depetris-Chauvin and Santos (2018) find that a 10% increase in IDP inflows in a given city and quarter in Colombia is associated with an increase in low-income rentals by 0.15% and a decrease in high-income rental prices by 0.39%.[24] Finally, with respect to role of congestion in schools, there is little comparable evidence to ours as the focus of this literature tends to be on educational enrollment and attainment of natives, however a potentially related issue is "native flight" from public to private schools. Tumen (2019) finds that roughly one native child switches to private education for every 31.6 refugee children enrolled in public schools in Turkey.

[23] An exception is the paper by Akgündüz, Van den Berg, and Hassink (2015) who focus on the impact of the refugee inflows on the labor market, but also examine the effect on native mobility in Turkey. While the authors do not quantify their impacts, they find a negative effect of the refugee presence on native entry rate with an estimated coefficient of -0.004.

[24] Also see Van Vuuren, Kjellander, and Nilsson (2019) who study the impact of an announcement to build 1,000 apartments on twelve building sites for temporary housing targeting refugees in the city of Gothenburg in Sweden in 2016 on housing prices and find a 4% drop in apartment prices within a 5-minute walking distance from these building sites.

5 Validity of the Empirical Strategy

5.1 The Parallel Trends Assumption: Difference-in-Differences

In order to check the robustness of our main findings, we first test the validity of our empirical strategy. The Difference-in-Differences strategy relies on the parallel trends assumption, which means that differences in outcomes between areas that witnessed large Syrian inflows and areas that witnessed smaller refugee inflows are not driven by pre-existing trends in outcomes. To check whether the common trends assumption holds, in Figure 2, we plot yearly internal migration rates since the year 2000 and up to 2016, by exposure to the Syrian refugee inflows. The red line shows internal migration rates in sub-districts with above median share of Syrian refugees, while the green line shows internal migration rates in sub-districts with below median share of refugees.[25] This figure shows that the common trends assumption holds prior to the year 2011, which corresponds to the beginning of the Syrian war. It is only starting from 2011 that we see a drastic increase in internal migration rates in districts hosting large shares of Syrian refugees.

Furthermore, following Kahn-Lang and Lang (2020), we perform a thorough comparison of the differences between treated and untreated units, including demographic composition and other factors. Relying on data from the 2004 Jordanian Census, we compare Jordanian districts—the most disaggregated geographical level in the data—by exposure to the Syrian refugee inflows in Table 7. Districts are split into below and above median exposure to refugee inflows, depending on the share of Syrian inhabitants in 2015, normalized by the number of Jordanians from the 2004 Jordanian Census. We compare the treatment and control groups along a large number of covariates including demographic characteristics, household infrastructure, educational attainment, and labor market characteristics. Overall, we find that districts witnessing large refugee inflows are not statistically different from those witnessing small refugee inflows. Out of the 30 indicators reported in Table 7, we only find significant differences across 5 indicators. Indeed, both groups of districts seem to be comparable along demographic characteristics including the percentage of married individuals, average family size, household structure, and the age composition of the population. Moreover, the treatment and control groups also seem to have similar pre-trends in terms of household infrastructure including the share of individuals who own their dwelling, the number of rooms in the dwelling unit, electricity access, connection to sewage disposal system, cell phone and computer availability, as well as Internet access.

In terms of educational attainment, we find that districts witnessing a large share of

[25] The share of refugees corresponds to the sub-district level number of refugees in 2011 or after (from the 2016 JLMPS) normalized by the number of Jordanian population before the outbreak of the war in Syria (from the 2004 Jordanian Census). Refugees are defined as individuals who are registered as refugees and who reported fleeing violence or persecution.

Syrians have a significantly lower share of individuals with less than primary education and a significantly higher share of individuals with secondary education compared to those with below median exposure to the Syrian presence. However, the magnitude of these differences is rather small: 4 and 3 percentage points, respectively. On the other hand, we find similar pre-trends in terms of labor market indicators including male labor force participation rate and public and private sector employment. However, we find that female labor force participation rates are lower in districts with above median share of Syrians compared to districts exposed to below median Syrian inflows. Finally, in terms of the sectorial composition of the labor force, overall, we find that districts exposed to below or above median share of Syrians have similar labor force engagement across the various economic activities, at the exception of two activities: mining and extraction, and wholesale and retail trade. Indeed, we find that districts with above median share of Syrians have a significantly lower share of individuals engaged in mining and extraction and are significantly more likely to engage in wholesale and retail trade compared to districts that witnessed small refugee inflows.

Overall, the evidence presented in Table 7 provides support to the parallel trends assumption along a wide set of districts' covariates including demographic characteristics, household infrastructure, and various labor market indicators. While Table 7 highlights some differences in terms of educational attainment and female labor force participation rates between districts exposed to varying levels of the Syrian presence, as presented in Section 3, we capture these differential pre-trends in education and labor force participation in equation (1) by controlling for individuals' highest level of educational prior to 2011 in our vector of pre-determined individual controls X_{it-1} and for both male and female labor force participation rates in the pre-period in our vector X_{gt-1}. As for differences in terms of the sectorial composition of the labor force, in Section 5.3, we control for the share of individuals employed in the various economic activities, further ruling out the possibility that differential pre-trends are driving our results.

Finally, to check for differential trends in the pre-period, we report in Figure A.1 in the Online Appendix, a series of placebo regressions using a moving twelve-year window (a pre and a post period, each of six years).[26] In these tests, we examine whether the future Syrian refugee inflows are associated with significant changes in outcomes relying on data preceding the refugee shock. Starting from the year 1995, we construct placebo panel data of twelve-year windows. For the first test we undertake, the pre-period corresponds to the years between 1995 and 2000, inclusive, while the post-period corresponds to the years 2001-2005, inclusive. In order for the placebo panel data to cover only a period that precedes the 2011 Syrian war, the last placebo panel that we construct starts with the year 1999 and ends with the year 2010. In

[26] Our empirical analysis relies on a twelve-year window. The 2005-2010 is a six-year window and refers to the pre-period and the 2011-2016 is also a six-year window and refers to the post-period.

Figure A.1, sub-figure (a) reports the results for the probability of internal migration, while sub-figure (b) reports the results for the probability of changing job location. These placebo regressions show that the future Syrian refugee inflows do not have any significant impact on internal migration or on the probability of changing job location relying on data preceding the Syrian inflows. These tests provide support to the parallel trends assumption and confirm that pre-existing trends in outcomes between geographical units exposed to varying levels of treatment intensity are not driving the results.

5.2 Addressing the Locational Sorting of Refugees: IV Difference-in-Differences

Even though the benchmark Difference-in-Differences specification controls for observed and unobserved time-invariant heterogeneity, our estimates might suffer from location selection bias as time-varying unobserved factors could potentially lead to refugees' self-selection into locations. Another potential threat to identification is that the outbreak of the Syrian conflict might have led to cross-border spillovers and disruptions along multiple dimensions, as Young, Stebbins, Frederick, and Al-Shahery (2014) highlight. We address the challenge of non-random refugee location by using an IV Difference-in-Differences specification, as a robustness check. Our IV-Difference-in-Differences also partly addresses concerns regarding concomitant cross-border spillover effects and allows us to better isolate the effect of the refugee influx from broader impacts. Furthermore, the inclusion of districts' latitude interacted with the year dummy alleviates these concerns since they potentially capture the differential spillovers associated with the outbreak of the war in Syria in districts located closer or further away from the Syrian border.

Following Basso and Peri (2015), Mayda, Parsons, Peri, and Wagner (2017), Amuedo-Dorantes, Bansak, and Pozo (2021), and Dehos (2021), we instrument the Syrian presence at the sub-district level using a shift-share instrument. We impute our shift-share instrument based on data on Syrians, as well as data on all other immigrants, from the 2004 and the 2015 Jordanian Census data. The rationale behind using this instrument is that refugees tend to locate together, often in areas with pre-existing networks of Syrians and other immigrant groups since these networks facilitate the refugees' placement. The shift-share instrument varies at the sub-district level (s) and is presented in the following equation:

$$shift\ share_s = \sum_{o=sj,\ mj} \theta_{o,\ 2004} \times \delta_{o,\ 2004-2015} \tag{2}$$

The instrument is computed relying on data on Syrians relative to Jordanians (sj) and on data on other immigrant groups relative to Jordanians (mj). $\theta_{o,\ 2004}$ corre-

sponds to the initial share of Syrians or other immigrants to Jordanian population at the sub-district level in 2004, while $\delta_{o,\ 2004-2015}$ corresponds to the inflows of Syrians or other immigrant groups to Jordanians between 2004 and 2015. As Goldsmith-Pinkham, Sorkin, and Swift (2020) highlight the underlying assumption behind this Bartik type instrument is still parallel trends. As the design exploits level differences in the shares, testing for parallel pre-trends allows assessing whether the common shock led to the change in the shares or whether the differences in the shares are due to pre-existing differences. The evidence we presented in Section 5.1, which supports the parallel trends assumption, therefore provides validity to the Difference-in-Differences strategy, as well as to the IV Difference-in-Differences relying on a shift-share instrument.

In Table 8, we rely on IV Difference-in-Differences regressions to estimate the impact of the Syrian inflows on the probability of internal migration, on the probability of moving in or out the camp hosting areas for residence, on the probability of changing job location, the probability of moving in or out of the camp hosting areas for work, and on the probability of commuting. Correcting for the potential non-random refugee location, we find a greater increase in internal mobility associated with the Syrian inflows. Using a standard deviation increase in the Syrian presence and evaluating the effects at the mean, we find that the Syrian influx increases the probability of internal migration by 21% to 23%. Similarly, we find a greater increase in the probability of changing job location by 32% to 34%. Using IV Difference-in-Differences, we also find that the Syrian presence leads to an increase in the probability of moving out of the camp areas for residence, while it leads to an increase in the probability of moving into the camp hosting areas for work. Overall, this supports our previous findings that camp areas are more likely to shed residents but might be attracting workers.

5.3 Refugees Versus Broader Impacts

The analysis presented in Section 5.1 and Section 5.2 confirms that neither differential pre-trends nor refugees' locational sorting are driving our empirical results. In this section, we provide a discussion on the impact of the Syrian refugee inflows versus other broader impacts associated with the war and the crisis. In a report published by RAND Corporation, Young, Stebbins, Frederick, and Al-Shahery (2014) highlight the potential for violence spillovers in Jordan from the Syrian civil war, despite the capabilities of Jordan's security forces. Likewise, a recent World Bank report on forcibly displaced highlights that conflict has broader impacts, which could include a collapse of trade and investment, the destruction of infrastructure, large losses of assets, and a weakening of institutional capacity (World Bank, 2017). Global Risk Insights (2019) further corroborates these broader impacts, as discussed in Section 2.1, by highlighting the disruptions of Jordan's trade routes through Syria.

Confounding factors that changed as a result of the war could indeed prevent us from isolating the impact of refugees on mobility patterns. For instance, commercial ties might be severed due to the Syrian conflict, which might in turn affect mobility patterns in Jordan. While we attempt to address the issue of cross-border spillover impacts through an IV Difference-in-Differences approach in Section 5.2, Card (2009) articulates these concerns broadly with shift-share instruments by highlighting that an enclave-based identification strategy might be less appealing if the initial immigrant shares are correlated with other unobserved features—the most salient being commercial relationships with Syria—that affect the outcome of interest. While we provide evidence in Section 5.2, supporting parallel trends—the underlying assumption for this Bartik type instrument according to Goldsmith-Pinkham, Sorkin, and Swift (2020)—in this section, we perform additional tests to address these concerns.

First, we attempt to capture geographical variation in the sectorial composition of the labor force in Jordan, pre-Syrian war. We do so in order to capture the variability in the labor force's engagement in trade related economic activities versus other activities, since trade routes were particularly severed by the war in Syria and business owners are likely to be negatively impacted. In Table 9, our IV Difference-in-Differences model additionally controls for the share of individuals engaged in the various economic activities, from the 2004 Jordanian Census data.[27] Our results are robust to controlling for the sectorial composition of the labor force including the share of individuals engaged in wholesale and retail trade. This test confirms that the IV Difference-in-Differences results are not driven by the correlation between the initial share of immigrants and pre-existing trade networks and composition of the labor force.

Second, we additionally control for the distance between districts' centroids and Aleppo's in our IV Difference-in-Differences model in order to potentially control for cross-border spillover impacts of the Syrian war and, in particular, violence spillovers. The results in Table 10 are robust to controlling for the distance to Aleppo—where conflict and violence were especially intense in the years 2012-2016. Controlling for the distance from the epicenter of the violence in Syria attempts to address additional concerns regarding violence spillovers in Jordan.

Furthermore, we check the robustness of our results to the exclusion of bordering sub-districts with Syria. In Table A.6, we exclude all bordering sub-districts located in the governorates of Mafraq and Irbid in Northern Jordan. Our results are robust to excluding these sub-districts, which are likely to be the most affected by violence spillovers and trade disruptions. Relatedly, we also exclude the three sub-districts that directly contain the refugee camps in Jordan (Zaatari, Azraq, and Mrajeeb Al

[27] The various economic activities include: agriculture, fishery and forestry; mining and extraction; construction and utilities; manufacturing; wholesale and retail trade; transport and telecommunications; public administration, health, and social work; and other economic activities.

Fhood) since sub-districts that received large refugee inflows are also likely to be more affected by the various disruptions associated with the outbreak of the war in Syria. The results we report in Table 11 are also robust to excluding these sub-districts and provide suggestive evidence that our findings are not driven by violence spillovers and other disruptions which are likely to be more pronounced in border sub-districts or in camp sub-districts.

While we aimed in this section to address potential confounding factors associated with the outbreak of the war in Syria, we acknowledge that forced displacement and refugee inflows are but one facet of the conflict as highlighted by World Bank (2017). Indeed, our analysis attempts to estimate the impact of refugee inflows on mobility patterns in Jordan, however, the growing refugee population in Jordan went hand in hand with trade disruptions and destruction of infrastructure in Syria that could have had wider implications on its neighboring country Jordan.

6 Robustness Checks

6.1 International and Return Migration

We also check whether the Syrian refugee inflows have an impact on international migration (international emigration and return migration) to potentially capture substitution between internal and international migration. For international migration, individuals were asked if there is any household member living or working abroad at the time of the survey. Households could report as many international migrants as occurred and the maximum number of reported international migrants at the household level is 9. However, it is important to note that we do not observe households who have migrated in their entireties. The JLMPS also has a particular module on return migration. Individuals aged between 15 and 59 years old were asked whether they have worked abroad for more than 6 months and they were also asked about the year of their final return to Jordan. To analyze the impact of the Syrian inflows on international and return migration, we therefore rely on household panel data. For each period under consideration (2005-2010 or 2011-2016), the international migration dummy at the household level is equal to one if there is any household member living or working abroad, who migrated between the years considered. As for the return migration dummy, similarly, it is equal to one if an individual currently residing in Jordan had worked abroad for more than 6 months and returned to Jordan between the years considered.

Table A.7 in the Online Appendix presents the impact of the Syrian refugee inflows on the international migration and return migration patterns of Jordanians using household level regressions. The dependent variable in column (1) is a dummy variable indicator for the incidence of international migration at the household level, while the

dependent variable in column (2) corresponds to the number of international migrants at the household level. As for return migration, the dependent variable in column (3) is a dummy variable indicator for having a return migrant at the household level and the dependent variable in column (4) corresponds to the number of return migrants at the household level. While the results reported in Section 4.1 show a positive and significant effect of the Syrian inflows on Jordanian internal mobility, in this section, our results suggest that the Syrian refugee inflows do not seem to have an impact on Jordanian international and return migration patterns.

6.2 Definition of Internal Migration

Throughout the paper, we define internal migration with respect to the locality of residence. In other words, we define an internal migrant as an individual who changed their locality between the years considered (2005-2010 or 2011-2016) compared to the preceding locality of residence. In the Online Appendix Table A.8, we check the robustness of our results to alternative definitions of internal migration. In columns (1) and (2), instead of considering internal mobility with respect to the residence prior to the move, we consider internal migration with respect to the place of birth. Individuals were asked if they moved internally compared to their place of birth. We thus defined internal migrants as those who moved internally in the periods between 2005-2010 and between 2011-2016, compared to their place of birth. In columns (3) and (4), we also checked the robustness of our results to defining internal migration with respect to the district of residence prior to the move, instead of the locality of residence. Therefore, we define an internal migrant as an individual who changed their district between the years considered compared to the preceding district of residence. Our results are consistently robust to using these two alternative definitions of internal migration.[28]

6.3 Time Checks

We also checked the robustness of our results with respect to the choice of the pre-period years. Instead of using the years between 2005 and 2010 as the reference period, we checked the sensitivity of our main findings using the years between 1997 and 2002 as the pre-period. The rationale behind using the period between 1997 and 2002 is that it precedes the 2003 United States invasion of Iraq, following which Jordan received large inflows of Iraqi migrants. We report the results in Table A.9 in the Online Appendix. In line with our main findings presented in Section 4.1, we find that the Syrian presence increases the probability of internal migration for Jordanians. Particularly, we find that the Syrian refugee inflows led to an increase in the probability of moving out of the camp hosting areas. Using the years between 1997

[28] We also checked the robustness of our main findings on internal migration by restricting our analysis to individuals aged 25 to 64 years old in 2016. Our results are also robust to this check.

and 2002 as the pre-period, we also investigate the impact of the Syrian refugee inflows on the probability of changing job location focusing on Jordanian nationals and on the probability of moving in or out of the camp hosting areas for work. Our results are also robust to this check and point to an increase in the probability of changing job location and in the probability of moving into the camp areas for work.[29]

6.4 Different Samples

Finally, we also check the robustness of our results using pooled cross-sectional data relying on two waves of the JLMPS (2010 and 2016), instead of relying on panel data constructed using the 2016 round of the JLMPS. These regressions include the same set of pre-determined individual and governorate controls presented in Section 3. We report the results using pooled cross-sectional data in the Online Appendix Table A.10. In line with our benchmark model relying on panel data, the cross-sectional results suggest that the Syrian presence is associated with higher internal mobility at the district level and higher residential exit rates from areas hosting the most important refugee camps. Our results also suggest that the Syrian inflows are associated with a higher probability of changing job location and particularly, a higher probability of moving into the camp areas for work, in line with our previous findings in Section 4.2.

7 Concluding Remarks

One of the understudied aspects related to the impact of refugee inflows on the host country is the effects on the host population's residential and job location mobility decisions. This paper examines the impact of massive refugee inflows on the internal migration of the host country's population. Using unique data from Jordan, we examine Jordanians' mobility before and after the beginning of the Syrian war and the ensuing massive Syrian refugee influx to Jordan. We study internal mobility and job location mobility, in particular, in and out of the camp hosting areas. We rely on a Difference-in-Differences specification to account for unobserved heterogeneity at the individual level.

Our findings suggest that the Syrian refugee inflows have increased internal mobility of Jordanians. More specifically, our results highlight that an increase in the share of Syrians to Jordanians, increases the probability of internal migration of Jordanians. In particular, the probability of moving out of camp areas has increased, driven by an increase in rents and a crowding out effect in schools, due to the Syrian refugee

[29] In unreported regressions, using the 1997-2002 as the reference period, we also examined the impact of the Syrian refugee inflows on international and return migration patterns of Jordanians. In line with our findings presented in Section 4.1, we do not find any significant effect of the Syrian presence on the probabilities of international migration and return migration for Jordanians. All our results were also robust to using the years between 2000 and 2005, inclusive, as a reference period.

inflows. Also, the Syrian refugee inflows have increased the probability of job location mobility by Jordanians and particularly of moving into the camp hosting areas for work. The findings show a negative effect, although small in magnitude, on the probability commuting. Our results suggest that camp areas are shedding residents but attracting workers. These findings are robust to using a shift-share instrument to address the potential locational sorting of refugees, while auxiliary placebo regressions and a thorough comparison of treated and untreated Jordanian districts confirm that pre-existing trends in outcomes are not driving the results.

This paper also assesses the differential push-pull factors affecting residential and job mobility in a developing host country. Our results comprehensively document the impact of a massive refugee inflow and the roles played by labor markets versus public services and housing, in areas with high refugees' concentration, for natives' residential and job mobility. Importantly, the findings of this paper carry implications for both developed and developing nations hosting large numbers of refugees.

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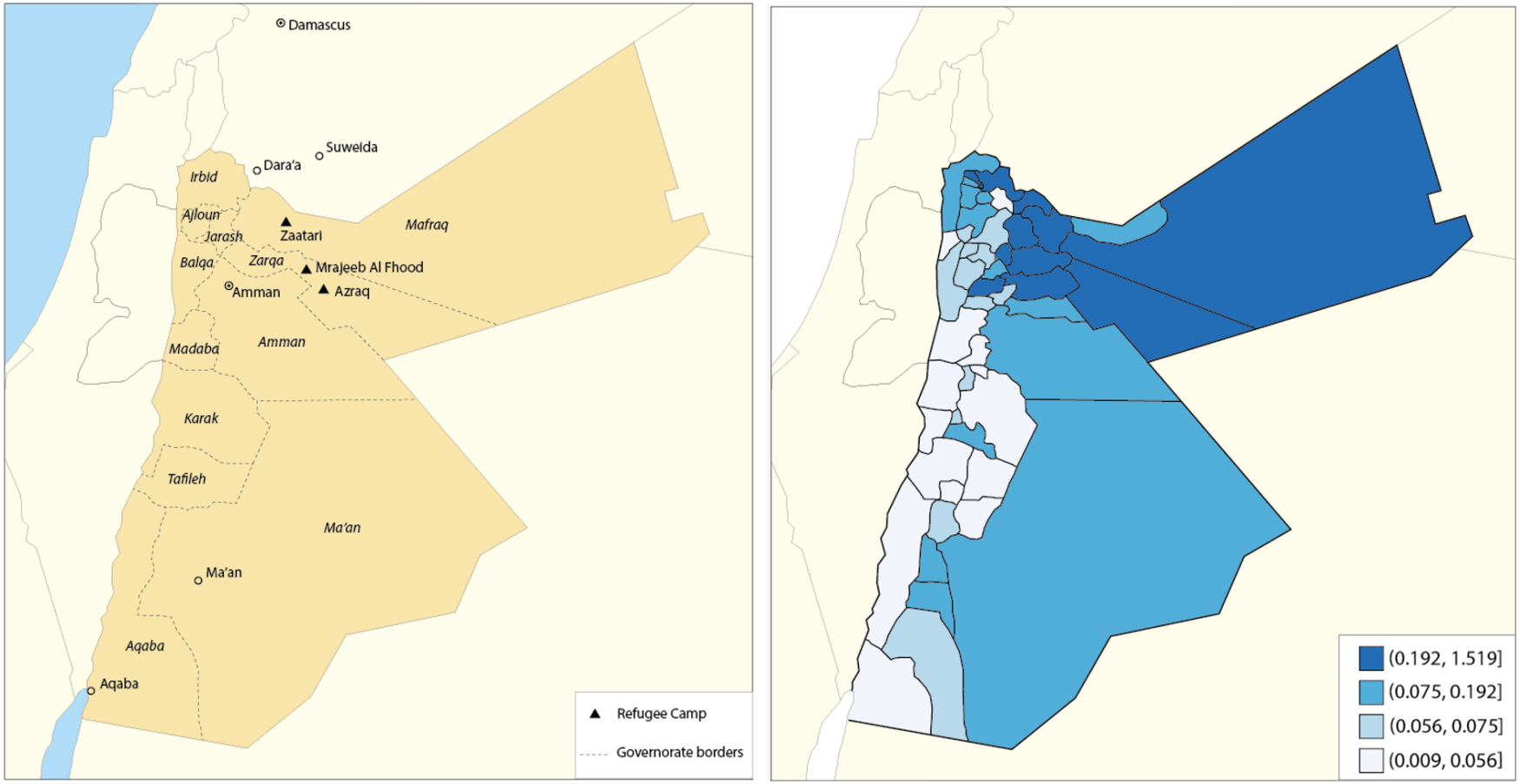


(a) Location of refugee camps in Jordan

(b) Distribution of Syrians to Jordanians

Figure 1: Refugee camps and distribution of Syrians in Jordan

Notes. Map (a) represents the location of the main refugee camps across Jordanian governorates, based on Google Maps' location data. Map (b) represents the share of Syrians to Jordanians across Jordan's districts. Data comes from the Jordanian Department of Statistics (DOS) in 2016.

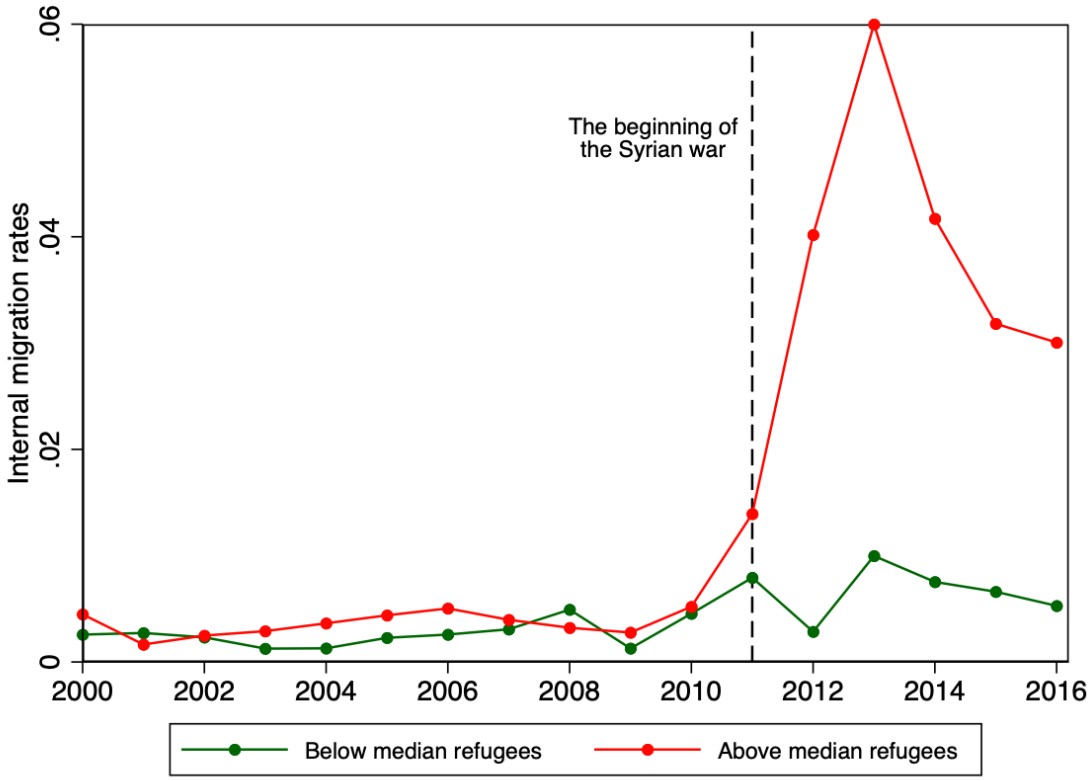


Figure 2: Internal migration rates before and after the Syrian refugee inflows

Notes. This figure shows internal migration rates in Jordan from 2000 to 2016. The red line shows internal migration rates in sub-districts with above median share of Syrian refugees, while the green line shows internal migration rates in sub-districts with below median share of Syrian refugees. The median share of Syrian refugees is equal to zero. The share of Syrian refugees is derived from the 2016 JLMPS and corresponds to the number of refugees in 2011 or later at the sub-district level, normalized by the number of Jordanians at the sub-district level from the 2004 Census. Internal migration rates are defined with respect to the place of birth.

Table 1: Descriptive statistics on Jordanian internal migrants

	Movers 2005-2010		**Movers 2011-2016**		
	(1)	(2)	(3)	(4)	(5)
	Mean	St. Dev.	Mean	St. Dev.	Difference (1) and (3)
Pre-determined individual education					
No education	0.229	0.421	0.183	0.387	0.046
Basic education	0.329	0.471	0.277	0.448	0.052
Secondary education	0.186	0.390	0.291	0.455	-0.105***
Above secondary education	0.256	0.437	0.249	0.433	0.007
Geographical regions at birth					
Central	0.469	0.500	0.369	0.483	0.100***
North	0.321	0.468	0.385	0.487	-0.064*
South	0.209	0.408	0.246	0.431	-0.037
Housing characteristics					
Number of rooms	3.571	1.007	3.625	1.116	-0.054
Dwelling area	129.77	43.461	128.053	47.634	1.716
Owned dwelling	0.787	0.410	0.608	0.489	0.180***
Tiles/ceramic or wood floor	0.950	0.218	0.932	0.253	0.019
Bricks or concrete external walls	0.975	0.156	0.970	0.172	0.006
Reinforced concrete roof	0.950	0.218	0.937	0.244	0.014
Public water	0.965	0.185	0.954	0.209	0.010
Public electric network	1.000	0.000	0.997	0.051	0.003
Public sewage system	0.468	0.500	0.539	0.499	-0.071*
Job characteristics					
Public sector	0.537	0.502	0.487	0.502	0.051
Incidence of work contract	0.634	0.485	0.657	0.477	-0.023
Job tenure	9.453	7.532	6.695	6.462	2.758***
Economic activities					
Agriculture	0.050	0.219	0.009	0.094	0.041*
Manufacturing	0.150	0.359	0.070	0.257	0.080*
Trade	0.075	0.265	0.105	0.308	-0.030
Public administration	0.263	0.443	0.254	0.437	0.008
Education and health	0.250	0.436	0.395	0.491	-0.145**
Other activities	0.212	0.412	0.167	0.374	0.046
Observations	395		282		

*** p<0.01, ** p<0.05, * p<0.1

Notes: Column 5: is t-test for whether the difference in means between column (1) and column (3) is statistically significant. Columns (1) and (2) correspond to Jordanians who moved inside Jordan between 2005 and 2010, inclusive. Columns (3) and (4) correspond to Jordanians who moved inside Jordan between 2011 and 2016, inclusive.

Table 2: Impact of Syrian refugee inflows on Jordanians' on internal migration and residential mobility in and out of the camp areas, Individual level regressions

	(1)	(2)	(3)	(4)	(5)
	Full sample	*Less educ.*	*More educ.*		
	Internal Migrant	Internal Migrant	Internal Migrant	Moving in for residence	Moving out for residence
Panel A: Syrians to Jordanians impacts					
Syrians to Jordanians × year	0.003**	0.000	0.013**	0.001	0.002***
	[0.001]	[0.001]	[0.005]	[0.001]	[0.001]
Observations	37,572	27,292	10,280	37,226	37,244
R-squared	0.503	0.505	0.498	0.509	0.505
Panel B: Syrians to population impacts					
Syrians to population × year	0.003**	0.000	0.014**	0.001	0.002***
	[0.001]	[0.001]	[0.005]	[0.001]	[0.001]
Observations	37,572	27,292	10,280	37,226	37,244
R-squared	0.503	0.505	0.498	0.509	0.505
Individual controls × year	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87
Dependent variable mean	0.014	0.011	0.022	0.006	0.006

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. The dependent variables in columns (1) to (3) are dummy variable indicators for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The results are reported on the full sample in column (1), on the less educated (without any education or with primary or preparatory education) in column (2), and on the most educated (with secondary or above secondary education) in column (3). The dependent variable in column (4) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (4) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. An individual moved into camp areas if the maximum distance between an individual's subdistrict and the most important refugee camps (Zaatari and Azraq) following the move is smaller than the distance prior to the move. An individual moved out of camp areas if the maximum distance between an individual's subdistrict and the most important refugee camps (Zaatari and Azraq) following the move is greater than the distance prior to the move. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel A, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table 3: Impact of Syrian refugee inflows on the probability of changing job location change and commuting, Individual level regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Full sample	*Less educ.*	*More educ.*			
	Change job location	Change job location	Change job location	Moving in for job	Moving out for job	Commuter
Panel A: Syrians to Jordanians impacts						
Syrians to Jordanians × year	0.005*	0.010**	0.001	0.005**	0.000	-0.005*
	[0.003]	[0.004]	[0.003]	[0.002]	[0.002]	[0.003]
Observations	9,938	5,253	4,685	9,829	9,851	9,725
R-squared	0.524	0.520	0.532	0.538	0.520	0.963
Panel B: Syrians to population impacts						
Syrians to population × year	0.006*	0.010**	0.002	0.006**	0.000	-0.005*
	[0.003]	[0.004]	[0.003]	[0.002]	[0.002]	[0.003]
Observations	9,938	5,253	4,685	9,829	9,851	9,725
R-squared	0.524	0.520	0.532	0.538	0.520	0.963
Individual controls × year	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87	87
Dependent variable mean	0.015	0.016	0.012	0.007	0.008	0.477

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. The sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variables in columns (1) to (3) are dummy variable indicators for the probability of changing job location and are equal to one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The results are reported for the full sample in column (1), for the less educated individuals (without any education or with primary or preparatory education) in column (2), and for the most educated individuals in column (3). The dependent variables in columns (4) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. An individual moved into camp areas for work if the maximum distance between an individual's district of work and the most important refugee camps (Zaatari and Azraq) following the move is smaller than the distance prior to the move. An individual moved out of camp areas for work if the maximum distance between an individual's district of work and the most important refugee camps (Zaatari and Azraq) following the move is greater than the distance prior to the move. The dependent variable in column (6) is a dummy variable indicator for the probability of commuting. A commuter is defined as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table 4: Testing the differential effects of the Syrian refugees inflows on residential and job mobility by education

	(1) Internal migrant	(2) Internal migrant	(3) Change job location	(4) Change job location
Syrians to Jordanians × year	0.007***	0.001	-0.000	0.011***
	[0.002]	[0.001]	[0.003]	[0.003]
Syrians to Jordanians × year × less educated	-0.005**		0.011***	
	[0.003]		[0.004]	
Syrians to Jordanians × year × more educated		0.005**		-0.011***
		[0.003]		[0.004]
Observations	37,572	37,572	9,938	9,938
R-squared	0.007	0.007	0.525	0.525
Individual controls × year	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Number of clusters	87	87	87	87
Dependent variable mean	0.014	0.014	0.015	0.015
Prob >F	0.102	0.006	0.002	0.902

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. The dependent variables in columns (1) and (2) are dummy variable indicators for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. In columns (3) and (4), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variables in columns (3) and (4) are dummy variable indicators for the probability of changing job location and are equal to one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The two time periods correspond to the years 2005-2010 and the years 2011-2016. The main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In columns (1) and (3), we include an interaction term with less educated dummy (without any education or with primary or preparatory education). In columns (2) and (4), we include an interaction term with the more educated dummy (with secondary or above secondary education). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. The P-value, from a test of whether the sum of the two reported coefficients in each column is different from zero, is reported in the last row.

Table 5: Underlying mechanisms. Impact of Syrian refugee inflows on rents and schooling, Sub-district level regressions

	(1) Log rents	(2) Log rents by Jord.	(3) Log rents to income	(4) Log rents by Jord. to income	(5) Syrian students to Jord.	(6) Syrian students per teacher	(7) Syrian students per class	(8) Jord. students per teacher	(9) Jord. students per class	(10) Teachers to students	(11) Class size
Panel A: Syrians to Jordanians impacts											
Syrians to Jordanians	0.052***	0.059***	0.133***	0.138***	0.490***	2.015***	6.217***	-1.544**	-1.332	-0.003*	4.885***
	[0.017]	[0.020]	[0.031]	[0.037]	[0.152]	[0.327]	[0.983]	[0.596]	[0.989]	[0.002]	[0.474]
Observations	68	66	68	66	87	87	87	87	87	87	87
R-squared	0.607	0.574	0.405	0.339	0.776	0.753	0.771	0.443	0.284	0.342	0.599
Panel B: Syrians to population impacts											
Syrians to population	0.056***	0.063***	0.143***	0.148***	0.520***	2.169***	6.693***	-1.621**	-1.356	-0.004**	5.337***
	[0.018]	[0.022]	[0.038]	[0.044]	[0.184]	[0.435]	[1.311]	[0.699]	[1.113]	[0.002]	[0.561]
Observations	68	66	68	66	87	87	87	87	87	87	87
R-squared	0.607	0.573	0.403	0.336	0.741	0.737	0.753	0.432	0.275	0.343	0.598
Subdistrict and governorate controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Latitude	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Dependent variable mean	4.684	4.695	-1.362	-1.356	0.128	0.986	2.081	11.760	18.570	0.084	20.650

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are reported in brackets.

Notes: Each cell represents a coefficient estimate from an OLS regression using sub-district level data. The dependent variable in column (1) corresponds to the logarithm of total monthly rents at the district level. The dependent variable in column (2) corresponds to the logarithm of monthly rents paid by Jordanians. In column (3), the dependent variable is the logarithm of total monthly rents relative to average monthly income. In column (4), the dependent variable is the logarithm of monthly rents paid by Jordanians relative to average monthly income. The dependent variable in column (5) corresponds to the ratio of Syrian to Jordanian students at the sub-district level. The dependent variable in column (6) corresponds to number of Syrians per teacher at the sub-district level. The dependent variable in column (7) corresponds to the number of Syrians per classroom at the sub-district level. The dependent variable in column (8) corresponds to the number of Jordanians per teacher. The dependent variable in column (9) corresponds to the number of Jordanians per classroom. The dependent variable in column (10) corresponds to the ratio of teachers to students, while the dependent variable in column (11) corresponds the number of Syrian and Jordanian students divided by the number of classrooms. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is to the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). Regressions include the following pre-determined sub-district controls derived from the JLMPS 2016: the sub-district level percent of individuals whose highest level of educational attainment prior to 2011 is no education, basic education, secondary education, or above secondary education, and the sub-district level shares of individuals born in the different regions (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The dependent variables' means are reported in the last row.

Table 6: Summary of Selected Papers on Impact of Refugees/Immigration on Native Internal Migration and Housing

Paper	Country (Data)	Measure	Results
Natives Internal Migration: Impact of Refugees/Immigration			
Akgündüz, Van den Berg, and Hassink (2015)	Turkey (TUIK)	Refugee presence, number of refugees hosted in the region	Entry rate : negative, Exit rate: insignificant, Net migration rate: negative.
Andersson, Berg, and Dahlberg (2021)	Sweden (GeoSweden)	Annual number of refugees	No evidence of "native flight" for the entire population. Among native homeowners, 0.35 natives move out when a neighborhood receives one more immigrant.
Borjas (2006)	US (US Census)	Immigrant Share	2 (6) fewer native workers, on net, move to a particular state (locality) for every 10 immigrants who enter that state (metropolitan area).
Accetturo, Manaresi, Mocetti, and Olivieri (2014)	Italy (matched adminstrative data at the district level)	Number of immigrants	10 additional immigrants who arrive in a district cause 6 natives to resettle in other areas of the city.
Moraga, Ferrer-i Carbonell, and Saiz (2019)	Spain (INE)	Total number of immigrant arrivals in the metropolitan area	For every 3 immigrants entering a neighborhood, one native moves out of it.
Mocetti and Porello (2010)	Italy (GPR)	The number of immigrants based on residence permits	A 1% increase in immigration leads to 0.9% increase in low-educated native outflows and to 0.6% decrease in inflows. For highly-educated natives, 1% increase in immigration leads to 1.1% increase in inflows.
Housing: Impact of Refugees			
Alhawarin, Assaad, and Elsayed (2021)	Jordan (HEIS)	Change in the share of Syrian households in district	A one standard deviation increase in the change in Syrian households increases real rents by 13%.
Rozo and Sviatschi (2021)	Jordan (HEIS)	Distance to refugee camps	A one standard deviation closer to refugee camps, housing expenditures increase by 3.8% and rental property income increases by 5.8%.
Van Vuuren, Kjellander, and Nilsson (2019)	Sweden (Booli.se)	Walking distance to the building sites announced to host refugees	4% drop in apartment prices within a 5-minute walking distance from the building sites for refugees.
Balkan, Tok, Torun, and Tumen (2018)	Turkey (SILC)	Region hosting refugees	Housing rents increased in the order of 2% to 5% in the hosting regions.
Depetris-Chauvin and Santos (2018)	Colombia (Census)	IDP flows across Colombian municipalities	A 10% increase in IDP inflows in a given city and quarter increases low-income rental prices by 0.15% and decreases high-income rental prices by 0.39%.

Table 7: Testing the parallel trends assumption. The comparability of Jordanian districts by exposure to the Syrian refugee inflows

	Below median share of Syrians		**Above median share of Syrians**		
	(1)	(2)	(3)	(4)	(5)
	Mean	St. Dev.	Mean	St. Dev.	Difference (1) and (3)
Demographic characteristics					
Married	0.330	0.019	0.339	0.020	-0.010
Family size	7.050	0.655	6.726	0.688	0.324
Number of children less than 5	0.262	0.022	0.251	0.025	0.011
Number of families in household	1.098	0.121	1.130	0.143	-0.033
Number of couples in household	0.946	0.049	0.952	0.044	-0.005
Percent of individuals less than 36	0.787	0.023	0.779	0.031	0.008
Percent of individuals above 35	0.213	0.023	0.221	0.031	-0.008
Household infrastructure					
Owned dwelling	0.788	0.087	0.759	0.141	0.029
Number of rooms	3.507	0.324	3.628	0.285	-0.122
Electricity access	0.978	0.027	0.989	0.023	-0.011
Connected to sewage disposal system	0.269	0.286	0.352	0.360	-0.082
Cell phone availability	0.460	0.102	0.498	0.136	-0.038
Internet access	0.974	0.026	0.952	0.053	0.021
Computer availability	0.831	0.087	0.778	0.115	0.053
Educational attainment					
Less than primary	0.333	0.059	0.294	0.060	0.040**
Primary	0.402	0.036	0.397	0.049	0.005
Secondary	0.208	0.052	0.235	0.047	-0.027*
University	0.057	0.028	0.075	0.046	-0.017
Labor market characteristics					
Male labor force participation	0.709	0.045	0.692	0.042	0.017
Female labor force	0.239	0.073	0.193	0.049	0.046**
Public sector employment	0.504	0.181	0.439	0.208	0.066
Private sector employment	0.496	0.181	0.561	0.208	-0.066
Agriculture, fishery and forestry	0.098	0.126	0.049	0.059	0.049
Mining and extraction	0.024	0.042	0.007	0.010	0.017*
Construction and utilities	0.080	0.024	0.084	0.030	-0.004
Manufacturing	0.080	0.067	0.103	0.055	-0.023
Wholesale and retail trade	0.079	0.042	0.122	0.066	-0.043**
Transport and telecommunications	0.062	0.024	0.085	0.061	-0.023
Public administration, health, and social work	0.385	0.140	0.365	0.184	0.020
Other industries	0.193	0.059	0.187	0.067	0.007

*** p<0.01, ** p<0.05, * p<0.1

Notes: All variables are pre-determined and are derived from the 2004 Jordanian Census. Column 5: is t-test for whether the difference in means between column (1) and column (3) is statistically significant. Columns (1) and (2) correspond to districts with below median share of Syrians to Jordanian population. Columns (3) and (4) correspond to districts with above median share of Syrians to Jordanian population. The share of Syrians to Jordanians is calculated as the total number of Syrian inhabitants at the district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the district level (from the 2004 Jordanian Census).

Table 8: Robustness checks using the shift-share instrument.
Individual level regressions using IV Difference-in Differences

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.004***	0.001	0.002***	0.006***	0.006***	0.001	-0.005**
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]
Observations	37,572	37,226	37,244	9,938	9,829	9,851	9,725
R-squared	0.503	0.509	0.505	0.524	0.538	0.520	0.963
Panel B: Syrians to population impacts							
Syrians to population × year	0.004***	0.001	0.002***	0.007***	0.006***	0.001	-0.006**
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]
Observations	37,572	37,226	37,244	9,938	9,829	9,851	9,725
R-squared	0.503	0.509	0.505	0.524	0.538	0.520	0.963
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87	87	87
Dependent variable mean	0.014	0.006	0.006	0.015	0.007	0.008	0.477

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from an IV Difference-in-Differences regression. The Syrian presence at the sub-district level is instrumented using a shift-share instrument. We impute our shift-share instrument based on data on Syrians, as well as all other immigrants, from the 2004 and the 2015 Jordanian Census data. The dependent variable in column (1) is a dummy variable indicator for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variable in column (4) is a dummy variable indicator for the probability of changing job location and are equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table 9: Robustness checks using a shift-share instrument and controlling for the pre-determined sectorial composition of the labor force. Individual level regressions

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.003***	0.001	0.002***	0.007***	0.006***	0.001	-0.005**
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]
Observations	37,572	37,226	37,244	9,938	9,829	9,851	9,725
R-squared	0.503	0.510	0.505	0.525	0.538	0.521	0.964
Panel B: Syrians to population impacts							
Syrians to population × year	0.004***	0.001	0.002***	0.007***	0.007***	0.001	-0.005**
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.002]
Observations	37,572	37,226	37,244	9,938	9,829	9,851	9,725
R-squared	0.503	0.510	0.505	0.525	0.538	0.521	0.964
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87	87	87
Dependent variable mean	0.014	0.006	0.006	0.015	0.007	0.008	0.477

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from an IV Difference-in-Differences regression. The Syrian presence at the sub-district level is instrumented using a shift-share instrument. We impute our shift-share instrument based on data on Syrians, as well as all other immigrants, from the 2004 and the 2015 Jordanian Census data. The dependent variable in column (1) is a dummy variable indicator for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variable in column (4) is a dummy variable indicator for the probability of changing job location and are equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. Regressions additionally control for the pre-determined sectorial composition of the labor force from the 2004 Jordanian Census interacted with the year dummy. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table 10: Robustness checks using the shift-share instrument and controlling for the distance between districts' centroids and Aleppo's. Individual level regressions

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.005***	0.001	0.003***	0.006***	0.006***	0.000	-0.008***
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.003]
Observations	37,572	37,226	37,244	9,938	9,829	9,851	9,725
R-squared	0.503	0.508	0.505	0.524	0.538	0.520	0.963
Panel B: Syrians to population impacts							
Syrians to population × year	0.005***	0.001	0.003***	0.006***	0.006***	0.000	-0.008***
	[0.001]	[0.001]	[0.001]	[0.002]	[0.002]	[0.002]	[0.003]
Observations	37,572	37,226	37,244	9,938	9,829	9,851	9,725
R-squared	0.503	0.508	0.505	0.524	0.538	0.520	0.963
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87	87	87
Dependent variable mean	0.014	0.006	0.006	0.015	0.007	0.008	0.477

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from an IV Difference-in-Differences regression. The Syrian presence at the sub-district level is instrumented using a shift-share instrument. We impute our shift-share instrument based on data on Syrians, as well as all other immigrants, from the 2004 and the 2015 Jordanian Census data. The dependent variable in column (1) is a dummy variable indicator for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variable in column (4) is a dummy variable indicator for the probability of changing job location and are equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. Regressions additionally include the distance between districts' centroids and Aleppo's centroids, interacted with the year dummy. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

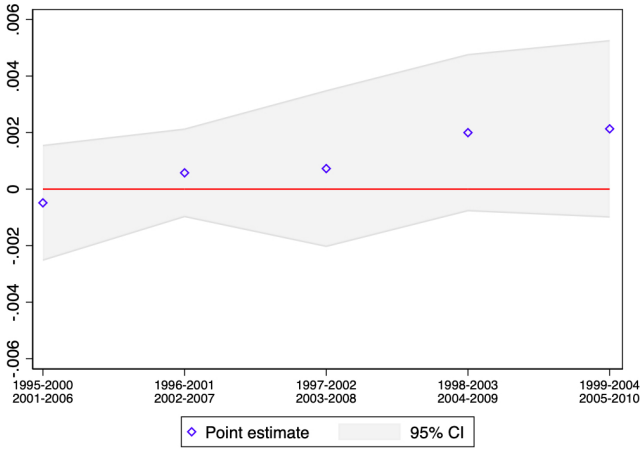
Table 11: Robustness checks excluding the sub-districts containing the refugee camps. Individual level regressions

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.003**	0.001	0.002***	0.006**	0.007***	0.000	-0.004*
	[0.001]	[0.001]	[0.001]	[0.003]	[0.002]	[0.002]	[0.002]
Observations	36,994	36,648	36,673	9,834	9,726	9,748	9,609
R-squared	0.503	0.509	0.505	0.525	0.539	0.520	0.963
Panel B: Syrians to population impacts							
Syrians to population × year	0.003**	0.001	0.002***	0.007**	0.007***	0.000	-0.004*
	[0.001]	[0.001]	[0.001]	[0.003]	[0.002]	[0.002]	[0.002]
Observations	36,994	36,648	36,673	9,834	9,726	9,748	9,609
R-squared	0.503	0.509	0.505	0.525	0.539	0.520	0.963
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	84	84	84	84	84	84	84
Dependent variable mean	0.014	0.006	0.007	0.015	0.007	0.008	0.479

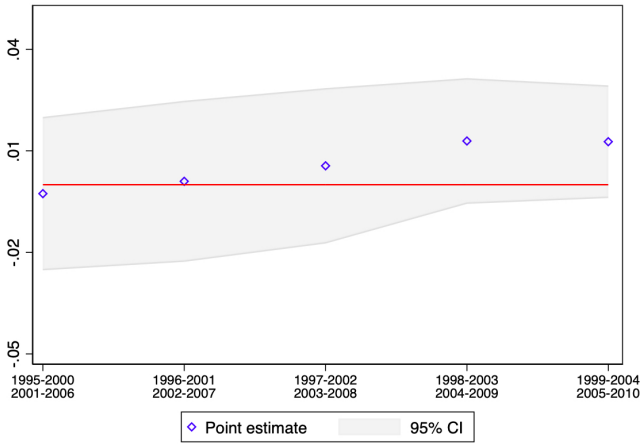
*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. The sub-districts that directly contain the refugee camps: Zaatari, Azraq, and Mrajeeb Al Fhood are excluded from the sample. The dependent variable in column (1) is a dummy variable indicator for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variable in column (4) is a dummy variable indicator for the probability of changing job location and are equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

A Online Appendix



(a) The probability of internal migration



(b) The probability of changing job location

Figure A.1: Common trend tests

Notes. This figure shows a coefficient plot for the interaction term between the Syrians to Jordanians variable and a year dummy for the post-period. and a year dummy for the post-period, as well as 95% confidence intervals. The Syrians to Jordanians variable corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). The dependent variable in (a) is the probability of internal migration, defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in (b) is the probability of changing job location and is equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The regressions include the full set of controls presented in Section 3. To check for differential trends in the pre-period, the figure reports a series of estimates using a moving twelve-year window (a pre and a post-period, each of six years).

Table A.1: Number of movers and probability of moving for the various geographical levels

	2005-2010	2011-2016	
	Number of movers [Probability of moving]	Number of movers [Probability of moving]	Difference
Locality	287	400	
	[0.010]	[0.015]	-0.004***
Sub-district	257	345	
	[0.009]	[0.013]	-0.003***
District	252	330	
	[0.009]	[0.012]	-0.003***
Governorate	165	216	
	[0.006]	[0.008]	-0.002***

*** p<0.01, ** p<0.05, * p<0.1

Notes: Column 3: is t-test for whether the difference in means between column (1) and column (2) is statistically significant. The first column corresponds to Jordanians who moved inside Jordan between 2005 and 2010, inclusive. The second column corresponds to Jordanians who moved inside Jordan between 2011 and 2016, inclusive. Each row corresponds to a different definition of internal migration. Locality refers to an individual changing their locality of residence in 2005-2010 or 2011-2016. Sub-district refers to an individual changing their sub-district of residence in 2005-2010 or 2011-2016. District refers to an individual changing their district of residence in 2005-2010 or 2011-2016. Governorate refers to an individual changing their governorate of residence in 2005-2010 or 2011-2016. This table reports the number of movers as well as the probability of moving for the various geographical levels. Locality is the smallest geographical unit, followed by sub-districts, districts and governorates.

Table A.2: Mobility matrices for internal migrants and job movers

Panel A: Internal migrants between 2005-2010				
2005-2010 region (N=287)				
Previous region	Central	North	South	Total (% of total)
Central	77.610	14.930	7.460	100.000 (46.690)
North	14.290	80.220	5.490	100.000 (31.710)
South	8.060	14.520	77.420	100.000 (21.600)
Total	42.510	35.540	21.950	100.000
Panel B: Internal migrants between 2011-2016				
2011-2016 region (N=400)				
Previous region	Central	North	South	Total (% of total)
Central	80.670	12.670	6.670	100.000 (37.500)
North	23.720	73.080	3.210	100.000 (39.000)
South	22.340	2.130	75.530	100.000 (23.500)
Total	44.750	33.750	21.500	100.000
Panel C: Job movers between 2005-2010				
2005-2010 job location (N=74)				
Previous job location	Central	North	South	Total (% of total)
Central	58.140	18.600	23.260	100.000 (58.110)
North	30.000	70.000	0.000	100.000 (27.030)
South	27.270	9.090	63.640	100.000 (14.860)
Total	45.950	31.080	22.970	100.000
Panel D: Job movers between 2011-2016				
2011-2016 job location (N=129)				
Previous job location	Central	North	South	Total (% of total)
Central	52.500	38.750	8.750	100.000 (62.020)
North	25.000	62.500	12.500	100.000 (24.810)
South	17.650	29.410	52.940	100.000 (13.180)
Total	41.090	43.410	15.500	100.000

Notes: The table presents internal mobility matrices for Jordanian internal, who moved inside Jordan between 2005 and 2010, inclusive (Panel A) and between 2011 and 2016, inclusive (Panel B). The table also presents job location changes for Jordanians, who changed their job location between 2005 and 2010, inclusive (Panel C) and between 2011 and 2016, inclusive (Panel D). The table features the mobility between the governorate preceding the move and the governorate the Jordanians moved to between 2005 and 2010 (Panel A) and between 2011 and 2016 (Panel B). Whereas the table features the mobility between the governorate preceding the job location change and the governorate the Jordanians moved into between 2005 and 2010 for a job (Panel C) and between 2011 and 2016 (Panel D). The mobility matrices are computed as % of the rows.

Table A.3: Moving for residence, moving for job, and commuting

Panel A: Moving for residence versus moving for job				
		Change in job location		
		0	**1**	**Total**
Change in residence location	**0**	5,367 95.754	129 2.302	5,496 98.055
	1	109 1.945	0 0.000	109 1.945
	Total	5,476 97.698	129 2.302	5,605 100.000
Panel B: Commuting versus moving for residence				
		Change in residence location		
		0	**1**	**Total**
Commuter	**0**	2,547 43.628	18 0.308	2,565 43.936
	1	3,174 54.368	99 1.696	3,273 56.064
	Total	5,721 97.996	117 2.004	5,838 100.000
Panel C: Commuting versus moving for job				
		Change in job location		
		0	**1**	**Total**
Commuter	**0**	2,557 48.966	9 0.172	2,566 49.138
	1	2,539 48.621	117 2.241	2,656 50.862
	Total	5,096 97.587	126 2.413	5,222 100.000

Notes: In Panel A, we report a two-way frequencies (and % of the total sample size) for the probability of internal migration at the district level and the probability of changing job location at the district level for the period between 2011 and 2016. In Panel B, we report two-way frequencies (and % of the total sample size) for the probability of commuting at the district level and the probability of internal migration at the district level for the period between 2011 and 2016. In Panel C, we report two-way frequencies (and % of the total sample size) for the probability of commuting at the district level and the probability of changing job location at the district level for the period between 2011 and 2016.

Table A.4: Descriptive statistics on Jordanians who moved for work between 2005-2010 and 2011-2016

	Job movers 2005-2010		**Job movers 2011-2016**		
	(1)	(2)	(3)	(4)	(5)
	Mean	St. Dev	Mean	St. Dev	Difference
Employment status					
Wage worker	0.824	0.383	0.814	0.391	0.010
Employer	0.027	0.163	0.054	0.227	-0.027
Self-employed	0.149	0.358	0.132	0.340	0.017
Unpaid worker	0.000	0.000	0.000	0.000	0.000
Sector of employment					
Public	0.446	0.500	0.326	0.470	0.120*
Private	0.554	0.500	0.674	0.470	-0.120*
Economic activity					
Agriculture, mining and quarrying	0.027	0.164	0.031	0.175	-0.004
Construction and utilities	0.068	0.254	0.109	0.313	-0.041
Manufacturing	0.068	0.254	0.094	0.293	-0.025
Wholesale and retail trade	0.205	0.407	0.211	0.410	-0.005
Transport and telecommunications	0.068	0.254	0.086	0.281	-0.017
Public administration	0.356	0.482	0.172	0.379	0.184***
Health, education and social services	0.110	0.315	0.234	0.425	-0.125**
Other economic activities	0.096	0.296	0.062	0.243	0.033
Job stability					
Permanent	0.838	0.371	0.698	0.461	0.140**
Temporary, seasonal and intermittent	0.162	0.371	0.302	0.461	-0.140**
Work contract and social security					
Permanent contract	0.486	0.503	0.349	0.478	0.138*
Temporary contract	0.081	0.275	0.178	0.384	-0.097*
No contract	0.432	0.499	0.473	0.501	-0.040
Incidence of social security	1.397	0.493	1.434	0.498	-0.037
Observations	74		129		

*** p<0.01, ** p<0.05, * p<0.1

Notes: Column 5: is t-test for whether the difference in means between column (1) and column (3) is statistically significant. Columns (1) and (2) correspond to Jordanians who changed their job location between 2005 and 2010, inclusive. Columns (3) and (4) correspond to Jordanians who changed their job location between 2011 and 2016, inclusive. Other economic activities include accommodation and food service activities, real estate activities, financial and insurance activities, activities of households as employers and activities of extraterritorial organizations and bodies.

Table A.5: Descriptive statistics on Jordanians who moved for work between 2011-2016

	Job before the move		**Job after the move**		
	(1)	(2)	(3)	(4)	(5)
	Mean	St. Dev.	Mean	St. Dev.	Difference
Employment status					
Wage worker	0.977	0.151	0.814	0.391	0.163***
Employer	0.000	0.000	0.054	0.227	-0.054***
Self-employed	0.008	0.088	0.132	0.340	-0.124***
Unpaid worker	0.016	0.124	0.000	0.000	0.016
Sector of employment					
Public	0.620	0.487	0.326	0.470	0.294***
Private	0.380	0.487	0.674	0.470	-0.294***
Economic activity					
Agriculture, mining and quarrying	0.023	0.151	0.031	0.175	-0.008
Construction and utilities	0.031	0.174	0.109	0.313	-0.078**
Manufacturing	0.101	0.302	0.094	0.293	0.007
Wholesale and retail trade	0.085	0.280	0.211	0.410	-0.126***
Transport and telecommunications	0.054	0.227	0.086	0.281	-0.032
Public administration	0.519	0.502	0.172	0.379	0.347***
Health, education and social services	0.132	0.340	0.234	0.425	-0.102***
Other economic activities	0.054	0.227	0.062	0.243	-0.008
Job stability					
Permanent	0.822	0.384	0.698	0.461	0.124**
Temporary, seasonal and intermittent	0.178	0.384	0.302	0.461	-0.124**
Work contract and social security					
Permanent contract	0.481	0.502	0.349	0.478	0.132**
Temporary contract	0.132	0.340	0.178	0.384	-0.046
No contract	0.388	0.489	0.473	0.501	-0.085*
Incidence of social security	0.589	0.494	0.566	0.498	0.023
Observations	129		129		

*** p<0.01, ** p<0.05, * p<0.1

Notes: Column 5: is t-test for whether the difference in means between column (1) and column (3) is statistically significant. Reported descriptive statistics are relative to the sample of Jordanians who changed their job location between 2011 and 2016, inclusive. In columns (1) and (2), the characteristics of the job preceding the job location change are reported. In columns (3) and (4), the characteristics of the new job following the job location change are reported. Other economic activities include accommodation and food service activities, real estate activities, financial and insurance activities, activities of households as employers and activities of extraterritorial organizations and bodies.

Table A.6: Robustness checks excluding border sub-districts in Mafraq and Irbid. Individual level regressions

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.003**	0.001	0.002***	0.006**	0.005*	0.002	-0.005
	[0.001]	[0.001]	[0.001]	[0.003]	[0.003]	[0.002]	[0.003]
Observations	35,972	35,640	35,653	9,510	9,408	9,431	9,304
R-squared	0.503	0.507	0.503	0.524	0.536	0.522	0.964
Panel B: Syrians to population impacts							
Syrians to population × year	0.003**	0.001	0.002***	0.007**	0.005*	0.002	-0.005*
	[0.001]	[0.001]	[0.001]	[0.003]	[0.003]	[0.002]	[0.003]
Observations	35,972	35,640	35,653	9,510	9,408	9,431	9,304
R-squared	0.503	0.507	0.503	0.524	0.536	0.522	0.964
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	80	80	80	80	80	80	80
Dependent variable mean	0.013	0.013	0.013	0.013	0.006	0.007	0.019

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. The analysis excludes bordering sub-districts with Syria in the governorates of Mafraq and Irbid. The dependent variable in column (1) is a dummy variable indicators for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variables in column (4) is a dummy variable indicator for the probability of changing job location and is equal to one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in columns (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table A.7: Impact of Syrian refugee inflows on Jordanian international and return migration. Household level regressions

	International migration		*Return migration*	
	(1)	(2)	(3)	(4)
	Migration	Number of migrants	Return	Number of returnees
Panel A: Syrians to Jordanians impacts				
Syrians to Jordanians × year	0.002	0.002	0.000	0.000
	[0.002]	[0.002]	[0.001]	[0.001]
Observations	8,995	8,995	7,175	7,175
R-squared	0.587	0.610	0.908	0.878
Panel B: Syrians to population impacts				
Syrians to population × year	0.002	0.002	0.000	0.000
	[0.002]	[0.002]	[0.001]	[0.001]
Observations	8,995	8,995	7,175	7,175
R-squared	0.587	0.610	0.908	0.878
Household controls × year	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES
Household FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Number of clusters	87	87	87	87
Dependent variable mean	0.002	0.002	0.003	0.003

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression using household level data. The dependent variable in column (1) is a dummy variable indicator for having an international migrant at the household level. The dependent variable in column (2) corresponds to the number of international migrants at the household level. The dependent variable in column (3) is a dummy variable indicator for having a return migrant at the household level. The dependent variable in column (4) corresponds to the number of return migrants at the household level. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined household controls interacted with the year dummy. Household controls are the following: four dummies for the head's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as household and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table A.8: Robustness checks using alternative definitions of internal migration, Individual level regressions

	Internal migration with respect to place of birth		*Internal migration at the district level*	
	(1)	(2)	(3)	(4)
	Internal Migrant	Internal Migrant	Internal Migrant	Internal Migrant
Syrians to Jordanians × year	0.003**		0.003*	
	[0.001]		[0.001]	
Syrians to population × year		0.003**		0.003**
		[0.001]		[0.001]
Observations	37,572	37,572	37,572	37,572
R-squared	0.504	0.504	0.503	0.503
Individual controls × year	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Number of clusters	87	87	87	87
Dependent variable mean	0.015	0.015	0.012	0.012

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. The dependent variables in columns (1) and (2) are dummy variable indicators for being an internal migrant. Internal migration is defined according to the birthplace. The dependent variables in columns (3) and (4) are dummy variable indicators for being an internal migrant. Internal migration is defined according to the district of residence in the period under consideration compared to the preceding district of residence. The two time periods correspond to the years 2005-2010 and the years 2011-2016. In the first row, the Syrians to Jordanians variable corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In the second row, the Syrians to population variable corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table A.9: Robustness checks using the 1997-2002 as the pre-period. Individual level regressions

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.003*	0.001	0.002*	0.008**	0.008***	0.001	-0.005
	[0.002]	[0.001]	[0.001]	[0.004]	[0.003]	[0.002]	[0.007]
Observations	37,572	37,288	37,346	9,921	9,831	9,841	7,710
R-squared	0.507	0.511	0.507	0.545	0.563	0.533	0.966
Panel B: Syrians to population impacts							
Syrians to population × year	0.003*	0.001	0.002*	0.009**	0.008***	0.001	-0.005
	[0.002]	[0.001]	[0.001]	[0.003]	[0.003]	[0.002]	[0.007]
Observations	37,572	37,288	37,346	9,921	9,831	9,841	7,710
R-squared	0.507	0.511	0.507	0.545	0.563	0.533	0.966
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87	87	87
Dependent variable mean	0.009	0.004	0.005	0.009	0.005	0.004	0.297

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. We use the period between 1997-2002 as the pre-period instead of the period between 2005-2010. The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 1997 and 2002 (before the war in Syria). The dependent variable in column (1) is a dummy variable indicator for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variable in column (4) is a dummy variable indicator for the probability of changing job location and are equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as individual and year fixed effects. Dependent variables' means in the pre-period are reported in the last row.

Table A.10: Robustness checks using pooled cross-sectional data. Individual level regressions

	(1) Internal Migrant	(2) Moving in for residence	(3) Moving out for residence	(4) Change job location	(5) Moving in for job	(6) Moving out for job	(7) Commuter
Panel A: Syrians to Jordanians impacts							
Syrians to Jordanians × year	0.002**	-0.001	0.001*	0.010*	0.010***	0.004	-0.011
	[0.001]	[0.001]	[0.001]	[0.006]	[0.002]	[0.005]	[0.022]
Observations	31,908	30,863	31,479	9,841	8,388	9,796	8,984
R-squared	0.022	0.015	0.029	0.200	0.020	0.198	0.028
Panel B: Syrians to population impacts							
Syrians to population × year	0.002**	-0.001	0.001*	0.011**	0.011***	0.005	-0.009
	[0.001]	[0.001]	[0.001]	[0.005]	[0.002]	[0.005]	[0.022]
Observations	31,908	30,863	31,479	9,841	8,388	9,796	8,984
R-squared	0.022	0.015	0.029	0.200	0.020	0.198	0.028
Individual controls × year	YES	YES	YES	YES	YES	YES	YES
Governorate controls × year	YES	YES	YES	YES	YES	YES	YES
Latitude × year	YES	YES	YES	YES	YES	YES	YES
Individual FE	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES
Number of clusters	87	87	87	87	87	87	87
Dependent variable mean	0.074	0.015	0.061	0.005	0.001	0.004	0.481

*** p<0.01, ** p<0.05, * p<0.1. Robust standard errors are clustered at the sub-district level.

Notes: Each cell represents a coefficient estimate from a Difference-in-Differences regression. We use pooled cross-sectional individual level data (the 2010 and 2016 JLMPS). The dependent variable in column (1) is a dummy variable indicator for being an internal migrant. Internal migration is defined according to the locality of residence in the period under consideration compared to the preceding locality of residence. The dependent variable in column (2) is a dummy variable indicator equal one if the individual moved into camp areas for residence, and equal zero for non-movers. The dependent variable in column (3) is a dummy variable indicator equal one if the individual moved out of camp areas for residence, and equal zero for non-movers. In columns (4) to (7), the sample is restricted to individuals aged between 15 and 64 years old who are currently working using the market definition of labor force participation (reference 3 months). The dependent variable in column (4) is a dummy variable indicator for the probability of changing job location and are equal one if the individual changed his district of work in the period under consideration compared to the preceding district of work. The dependent variable in column (5) is a dummy variable indicator equal one if the individual moved into camp areas for job, and equal zero for non-movers. The dependent variable in column (6) is a dummy variable indicator equal one if the individual moved out of camp areas for job, and equal zero for non-movers. In column (7), we define a commuter as an individual who is working in a district that is different from his district of residence, in any given year for the two periods under consideration. In Panel A, the main variable of interest is the share of Syrians to Jordanians, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by the number of Jordanians at the sub-district level (from the 2004 Jordanian Census). In Panel B, the main variable of interest is the share of Syrians to population, which corresponds to the total number of Syrian inhabitants at the sub-district level (from the 2015 Jordanian Census), normalized by total population at the sub-district level (from the 2004 Jordanian Census). The year dummy is equal to one for the period between 2011 and 2016 (after the war in Syria) and zero for the period between 2005 and 2010 (before the war in Syria). Regressions include pre-determined individual controls interacted with the year dummy. Individual controls are the following: four dummies for the individual's highest level of education attainment prior to 2011 (no education, basic education, secondary education and above secondary education), as well as three dummies for the region of birth (Central, North, and South). The regressions also control for pre-determined governorate level covariates derived from the 2004 Jordanian Census interacted with the year dummy and they include percent of individuals who own their dwelling, percent of individuals with electricity access, percent of individuals with piped water supply, the percent of individuals connected to a sewage system, the percent of individuals aged above 35 years old, male labor force participation rate and female labor force participation rate. The regressions also include district's latitude interacted with a year dummy, as well as year fixed effects. Dependent variables' means in the pre-period are reported in the last row.