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Ibrahim Alhawarin
Al-Hussein Bin Talal University

Ahmed Elsayed
IZA

Ragui Assaad
University of Minnesota and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Migration Shocks and Housing: Short-Run Impact of the Syrian Refugee Crisis in Jordan*

This paper investigates the impact of migration shocks on housing conditions and rental prices for the local population. The identification comes from the regional variation in the large influx of Syrian refugees to Jordan in the wake of the Syrian conflict which started in 2011. Combining detailed household-level surveys with information on where Syrian refugees are concentrated, we employ a difference-in-difference approach and show that the influx had negative impacts on housing quality and increased the rents paid by local households. Residential mobility also increased in response to the flow of refugees, and this could have acted as a channel through which housing quality decreased and may have attenuated the impact on rents. The effects are more pronounced among poorer and less-educated households, those who are arguably in competition with refugees for housing.

JEL Classification: O18, R21, R23

Keywords: migration, Syrian refugee crisis, housing, Jordan

Corresponding author:
Ahmed Elsayed
IZA
Schaumburg-Lippe-Strasse 5-9
53113 Bonn
Germany

E-mail: elsayed@iza.org

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1. Introduction

The eruption of the Syrian conflict in 2011 has caused a massive regional displacement of Syrian refugees. Most of those who left the country sought shelter in neighboring countries like Turkey, Lebanon and Jordan. With the assistance of the international community, these countries have expended a significant amount of resources to meet the social service needs of incoming refugees. Jordan, for instance, hosts around 660,000 registered Syrian refugees, 80 percent of whom live outside official refugee camps (UNHCR 2019).[1] These refugees mostly flowed to communities close to the official refugee camps and those close to the Syrian border, which have longstanding ties to Syria, where they constituted a substantial increment to the population. They also flowed to the Amman metropolitan area, the center of gravity of the Jordanian economy.

Using geographical variation in the exposure to refugees, this paper aims to estimate the causal impact of the influx of Syrian refugees on housing outcomes in Jordan. We combine data on the share of Syrian refugees across different localities (and districts) from the 2004 and 2015 population censuses with panel data on several housing outcomes from the 2010 and 2016 waves of the Jordan Labor Market Panel Survey (JLMPS), as well as repeated cross-section data from the 2006 and 2013 rounds of the Jordan Household Expenditure and Income Survey (HEIS).[2] Like most of the studies in this literature, we employ a difference in difference approach to evaluate the change in housing conditions and rental prices in areas with relatively higher flows of Syrian refugees compared to areas with relatively lower flows of Syrian refugees.

[1] The 2015 Population Census of Jordan estimates the number of Syrians in Jordan to be much higher at 1.3 million, corresponding to 13.3% of the total population of Jordan at the time, making Jordan one of the largest host countries relative to its own population. See Krafft, Razzaz, Keo, & Assaad (2019) for a discussion of the various estimates of Syrian refugees in Jordan.
[2] We use the most detailed geographic level available in each dataset: localities in JLMPS and districts in HEIS.

The main identifying assumption in such empirical analysis is that high-refugee and low-refugee localities (districts) would have witnessed similar housing trends in the absence of the influx of refugees. To account for the possibility of differential time trends across broader regions of the country, we include governorate (province) level time trends, which would enable us to capture any potential variations between high- and low-refugee localities/districts within the same governorate. We also leverage earlier waves of HEIS to show suggestive evidence that there are no significant differences in the time trends of housing outcomes across high- and low-influx governorates prior to the influx.

We show that the refugee influx had negative impacts on housing quality, and positive impacts on rental prices. The impact is robust to the inclusion of governorate-specific time-trends as well as to accounting for the possible endogeneity of the refugees' location decisions using instrumental variable methods. The impacts are more pronounced among poorer and lower-educated households, i.e., groups who are arguably in competition with refugees for housing. We further show that exposure to the refugee influx also increases the probability of residential mobility of locals across localities, but from very low initial levels.

While the vast majority of studies examine the labor market consequences of refugee shocks, a few papers focus on the effects on housing markets in host communities (e.g., Alix-Garcia, Bartlett, & Saah, 2012; Balkan, Tok, Torun, & Tumen, 2018; Depetris-Chauvin & Santos, 2018; Kürschner & Kvasnicka, 2018). While most of these papers find positive effects on housing prices and rents, those that examine local level as opposed to regional level effects often find negative effects due to the mobility response of natives. Existing studies also differ in terms of whether they examine short- vs long-run effects of migration and refugee shocks.

We contribute to this literature in a number of ways. First, this is the first paper that looks at the case of Jordan, where the size of the influx is much larger relative to the native population compared to countries covered by existing studies. Second, existing studies have differed in their conclusions on the effect of migration shocks on housing outcomes depending on the geographical scale they have examined. At least for some of the outcomes, we are able to examine effects at two geographic levels: the locality level, which approximates local and neighborhood-level effects, and the district level, which approximates metropolitan and regional level effects.[3] Unlike other studies, we do not find differences in the sign of the effects at these two levels, which we attribute to the limited mobility response of natives. Because Syrians and Jordanians share the same culture and language, and often the same tribal and family roots, it was easier for Syrians to integrate in Jordanian communities leading to an attenuated mobility response of natives from neighborhoods where the refugees settled. Third, the paper is not limited to analyzing the effect of migration shocks on rental prices, but also examines effects on housing quality, and type of tenancy. Finally, we provide direct evidence on the impact of the migration shock on the residential mobility of natives.

Because our data is from one to four years following the major influx of Syrians into Jordan, we are, by necessity, estimating the relatively short-term impact of the migration shock. Our analysis of effects on rental values is very short-run since it involves data from the year in which the bulk of refugees arrived (2013), but our analysis of effects on other outcomes such as housing quality, quantity, and type of tenancy is more medium-term since it is using data from 2016/17.

[3] The top four levels of Jordan's administrative geography are governorates, districts, sub-districts and localities. As of 2015, there were 12 governorates, 51 districts, 89 sub-districts, and 983 localities.

The paper adds to a series of studies examining the effects of the Syrian refugees on different outcomes in Jordan including employment and wages of Jordanians (Fallah, Krafft, & Wahba, 2019), employment outcomes for migrants (Malaeb & Wahba, 2018), internal mobility of Jordanians (El-Mallakh & Wahba 2018), and education outcomes (Assaad, Ginn, & Saleh, 2018).

The rest of the paper is structured as follows. Section 2 further reviews the previous related literature and explains the context of refugees and housing in Jordan. Section 3 describes the data used, the outcome variables and descriptive statistics. Section 4 explains the identification strategy. Results are presented in Section 5, and Section 6 summarizes the main findings.

2. Background

2.1 Related literature

The literature on the impact of forced migration on host communities has been growing rapidly in recent years as attested by two recent literature reviews (Becker & Ferrara, 2019; Verme & Schuettler, 2019). According to Verme & Schuettler (2019), the rate of papers published on this topic accelerated dramatically since 2011, from about one paper per year to ten per year, in part due to the onset of the Syrian refugee crisis. These two literature surveys identify 19 papers on the impact of the Syrian refugee influx on host countries, most of which are on Turkey (11 papers), some on Jordan (listed above), and a small handful on Germany. Globally, Verme & Schuettler's (2019) meta-analysis covers 762 results of which fewer than one in five show negative and significant results; about half show positive and significant results and the remaining show insignificant results.[4]

[4] Most of the available literature on forced, as well as voluntary, migration examines employment and wage effects (For a detailed review see Becker & Ferrara (2019).

There is a small, yet growing, literature on the impact of migration on housing markets for locals. Standard economic theory suggests that immigration boosts housing demand instantaneously, while the housing supply may require a long time to respond. Hence, studies in this field are based on the theoretical prediction that such population inflows drive up housing prices and rents. Yet, the available literature provides mixed evidence and the effects vary spatially (neighborhood vs metropolitan level) and temporally (short vs. long-run effects). Saiz (2003) who studied the long-run metropolitan level effects of the inflow of Cuban immigrants to Miami resulting from the Mariel boatlift of 1980 finds positive effects on housing prices and rents. He specifically finds large increases in rents for low-quality units and poor residents. He extends these findings to other US metropolitan areas in a subsequent paper (Saiz, 2007). Examining the long-run effects of immigration on US housing markets using spatial econometric models, Mussa, Nwaogu, & Pozo, (2017) find that immigration inflows not only increase house prices and rents in metropolitan areas in which immigrants cluster but also in nearby metropolitan areas. In a similar analysis at the provincial level for Spain, Gonzalez & Ortega (2013) find that immigration increased housing prices and rents over the period between 2000 and 2010. Also working at the regional level and using vector autoregression estimation methods, d'Albis & Boubtane (2019) find no causality running from immigration to housing values in France, but suggest instead that the relationship runs in the opposite direction with French regions with lower rents attracting larger shares of immigrants.

There are fewer studies specifically studying the effects of internally displaced persons (IDPs) or refugees on housing prices and rents in developing countries. Depetris-Chauvin & Santos (2018) who examine the long-run effects of the influx of IDPs on rental prices in Colombian municipalities from 1999 to 2014 find that IDP inflows increase rental prices of low-income units,

while decreasing those of high-income units. They attribute the later result to the exodus of high-income residents in response to rising crime rates associated with the arrival of IDPs. Studying the short-run effects of the Syrian refugee influx on housing prices in Turkey, Balkan, Tok, Torun, & Tumen (2018) come to almost the opposite conclusion. Using provincial-level data, they find that while housing rents increased modestly in provinces exposed to refugee inflows, most of the increase was due to increased rents in high-quality units; low-quality units actually experienced a decline in rent. They attribute this result to the flight of natives to neighborhoods with higher quality amenities away from where the refugees are concentrated. In the context of Jordan, a recent paper by Rozo and Sviatschi (2020) documents an increase in housing expenditures for Jordanians living near the refugee camps and an increase in rental income of individuals who own real estate property. These effects are explained by the large spike in rental prices that resulted from the higher demand for housing units and the rather unresponsive housing supply in refugee hosting areas.

Although most of the evidence they present is anecdotal in nature, Alix-Garcia, Bartlett, & Saah (2012) suggest that the increase in housing values for urban residents in Darfur after the large influx of IDPs was primarily driven by the arrival of humanitarian workers and NGOs rather than the IDPs themselves, who were mostly housed in camps. They suggest that local residents in Darfur responded to these increased rents by downgrading to lower quality rental housing.

Studies that focus at the neighborhood or local level tend to focus on the impact on housing prices and they show negative effects in areas with large numbers of refugees. Studying the effects of immigration on Italian cities, Accetturo et al. (2014) find that immigration reduces housing prices in immigrant neighborhoods by leading to the departure of natives in reaction to negative perceptions of the amenity of such housing. Examining the effects of immigration on housing prices in the UK, Sá (2015) shows that immigration drives out natives from immigrant areas,

resulting in a negative income effect on housing prices. Using county-level data to study the short-run local impacts of Syrian refugee flows in Germany, Kürschner & Kvasnicka (2018) also find sizable negative effects of immigration on rental prices. However, they find that these effects are somewhat attenuated when refugees are not highly concentrated in specific neighborhoods.

We conclude from this review that the geographic scale of the analysis is a critical determinant of the direction of the effect. At the rather broad regional/metropolitan levels, the mobility response of natives is more limited, leading to an increase in rental prices both in the short and long run, but the type of unit affected may depend on the income level of the natives who either move out or change their housing preferences in response to the migration shock. At the neighborhood/local level, native flight can be more pronounced, resulting in a possible decrease in housing rents. In such a situation, the mobility response of natives may not simply be driven by the scarcity of housing and the rising prices, but by the perception of reduced amenity of the neighborhoods in which immigrants settle. In the long-run, these negative effects can grow as immigrant neighborhoods become more segregated. We suggest that in Jordan, the mobility response of natives is likely attenuated by the cultural, linguistic and familial proximity of Jordanians and Syrian refugees, which may increase competition over low-cost housing even at the neighborhood level, resulting in increased housing scarcity at all levels.

While studies that focus on more localized effects of immigration on housing markets refer to the perceived deterioration of local amenities and services as a driver of native flight and thus falling housing prices, few studies directly examine the effects of immigration on the housing quality of natives, something that we attempt in this study.

2.2 Syrian refugees in Jordan

Jordan has a long history as a place of refuge for people fleeing conflict in the surrounding region. Jordan welcomed large numbers of Palestinians after the 1948 and 1967 Arab-Israeli wars. It welcomed back many Palestinians and Jordanians fleeing Iraq after the first Gulf War in 1991 and large flow of Iraqi refugees following the US invasion of Iraq in 2003. The most recent wave of refugee (which is the focus of this paper) took place in the wake of the civil war that followed the Arab Spring uprisings in Syria, which took the lives of hundreds of thousands and forced millions to flee the country.[5]

As conflict progressed, Syrian refugees began arriving in large numbers to Jordan in 2012 and 2013. According to UNHCR, the number of registered Syrian refugees in Jordan increased from nearly 3,000 in January 2012 to 120 thousand in January 2013 to 576 thousand in January 2014 (UNHCR, 2020). The number of registered Syrian refugees then stabilized at about 650 thousand by mid-2016. Starting in 2014, Syrian refugees had to first head to one of three official refugee camps upon arrival to the country: Za'atari (in Mafraq goverorate), by far the largest, Azraq, and the Emirati-Jordanian camps (both in Zarqa governorate) (see map in Figure 1).[6] They could seek permission to leave camps by obtaining formal sponsorship from a relative already living outside camps. Many of those unable to obtain such formal sponsorships left the camps without authorization, but that prevented them from being able to obtain the Ministry of Interior service card and the UNHCR asylum-seeker certificates, which are both necessary to get access to a number of public services (Salemi, Bowman, & Compton, 2018). According to JLMPS 2016, only 18% of refugees reported that they live in a camp, and 64% said they were never in a camp (Krafft, Sieverding, Salemi, & Keo, 2018). Figure 1 shows the prevalence of Syrian households at

[5] https://edition.cnn.com/specials/middleeast/syria
[6] The location of the Emirati-Jordanian camp could not be precisely determined, but it is known to be fairly close to the Azraq camp.

the sub-district level in 2015. The figure clearly shows that the proportion of households that is Syrian is highest in the two sub-districts which contain the refugee camps, followed by contiguous sub-districts, and sub-districts in or near the northern city of Irbid and the capital Amman.

Prior to the Syrian civil war, Syrian in Jordan were primarily temporary economic migrants and were concentrated in the Amman Metropolitan area. According to the 2004 Population Census, there were 38 thousand Syrians in Jordan in 2004, making up 0.7 percent of the total population and 9.7 percent of non-Jordanians in Jordan (Department of Statistics (Jordan), 2004). The Syrian population in 2004 was majority male (59 percent), predominantly aged fifteen and older (70 percent), and concentrated in the governorates of Amman, Balqa and Zarqa, which roughly corresponds to the Amman Metropolitan area (71 percent).

After the Syrian refugee influx, the Syrian population in Jordan was made up primarily of refugees, with much larger shares of women and children and a higher concentration in the Northern region, close to the border with Syria and the major refugee camps. According to the 2015 Population Census, there were 1.26 million Syrians in Jordan in 2015, of which 953 thousand (75 percent) were recorded by the census as refugees (Department of Statistics (Jordan), 2015). As such, Syrians made up 13 percent of the total population of Jordan and 43 percent of non-Jordanians in Jordan in 2015. Males made up just under 50 percent of all Syrians in Jordan in 2015 and individuals 15 and older made up 52 percent of the total.[7] The share of refugees in the Amman Metropolitan Area declined from 71 percent in 2004 to 50 percent in 2015 and the share in the Northern governorates, particularly Irbid and Mafraq, increased from 22 percent in 2004 to 46 percent in 2015.

[7] The latter figure is for 2016 and is from the JLMPS.

2.3 Housing conditions in Jordan

Jordan's housing market compares favorably to those of comparator countries in the Middle East and North Africa (MENA) region, with relatively good affordability, high levels of home ownership, relatively good availability of finance and low rates of informality. According to Erbaş & Nothaft (2005), who analyze data from the early 1990s, Jordan's house-price-to-income ratio at 3 was one half to one fourth of what it was in Algeria, Egypt, Morocco and Tunisia. The home-ownership rate, at 75 percent, was substantially higher than in these comparator countries, with the exception of Tunisia. Using somewhat more recent data from the mid to late 2000s, Beidas-Strom, Lian, & Maseeh (2009) also show Jordan with a 71 percent home-ownership rate; one of the highest in the MENA region, with only Syria, Tunisia and Qatar having higher rates. Rental rates have been increasing rapidly in recent years, going from 24 percent in 2004 to 30 percent in 2015 (World Bank, 2018). Rental rates decrease steadily with household income, with 57 percent of household in the lowest income decile in 2015 renting as compared to 13 percent of those in the highest decile. The growth in rental units also appears to be greatest in regions that have seen the most rapid growth in the non-Jordanian population (Ibid.). We thus expect rental rates to be relatively high for the low-income Jordanian households that are most likely to consume the kinds of housing that refugees would demand.

Jordan also fares well with regard to the availability of mortgage financing, with a ratio of mortgage loans to total loans of nearly 20 percent, compared to 7 percent in Egypt and Morocco, and 8 percent in Tunisia in 1990 (Erbaş & Nothaft, 2005). However, mortgage finance continues to be very limited for low-income households. According to the World Bank (2018), households in the bottom two deciles of the expenditure distribution have no access to housing finance under current finance conditions. Those in the 3rd to the 5th decile can only obtain finance for units of

under 100 m^2. Rental housing is relatively more affordable with rentals being below a third of family income in all governorates except for Amman and Aqaba (Ibid.).

Despite its relatively healthy housing market, the rapid population growth, brought about by the unprecedented growth in the number of non-Jordanians, has created excess demand for housing in the short run, raising rental values in recent years, especially at the low end of the market. According to the population census, Jordan's population has grown at an average rate of close to 6 percent per year from 2004 to 2015, with the number of Jordanian's growing at about 3 percent per year and that of non-Jordanians at an average of 22 percent per year. Northern governorates such as Irbid, Mafraq and Ajloun where Syrian refugees have settled in large numbers have seen growth of their non-Jordanian population of more than 30 percent per annum (World Bank, 2018). From 2004 to 2015, the number of housing units in Jordan has grown from 1.2 to 2.3 million units, or at an average annual rate of 5.09 percent. The number of rental units more than doubled from 223,000 in 2004 to 540,000 in 2015, an annual rate of growth of 8 percent. Most of these new rental units were concentrated in the governorates of Amman (48 percent), Irbid (17 percent) and Zarqa (13 percent) (Irbid.). These percentages correspond almost exactly to the concentration of non-Jordanian residents in Jordan according to the 2015 population census (Amman 50 percent, Irbid 16 percent, and Zarqa 15 percent). Mafraq, the governorate that hosts the Za'atari refugee camp and that has seen the largest growth rate in the non-Jordanian population, also saw the largest growth rate in rental housing at 15.1 percent per annum from 2004 to 2015 (Ibid.).

Despite this healthy supply response to the growing demand for housing, the World Bank (2018) estimates the quantitative housing deficit in Jordan, as measured by two or more families sharing the same conventional dwelling, to be 10 percent nationally. While two thirds of this deficit

is made up of non-Jordanian households, Jordanians still account for a third of it. Overcrowding, defined as more than 2.9 persons per room, was measured at 6 percent of all households in 2015. Both of these estimates exclude the Syrian refugee camps. According to the World Bank (2018), rental prices doubled from 2004 to 2015, with an average annual rate of increase of 6.3 percent, compared to an inflation rate of 4.4 percent. This pattern was more pronounced in regions with more inflows of Syrian refugees: rental prices tripled in Mafraq and more than doubled in Amman and Zarqa (Ibid.).

3. Data and descriptive statistics

The paper leverages two unique household-level data sources: (1) The 2010 and 2016 waves of the Jordan Labor Market Panel Survey (JLMPS), and (2) the 2006 and 2013 rounds of the Jordan Household Expenditure and Income Survey (HEIS). The JLMPS was designed and implemented by the Economic Research Forum (ERF) in cooperation with the Jordanian Department of Statistics (OAMDI, 2018). The dataset contains detailed information on demographic characteristics (e.g., employment status, household composition, household assets, education history, etc.).[8] More importantly for the purpose of the current study, it contains detailed data on housing and living conditions including information on dwelling ownership, area of dwelling, access to infrastructure (e.g., public water, public sewage, etc.) and quality of dwelling (e.g., type of building materials used in walls, floor, roof, etc.). Moreover, it contains geographic information down to the locality of residence (with a total of 224 randomly selected localities represented in the sample, out of a total of 983 localities in Jordan). We also conduct our analysis with exposure to the Syrian influx measured at the district level so as to compare the effects of the

[8] See Krafft & Assaad (2018) for a more complete description of the JLMPS 2016 and the construction of the panel data from 2010 to 2016.

influx across the two geographic levels. All 51 districts in Jordan are represented in the JLMPS sample. To address the possibility of selective attrition from the panel, we use panel weights with the JLMPS data which account for attrition based on observable characteristics (see Krafft & Assaad (2018) for more details). The panel data is therefore representative of Jordanian households that existed in 2010 and does not account for new household formation between 2010 and 2016.

We use the panel data to examine the impact of the Syrian influx on three main outcome variables from JLMPS. First, a housing quality index (HQI), measured using factor analysis to reduce the number of housing characteristics and amenities into a single housing quality dimension. We include the following components: floor type, water facility type (public, well, tanker or other), type of heating (central heating, gas, kerosene, electric, solar, wood and coal or others), type of sewage (public system, ground absorbency, none), garbage (open/closed dumpster, burnt or buried, public collector and other). We create a dummy variable for each of these aspects that takes the value 1 if the quality is high, and zero otherwise. Then we use these variables in predicting a housing quality index based on the first factor produced by the factor analysis. Table A1 in the Appendix lists the items and shows how each indicator was calculated. Second, we analyze the impact on the dwelling area in square meters per household member to see how overcrowding was affected by the influx of refugees. Third, we examine the pattern of owning vs. renting of a housing unit, measured as a dummy variable that takes the value 1 if the household owns the unit, and zero otherwise. We limit the analyses to the households for whom we have complete information on housing outcomes across the two waves. This results in a final sample of 6,874 observations for 3,437 households observed in both waves.

The 2016 wave of JLMPS also contains a retrospective module with detailed information on residential mobility of individuals from birth onwards. We exploit this module to investigate

whether households who lived in high-refugee localities prior to the influx were more likely to change their locality of residence in response to the influx.

Despite the richness of JLMPS, it does not contain consistent measures of the actual rent paid by households across the two waves. Therefore, we complement the analyses with data from the Jordan Household Expenditure and Income Survey (HEIS) for the years 2006 and 2013. The HEIS is a nationally-representative household survey administered by the Jordanian Department of Statistics (DoS). The integrated public use samples are made available by the Economic Research Forum (OAMDI, 2017). The data provides information on several aspects related to consumption, spending, income, and living conditions of households in Jordan. The survey was conducted in four rounds: 2002, 2006, 2010, and 2013. Only the two rounds of 2006 and 2013 include district identifiers (with all 51 districts in Jordan represented in the sample). The other rounds only contain geographic identifiers for the more aggregated level of governorate (12 governorates). Therefore, we only use the 2006 and 2013 rounds for the purpose of our analyses, but exploit all four rounds to test the validity of the common trends assumption at the governorate level.

We evaluate the impact of the Syrian refugee influx on two main outcome variables from HEIS. First, the number of rooms per household member, which allows us to get a comparable measure to the dwelling area per household member from JLMPS. Second, log rent, measured by the logged real value of the monthly rent paid by households (if they rent the housing unit). We limit the analyses to households that have complete information on the variables of interest. This leaves us with 7,722 observations for the model of the number of rooms and 1,544 observations on the model for rent, which is only applicable to rent-paying households.

The share of Syrians is calculated as the number of Syrian households divided by total number of households in a region (locality or district in JLMPS and district in HEIS). The values are calculated from the 2004 and 2015 rounds of the Jordanian population census. Due to the absence of data on refugees at these fine geographic level in the census, we use the total number of Syrian households as a proxy for Syrian refugees. As mentioned earlier, 75 percent of Syrians in Jordan are recorded as refugees by the 2015 census. The main variable quantifying the exposure to the Syrian refugee influx is the difference in the share of Syrians between 2004 and 2015, standardized across localities and districts by subtracting the mean difference across localities/districts and dividing by the standard deviation. To capture any non-linearities in the effect, we also specify it in the form of quartiles of the distribution across localities/districts.

Table A2 in the Appendix shows the share of Syrians at the locality and district levels from the 2004 and 2015 waves of the census. The table clearly shows that prior to the recent influx, the share of Syrian households across Jordanian localities and districts was very small with the average locality having 0.6 percent of households being Syrian in 2004, and the average district 0.8 percent. The range across localities in 2004 was 0 percent to 7.7 percent. The range across districts was 0.5 percent to 4 percent. In 2015 the average locality had a share of Syrians of 9.3 percent and the average district had a share of 10.9 percent. As an indication of how exposure to the Syrian refugee influx varied across locations in Jordan, the range varied from 0 to 52 percent across localities in 2015 and 0.8 to 60 percent across districts.[9]

Table 1 shows descriptive statistics of the outcome variable and basic covariates prior to the crisis in areas (localities and districts) that later had below vs. median or above shares of Syrian

[9] The extreme values come from the localities and districts which host the three main refugee camps in the country. As a robustness check, we run the analyses after removing the regions with extreme share of Syrians. The results are qualitatively similar.

households. For most outcomes, areas with above median exposure to refugees were more advantaged prior to the influx: they had higher housing quality and dwelling areas per household member. However, they had lower rates of home ownership. According to HEIS data, monthly rents in above-median exposure areas were also significantly higher than those in below-median exposure areas. Locals who live in these areas were, on average, more educated, economically better off, and had smaller households.

The table further shows that the majority of households are headed by men, with only 13 percent households headed by women in the above-median areas and 11 percent in the below-median areas in the JLMPS sample (12 percent across the two groups in the HEIS sample). The average age of household heads is higher in median or above areas (49.5 years in JLMPS and 49 years in HEIS) compared to below median areas (48 years in both JLMPS and HEIS). Using the retrospective data on residential mobility from JLMPS, the table shows that the percentage of households that changed the residential locality prior to 2011 and in 2011 or later in both sets of areas. The percentage of households who changed locality prior to 2011 (between 2006 and 2010) in below and above median localities was the same and was very low at 1 percent, however, it increased to 2 percent (3 percent) in below-median (above-median) localities after 2011.

4. Empirical strategy

Employing a difference-in-difference approach, the effect of the influx of refugees can be estimated using the following model:

$$H_{itl} = \beta_0 + \gamma \Delta S_l + \theta T * \Delta S_l + \rho L_{lt} + \mu_t T * R_r + \vartheta \mathrm{i} + \varepsilon_{itl} \qquad (1)$$

where H_{itl} are housing outcomes for household *i* at time *t* in locality/district *l*. Since the JLMPS data is panel data, the same household is observed twice, once at T = 0 (2010) and once at T=1

(2016). In the HEIS data, which is pooled cross-section data, different households are observed at time T=0 (2006) and T=1 (2013). ΔS_l is the difference in the share of Syrian households in an area (locality in JLMPS, district in HEIS) between 2004 and 2015. As mentioned above, we specify this difference as both a continuous standardized variable and as a set of quartile dummies. T is a dummy variable that takes the value 1 if the observation is post-influx, 0 otherwise. Thus θ, is the coefficient of interest that captures the effect of the refugee crisis. L_{lt} denotes area (locality/district) fixed effects. R_r are governorate dummies, so that $T * R_r$ are governorate-specific time trends, which we include to account for the possibility of differential time trends across governorates that may result from time-varying unobservables (see Tumen, 2019). This term is included to relax the common-trends assumption across treated and control areas within governorates. ϑ_i is a household fixed effect (FE), which is only included in the panel data model that uses JLMPS data. Finally, ε_{itl} is the error-term clustered at the locality/district level.[10] Because regular standard errors clustered at the district level (for the HEIS) are not reliable when the number of districts is low, wild bootstrapped standard errors are also estimated.

The effect of the influx of refugees is expected to be particularly pronounced among the local groups who are most likely to be in direct competition with refugees in the housing market, namely poorer and lower socio-economic background households. To test this possibility, we analyze these heterogeneous effects by interacting the coefficient of interest θ_t with a dummy variable for different groups based on education of the head and financial situation of the household.[11]

[10] The findings are robust to controlling for a large set of time-varying household controls including age, education, employment status of the head of the household, household size, and wealth quintile of the household in JLMPS, household disposable income in HEIS. The outcomes are also robust for including a dummy for gender of the head of the household in the non-panel models

[11] Household financial situation is measured in a binary fashion. Households are designated as "poor" if their wealth index in the JLMPS data is below the median level or if the income level in the HEIS data is below the median level. The remaining

Since the majority of refugees do not live in camps, they have some choice as to where to locate and may select into areas with differential housing conditions (e.g., better quality, greater supply, etc.). Table 1 already suggests that such a selection pattern may exist. Although identification does not require that refugee location is randomly assigned, we analyze the sensitivity of our results to the issue of self-selection as an additional robustness test. Similar to the literature (e.g., Del Carpio and Wagner 2016; Fallah et al. 2019), we instrument for the share of refugees in locality/district using the distance in kilometers from the locality/district to the Za'atari refugee camp, which is by far the largest of the three official refugee camps.[12] The identifying assumption here is that proximity to the camp affects where refugees decide to settle, but would not directly affect the outcomes of interest.

Locals could respond to the refugee crisis by moving out of regions with exposure to refugees. We test this possibility by exploiting a rich retrospective section of the 2016 wave of the JLMPS survey on residential mobility from time of birth to the present. We run the following regression for the 5,375 individuals for whom we have information on residential mobility:

$$M_i = \alpha + \partial T_l + \varphi_j Z_i + v_i \qquad (2)$$

where *M* is a dummy variable that takes the value 1 if a person *i* migrated from her place of birth in 2011 (the year the Syrian civil war started) or later, zero otherwise. T_l is a dummy variable that takes the value 1 if the person was born in a locality that later received a large number of refugees

households are designated as "rich." The wealth index in the JLMPS data is provided in the public use data and is a standardized index estimated by undertaking factor analysis on a series of household durables. See Krafft & Assaad (2018) for more details.

[12] The Za'atari camp, the largest of the three refugee camps, was opened in 2012 in response to the rapid inflow of refugees from Syria. It is located near the Syrian borders (See map in Figure 1). Its placement is plausibly assumed to be unrelated to housing market conditions.

(above median), 0 otherwise.[13] Z_i is a vector of *j* individual-level controls including age, education, employment status, household size, and the wealth quintile of the individual's household. v_i is a random error term clustered at the locality level. We also use similar equation to test if there are differences between treated and control regions in the pattern of native flights prior to the influx by replacing $M_i$with the probability to migrate prior to 2011,which is estimated by a dummy variable that takes the value 1 if the person ever migrated prior to 2011, and zero otherwise.

To test our identifying assumption that housing outcomes across treated and control areas would have followed parallel trends in the absence of the refugee influx, we need to conduct a placebo test using data from the period prior to the influx. We are unable to do this with the JLMPS since it only consists of two waves. HEIS data on the other hand is available for four rounds, three of which — 2002, 2006 and 2010 precede the influx. An unfortunate limitation of this data, however, is that district identifiers are only available for the 2006 and 2013 rounds, and missing for 2002 and 2010. Since all four rounds of HEIS have governorate identifiers, we use this information to test the parallel trends assumption at governorate level. Figure 2 descriptively shows the trends in the number of rooms per household member and the log rent by showing the average of these two outcomes for governorates that received above-median flow of Syrians and those that received below-median flows across years. The graph clearly shows that after the influx (the 2013 wave) the two groups converged particularly in terms of number of rooms per household member. Prior to the influx, the trend was not different across the two groups. We also run a statistical test for common trends assumption by estimating the model below:

[13] The question on mobility asks individuals about the year of moving from place of birth. This reduces the endogeneity associated with multiple moves. Data from JLMPS shows that internal mobility is generally low in Jordan, with the percentage of individuals who ever moved from place of birth is less than 9%.

$$H_{itr} = \alpha + \sum_{t=2002}^{2013} \delta_t + \beta \Delta S_r + \sum_{t=2002}^{2013} \delta_t \Delta S_r + u_{itr} \quad (3)$$

where H_{itr} are the housing outcomes for household *i* at time *t* in governorate *r*. The δ_t's are round fixed effects for the four waves of the HEIS in 2002, 2006, 2010 and 2013, ΔS_r is the change in the share of Syrian refugees in governorate *r* estimated by the difference in the share of Syrian households within governorates between 2004 and 2015 from the census. Similar to the analysis above, it is time-constant and is standardized to have a mean of zero and standard deviation of one. We select the 2010 round as the reference round for which δ_t and τ_t are set to zero. The interaction term between δ_t dummies and the share of Syrian refugees ΔS_r captures the change in the housing outcomes for households in response to the change over time in the share of Syrian refugees. If any of these coefficients is significant for the rounds prior to the influx, this would suggest that the equal trends assumption across governorates is violated prior to the influx.

The results from this regression are shown in Table A3 in the Appendix. None of the coefficients of the interaction terms between the round dummy and the treatment dummy is statistically significant, suggesting that the equal trend assumption holds in the period prior to the influx at least across governorates. While this evidence is in favor of the equal-trends assumption, it should only be taken as suggestive since we are unable to carry out the placebo test at the district level, but only at the broad governorate level. In fact, at the governorate level, difference-in-difference estimated of the effect of the Syrian influx (measured from 2010 to 2013) are statistically insignificant (Table A3).

5. Results

5.1 Baseline model

Table 2 shows the estimates from Equation 1. The first three columns show coefficient estimates from a panel data fixed effects regression for various housing outcomes using the JLMPS dataset. The exposure to the Syrian refugee influx is first specified continuously as the standardized value of the change in the share of Syrian households between 2004 and 2015 at the locality level (Panel A) and then in quartiles of that variable to detect possible non-linearities in the effect (Panel B). Quartiles are ranked in ascending order: quartile 1 contains the bottom 25% of regions (localities or districts) ranked by the change in share of Syrian households, while quartile 4 consists of regions in the top 25% of the distribution of regions). Columns 4 and 5 show the coefficients from an OLS difference-in-difference model on two additional outcomes from the HEIS data, with the exposure variables estimated at the district level. The standard errors are clustered at the locality level for JLMPS and district level for HEIS. Given the relatively small number of districts (51), estimates obtained from HEIS could be prone to downward-biased cluster-robust standard errors (Cameron & Miller, 2015). To deal with this issue, we apply the wild cluster bootstrap technique recommended by Cameron, Gelbach, & Miller, (2008) and Cameron and Miller (2015). Standard errors clustered at the district level are reported in parentheses and wild bootstrapped p-values are reported in square brackets for the coefficients of interest in all regressions based on HEIS data.

Table 2 shows that the Syrian refugee influx had a negative impact on the quality of housing. A one standard deviation increase in the change of the share of Syrian households at the locality level decreases the housing quality index (HQI) by 0.18 standard deviations. The decline in housing quality due to the influx is concentrated in the top quartile of localities (Panel B). There is, however, no significant effect of the influx on dwelling area per person or on the probability of home ownership. The large coefficients from the un-interacted change in the share of Syrians

should be interpreted with caution in the fixed effects model since they result from households that changed their locality of residence from 2010 to 2016. The un-interacted period dummy indicates that housing quality and log area per person declined over time on average for households that existed in 2010, an indication of increased crowding.

Estimates from the HEIS data show that the number of rooms per household member was not significantly affected by the refugee influx, but that there was a significant effect on real rents. A one standard deviation increase in the change of the share of Syrian households at the district level, raised real rents by 13 percent. The increase in rent is higher exclusively in districts in the top quartile in terms of the change in the share of Syrians; Jordanians who rent in the 4th quartile districts experienced increases in rental values of about 32 percent relative to those renting in districts in the bottom quartile. We repeated the estimates using the JLMPS data, but now specifying the exposure to the Syrian refugee influx at the district rather than the locality level. These estimates, shown in Table A4, show that the negative effect of the Syrian refugee influx on housing quality extends to the district level. The quartile estimates of the effects of the Syrian refugee influx on housing quality are larger than their locality level counterparts.[14] The novelty here is in the results for log-area per person when exposure to the Syrian influx is specified as quartiles of exposure rather than continuously. Although the effect remains statistically insignificant for the continuous measure, it becomes negative and statistically significant when exposure is specified as quartiles at the district level. All three quartiles experience a negative effect relative to the bottom quartile, with effects ranging from a 18-23 percent reduction in area per person.

[14] As in the case of the district-level estimates with the HEIS data, we report wild bootstrapped p-values on these coefficient estimates to address the fact that we cluster on a relatively small number of districts.

Next, we attempt to correct for the possible endogeneity of the Syrian settlement pattern by instrumenting for the exposure variable using the distance in kilometers to the Za'atari refugee camp. Estimates from Instrumental Variable (IV) models are shown in Table 3. As before the first three columns are from panel data models with household fixed effects using the JLMPS data, and the last two columns are from a two-stage least squares model using the HEIS data. In the first stage, the standardized change in the share of Syrians is regressed on the distance from the Za'atari camp, with the distance being set to zero in the pre-shock period. The first stage results confirm a negative and significant relationship between the distance to the Za'atari refugee camp and the change in the share of Syrian households in the locality/district. In the fixed effects panel data model estimated on JLMPS data, a one-kilometer increase in the distance between the camp and the locality reduces the change in the share of Syrian households in the locality by 0.009 standard deviations. In the two-stage least squares model using HEIS data, a one-kilometer increase in the distance between the camp and the district of residence is associated with a decline of 0.002 to 0.003 standard deviations in the change of the share of Syrian households in the district. The first stages passes the usual tests for the strength of the instrument. The Cragg-Donald Wald F-statistic is equal to 510.52 for the JLMPS panel data models, 605.63 for the rooms per person model and 107.68 for the log-rent model using the HEIS data, well above the critical levels needed for a strong instrument. The Anderson-Canon Chi-square test of under-identification clearly rejects the null that the model is under-identified.[15]

The second stage IV estimates are qualitatively similar to the non-IV estimates shown in Table 2 for the continuous exposure measure. For the JLMPS panel data models, the effect of exposure to the influx on housing quality is still negative and significant and larger in magnitude

[15] An over-identification test is not relevant here since we only have one instrumental variable.

than in the non-IV model. There is still no effect on log-area per person and on the probability of dwelling ownership. For the models using the HEIS data, the negative effect on log-rent is substantially larger than in the non-IV model and the effect on rooms per person is now negative and statistically significant.

The fact that the IV models produce larger effects on rent than those of the non-IV models suggests that there could be some selection in the Syrian's location decisions, with Syrians opting to settle in localities and districts with lower rents. The difference could also be due to the fact that the non-IV models estimate the average treatment effect (ATE) whereas the IV models estimate the local average treatment effect (LATE). The LATE measures the effect for compliers, that is localities and districts that attract Syrians primarily because they are close to the Za'atari camp. That effect could be different from the effect of exposure for non-compliers, locality and districts that would either attract Syrians anyway (such as Amman the capital) or ones that would not attract them irrespective of distance to Za'atari.

As a further check on the validity of our instrument, we examine the difference in pre-influx outcome variables across localities and districts with below-median and above-median distance to the Za'atari camp. Table A5 in the Appendix provides coefficient estimates of a simple regression of each outcome on a dummy variable indicating whether the locality/district is below median distance. The results show no evidence of significant differences in pre-influx outcomes except for log-rent, which is higher in areas closer to the camp, yet it is significant only at the 10% level. Even if such static outcome were different, however, our difference-in-difference methodology would account for that by differencing out the initial levels.

5.2 Heterogeneous effects: the role of socio-economic background

Given the fact that refugees compete for housing primarily at the low end of the housing market, one would expect that locals from lower socio-economic backgrounds would be more negatively affected by exposure to the refugee influx than ones from higher socio-economic backgrounds. To check this, we perform a heterogeneity analysis by household wealth and education of household head. We interact our treatment-time interaction variable separately with a dummy variable for poorer households (1 if below-median wealth in JLMPS; zero otherwise and 1 if below-median household disposable income in HEIS; zero otherwise), and dummy variable for lower education of household head (1 if below upper secondary; zero otherwise).

Table 4 shows the outcomes of the heterogeneity analysis. Panel A shows the effect for poor vs rich households and Panel B shows the effect for the households with low-educated vs. those with high-educated heads. The table shows that the negative (positive) effect of the refugees influx on housing quality index (rent) is more pronounced for the poorer and less-educated households. [16] The table further shows that the low educated (and to a lesser extent the poor) are affected negatively by the influx in terms of number of rooms per household member (estimated from the HEIS).

5.3 Residential mobility

Residential mobility could be another direct outcome of the refugee influx (as well as a channel through which housing outcomes are affected). Using retrospective data on the residential mobility of individuals from the 2016 wave of JLMPS, we compare the probability of moving out from the locality of residence after the influx of refugees (in the time period 2011-2016) for individuals who resided in high-influx vs. those in low-influx localities (defined as localities with

[16] Heterogeneity analyses by the gender of the head of the households show that the impact is mainly driven by male-headed households.

median or above vs. below median change in share of Syrian households). We also compare these patterns of migration to the ones that existed across the two types of localities prior to the refugee influx (for the time period 2005-2010), to check whether they are driven by the influx itself or by other pre-existing push and pull factors.

Table 5 shows estimates from a linear probability model of the likelihood of moving from one's locality of residence in 2011 or later i.e., in the wake of the refugee influx (Column 1) and between 2005 and 2010, i.e., prior to the refugee influx (Column 2) as specified in equation 2. Any move across locality boundaries is considered a move. Panel A shows the baseline estimates while Panel B shows the coefficients interacted with the wealth and education indicators to investigate whether there are heterogeneous effects. Column 1 shows that the probability that individuals would change their locality of birth in 2011 or later increases more significantly in localities of birth that have received above median influx of refugees. Residential mobility from these localities increased by about 1.7 percentage point relative to localities which received below median influx of refugees. This increase represents a near doubling of the migration rate in the treated localities relative to the rate prior to the Syrian influx, which was rather low at 1.4%. In contrast, as shown in column 2 of the table, there was no significant difference in migration rates from 2005 to 2010 between high and low influx areas. Our results are qualitatively similar to those of El-Mallakh & Wahba (2018) who estimate an increase of 9 to 12% in the probability that individuals will migrate across localities in Jordan for a one standard deviation increase in the share of Syrians across sub-districts (El-Mallakh & Wahba 2018).[17]

[17] The larger magnitude of the migration response in our estimates is due to differences in the specification of the treatment variable. We use a dummy indicating below or above median change in the share of Syrians measured at the locality level, whereas El-Mallakh and Wahba (2018) use a one standard deviation increase in a continuous measures of the percent of Syrians measured at the sub-district level.

Column 2 shows the estimates for the difference in the probability to move across localities prior to the influx of refugees in the time period 2005-2010 for the localities which later received more refugees (median or above) relative to those which received fewer refugees (below median). The insignificant coefficient shows no difference in the probability to move from locality of birth between the two types of localities, suggesting no difference in the prior trend across the two types of localities.

The heterogeneity analyses in Panel B show that although poorer households have lower probability of moving to start with, their probability of moving is more affected by the refugee influx than the richer households, who are not significantly affected. However, results for education show no statistically significant difference between high-educated and low-educated heads of households in the pattern of residential mobility before or after the influx of refugees.

6. Concluding remarks

Using variation in the exposure to refugees across localities and districts, the aim of this paper is to estimate the causal impact of the influx of Syrian refugees on the housing outcomes of locals in Jordan. Combining data on the change in the share of Syrians from 2004 to 2015 at the locality and district levels from the population census with representative household-level data from two different multi-year surveys, we use a difference-in-difference approach to show that the influx of Syrian refugees had negative impacts on housing quality and a positive impact on rental prices. The impact is robust to controlling for differential trends at a higher geographic level (the governorate level) as well as for the possible endogeneity of the refugees' geographical settlement pattern. We also find that, as expected, the impact of the Syrian refugee influx is more pronounced among poorer households and those with lower-educated household heads, who are arguably in competition with refugees for housing. Finally, we show that the probability of moving in 2011,

(the year of the start of the Syrian civil war) or later, increases for individuals residing in localities with high exposure to refugees, albeit from very low initial levels. Since this does not apply to the probability of moving before 2011, we conclude that it is the result of refugee influx and its possible effects on housing markets rather than a result of refugees choosing to settle in less desirable areas.

Our results may be a function of both the temporal and geographic scales of our analysis. Because we study impacts in 2013 and 2016, one year and four years after the initiation of the Syrian refugee influx and, in the case of 2013, during a dramatic growth period in the number of refugees, our results reflect the short-term effects of the influx. The results on rental values in particular, which are from 2013, could be attenuated over time, in part because of the mobility response of locals, which we document. Our results on the negative effects of the influx on housing quality of poorer Jordanian households are from 2016 and may, therefore, be more durable.

With respect to the geographic scale of the analysis, we are able to study the effect of the influx at both a more aggregated level, that of district, which approximates city-wide effects, as well as at a more disaggregated level, that of locality, which approximates the neighborhood level effects. As we showed in our literature review, the literature on the effects of migration shocks on housing markets finds contradictory effects at different geographic scales. City-wide or metropolitan-level analyses usually find a positive effect of migration shocks on rental values, whereas those at the neighborhood level find negative effects on rents, which they attribute to the mobility responses of natives. Our results on rental values are at the more aggregated district level and, consistent with the literature, show positive effects on rent. Our analysis of housing quality is undertaken at both the locality and district levels. In both instances, we find that the influx has a negative effect on the housing quality of locals, with the effect being slightly larger at the district

level. For both levels of analysis, we find that poorer natives are the ones that are more adversely affected by the influx.

Our results differ from those in the existing literature in a number of ways. First, while we find that poorer households and presumably low-valued rental units to be more affected by the influx (as in the case of Depetris-Chauvin & Santos (2018) in Colombia), Balkan, Tok, Torun, & Tumen (2018) find that high-valued rental units are more affected. They attribute this to the mobility response of natives who attempt to move away from immigrant neighborhoods by upgrading their housing. Our results also differ from those of local-level studies that find decline in rental values due the disamenity locals perceive from living in close proximity to refugees (Accetturo, Manaresi, Mocetti, & Olivieri, 2014; Sá, 2015). Although, we are not able to study effects on rental values at the local level, we find no difference in the direction of the effects on housing quality between the district and locality levels and suspect the same would apply to rents.

We attribute these differences to the more limited mobility response of locals in Jordan. Although we do find that the refugee influx induces locals to move across localities, the observed rates of mobility of about 1-2 percent over a five-year period are probably too low to affect housing outcomes very much. Unlike the situation in Turkey, Italy and the UK, where locals would perceive strong disamenity from living in proximity to migrants, Jordanians share strong linguistic, cultural, and even familial ties with Syrian refugees who settled in Jordan. Thus, if Jordanians move away from high-refugee areas, this movement is probably driven by housing shortages rather than to the disamenity of living in close proximity to refugees. The extent of mobility of locals would therefore likely be self-limiting and would likely not result in a net decline in rents.

While we find that poorer Jordanians are in direct competition with refugees over housing and are therefore adversely affected by the refugee influx in the housing market, a recent study (Fallah et al. 2019) on labor market effects of the influx has not found similar adverse effects on Jordanian workers. This is apparently because Syrian refugees do not compete directly with Jordanians for low-income jobs, but compete instead with other migrant workers (primarily Egyptians) who dominate informal and casual employment in Jordan (Assaad & Salemi, 2018; Malaeb & Wahba, 2018). Another study (Assaad, Ginn, & Saleh, 2018) looking at the effects of the Syrian refugee influx on the educational outcomes of Jordanians also finds no adverse effects; a finding the authors attribute to the creation of second shifts in existing schools to accommodate Syrian students. Thus, the results for housing, reveal a particular dimension of vulnerability among lower income Jordanians that needs to be addressed by specific interventions on the part of the Jordanian government and international actors engaged in the refugee response in Jordan. While there is relatively little concern in Jordan regarding the creation of segregated immigrant ghettoes, there is a concern that poorer Jordanians are in direct competition with refugees over access to affordable housing, something that can be addressed through more inclusive housing finance or greater incentives to increase the supply of low-end rental housing.

References

Accetturo, A., Manaresi, F., Mocetti, S., & Olivieri, E. (2014). Don't Stand so Close to Me: The Urban Impact of Immigration. *Regional Science and Urban Economics, 45*(1), 45–56.

Alix-Garcia, J., Bartlett, A., & Saah, D. (2012). Displaced Populations, Humanitarian Assistance and Hosts: A Framework for Analyzing Impacts on Semi-Urban Households. *World Development, 40*(2), 373–386.

Assaad, R., Ginn, T., & Saleh, M. (2018). *Impact of Syrian Refugees in Jordan on Education Outcomes for Jordanian Youth. No. 1214*. Cairo, Egypt.

Assaad, R., & Salemi, C. (2018). *The Structure and Evolution of Employment from 2010 to 2016 in Jordan*. *Economic Research Forum Working Paper Series (Forthcoming)*. Cairo, Egypt.

Balkan, B., Tok, E. O., Torun, H., & Tumen, S. (2018). *Immigration, Housing Rents, and Residential Segregation: Evidence from Syrian Refugees in Turkey*. *IZA Discussion Paper No. 11611*.

Becker, S. O., & Ferrara, A. (2019). Consequences of Forced Migration: A Survey of Recent Findings. *Labour Economics, 59*(November 2018), 1–16.

Beidas-Strom, S., Lian, W., & Maseeh, A. (2009). *The Housing Cycle in Emerging Middle Eastern Economies and Its Macroeconomic Policy Implications*. *IMF Working Paper*.

Cameron, A. C., Gelbach, J. B., & Miller, D. L. (2008). Bootstraped-Based Improvements for Inference with Clustered Errors. *The Review of Economics and Statistics, 90*(3), 414–427.

Cameron, A. C., & Miller, D. L. (2015). A Practitioner's Guide to Cluster- Robust Inference. *Journal of Human Resources, 50*(2), 317–372.

D'Albis, H., & Boubtane, E. (2019). International Migration and Regional Housing Markets : Evidence from France. *Inrternational Regional Science Review, 42*(2), 147–180.

Department of Statistics (Jordan). (2004). Final Results of Population and Housing Census 2004. Table 5.1. Retrieved August 17, 2018 from http://www.dos.gov.jo/dos_home_a/main/population/census2004/group5/table_5_1.pdf

Department of Statistics (Jordan). (2015). Final Results of the Population and Housing Census 2015.

Depetris-Chauvin, E., & Santos, R. J. (2018). Unexpected Guests: The Impact of Internal Displacement Inflows on Rental Prices in Colombian Host Cities. *Journal of Development Economics, 134*(May), 289–309.

El-mallakh, N., & Wahba, J. (2018). *Syrian Refugees and the Migration Dynamics of Jordanians: Moving in or Moving Out? No. 1191*. Cairo, Egypt.

Erbaş, S. N., & Nothaft, F. E. (2005). Mortgage Markets in Middle East and North African Countries: Market Development, Poverty Reduction, and Growth. *Journal of Housing Economics, 14*(3), 212–241.

Fallah, B., Krafft, C., & Wahba, J. (2019). The Impact of Refugees on Employment and Wages in Jordan. *Journal of Development Economics*, *139*(March), 203–216.

Gonzalez, L., & Ortega, F. (2013). Immigration and Housing Booms: Evidence from Spain*. *Journal of Regional Science*, *53*(1), 37–59.

Krafft, C., & Assaad, R. (2018). *Introducing the Jordan Labor Market Panel Survey 2016*. *No. 1186*. Cairo, Egypt.

Krafft, C., Razzaz, S., Keo, C., & Assaad, R. (2019). The Number and Characteristics of Syrians in Jordan: A Multi-Source Analysis. In C. Krafft & R. Assaad (Eds.), *The Jordanian Labor Market between Fragility and Resilience* (pp. 173–202). Oxford: Oxford University Press.

Krafft, C., Sieverding, M., Salemi, C., & Keo, C. (2018). *Syrian Refugees in Jordan: Demographics, Livelihoods, Education, and Health*. *No. 1184*. Cairo, Egypt.

Kürschner, K., & Kvasnicka, M. (2018). *The 2015 European Refugee Crisis and Residential Housing Rents in Germany*. *No. 12047*.

Malaeb, B., & Wahba, J. (2018). *Impact of Refugees on Immigrants' Labor Market Outcomes*. *Economic Research Forum Working Paper Series No. 1194*. Cairo, Egypt, Egypt.

Mussa, A., Nwaogu, U. G., & Pozo, S. (2017). Immigration and Housing: A Spatial Econometric Analysis. *Journal of Housing Economics*, *35*, 13–25.

OAMDI. (2017). Harmonized Household Income and Expenditure Surveys (HHIES). Version 2.0 of Licensed Data Files; Research Forum (ERF).

OAMDI. (2018). Labor Market Panel Surveys (LMPS). Version 1.1 of Licensed Data Files; JLMPS 2016. Cairo, Egypt: Economic Research Forum.

Rozo, S. V., and Sviatschi M. (Forthcoming) Is a refugee crisis a housing crisis? Only if housing supply is unresponsive. *Journal of Development Economics*, 148: 102563.

Sá, F. (2015). Immigration and House Prices in the UK. *Economic Journal*, *125*(587), 1393–1424.

Saiz, A. (2003). Room in the Kitchen for the Melting Pot : Immigration and Rental Prices. *Review of Economics and Statistics*, *85*(3), 502–521.

Saiz, A. (2007). Immigration and Housing Rents in American Cities. *Journal of Urban Economics*, *61*(2), 345–371.

Salemi, C., Bowman, J., & Compton, J. (2018). *Services for Syrian Refugee Children and Youth in Jordan: Forced Displacement, Foreign Aid, and Vulnerability*. *No. Forthcoming*. Cairo, Egypt.

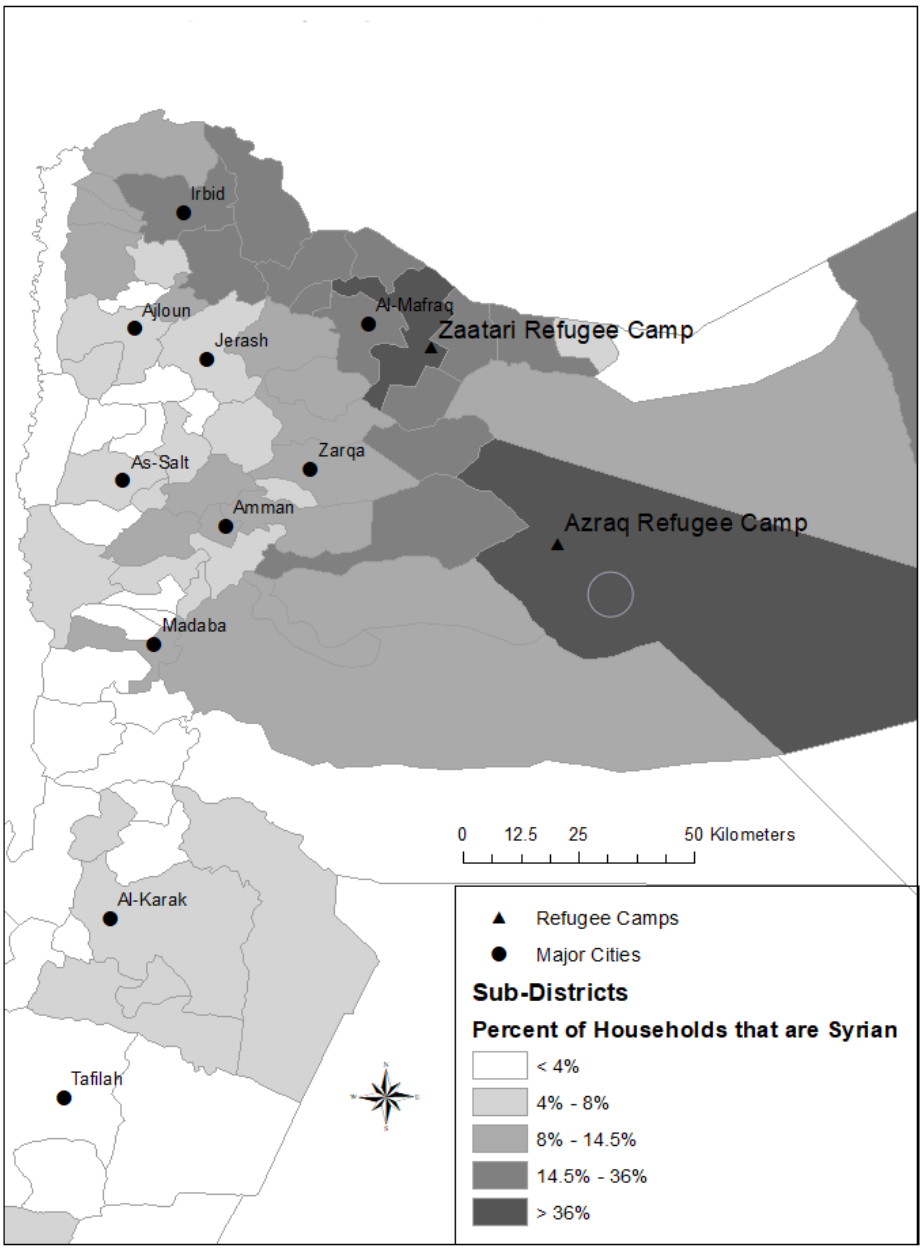
Tumen, S. (2019). Refugees and 'Native Flight' from Public to Private Schools. *Economics Letters*, *181*, 154–159.

UNHCR. (2020). Syrian Refugee Response: Jordan. *Operational Portal: Refugee Situations*. Retrieved August 4, 2020 from https://data2.unhcr.org/en/situations/syria/location/36

Verme, P., & Schuettler, K. (2019). *The Impact of Forced Displacement on Host Communities A Review of the Empirical Literature in Economics*. *World Bank Policy Research Working Paper*.

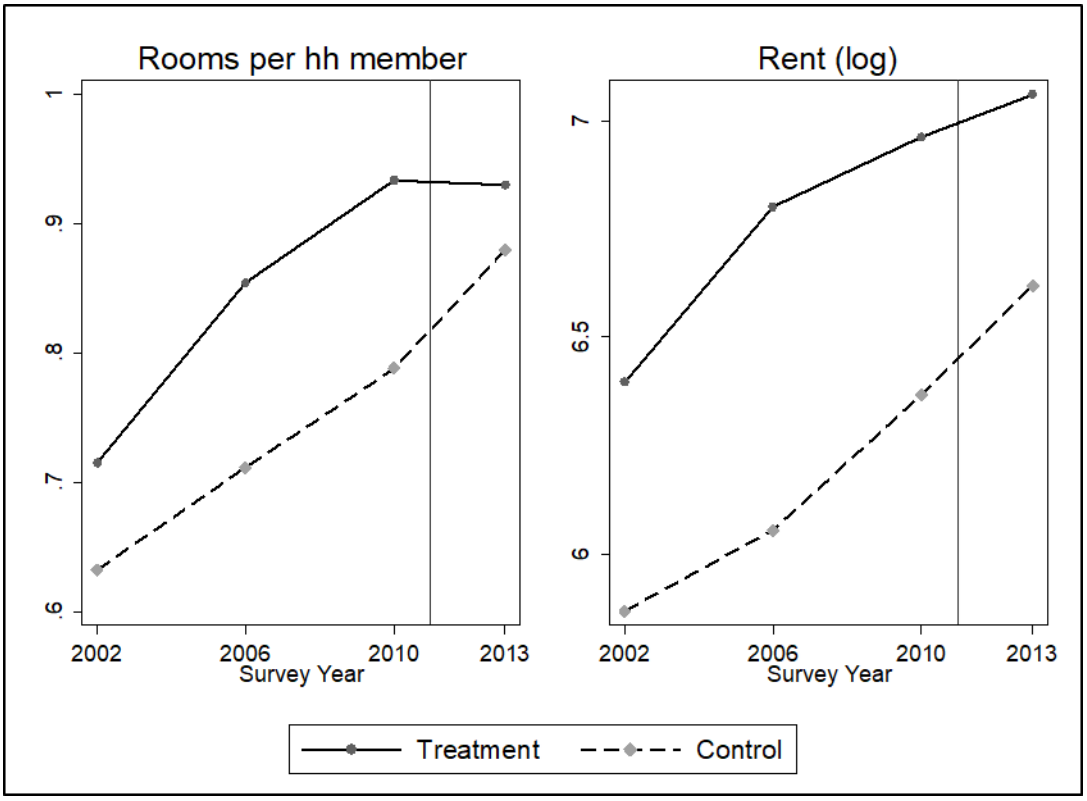
World Bank. (2018). *Jordan Housing Sector Review*. Washington D.C.

Figure 1. Share households that are Syrian in Jordan by sub-district, 2015



Source: Salemi, Bowman, & Compton (2018), based on data from the 2015 Population Census, Jordanian Department of Statistics. The Syrian border straddles the northern edge of the map.

Figure 2. Parallel trends (2002-2013), HEIS.



Note: Authos' calculations of average values from HEIS data 2002, 2006, 2010 and 2013. Analysis on governorate level. Treatment group includes governorates with share of Syrian refugees greater than or equal to median level, Control group – with share below median level. A vertical line denotes year of refugee crisis in Jordan, namely 2011.

Table 1. Descriptive statistics outcome variables and some covariates prior to refugee crisis.

VARIABLES	(1) **Refugees Below-median** Mean	(2) SD	(3) **Refugees at median or above** Mean	(4) SD	(5) ***P*-Value**
JLMPS 2010					
Outcome variables					
House area (m^2/individual)	26.97	19.51	30.26	24.08	0.00
HQI (std.)	-0.34	0.94	0.11	0.71	0.00
Dwelling ownership	0.88	0.32	0.84	0.37	0.00
Household size	6.38	2.86	5.61	2.43	0.00
Low-educated	0.66	0.47	0.59	0.49	0.00
Employed	0.68	0.47	0.68	0.46	0.61
Gender of the household head (1 if female)	0.11	0.32	0.13	0.33	0.01
Age of the household head	48.44	16.00	49.46	15.06	0.00
1 if changed locality between 2011-2016	0.02	0.14	0.03	0.03	0.05
1 if changed locality between 2006-2010	0.01	0.11	0.01	0.12	0.30
Share of Syrians 2015 (%)	1.37	1.16	11.70	7.18	0.00
Share of Syrians 2004 (%)	0.45	3.75	0.67	0.60	0.00
Observations	765		2,672		
HEIS 2006					
Outcome variables					
Number of rooms per HH member	0.72	0.47	0.86	0.63	0.00
Rent (in dinars)	753.62	581.35	1,823.17	3,550.10	0.00
Household size	6.25	2.77	5.74	2.47	0.00
Low-educated	0.72	0.45	0.62	0.49	0.00
Employed	0.57	0.50	0.60	0.49	0.54
Household disposable income (in dinars)	5,381	4,014	6,885	13,963	0.00
Gender of the household head (1 if female)	0.12	0.32	0.12	0.33	0.14
Age of the household head	47.58	13.99	48.91	14.03	0.00
Share of Syrians 2015 (%)	4.49	3.06	13.41	7.70	0.00
Share of Syrians 2004 (%)	0.6	0.5	0.9	0.4	0.00
Observations	573		2,316		

Notes: Refugees above-median refers to above median increase in share of Syrians between 2004 and 2015. Based on JLMPS 2010 and HEIS 2006. The p-value are from a difference in means test between the below-median and above-median areas.

Table 2. Impact of refugees' influx on housing of locals: coefficients from panel data fixed effects regression (JLMPS) and OLS regression (HEIS).

	JLMPS (panel data FE estimates)			HEIS (OLS)	
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HQI (std.)	Log-area per person	Dwelling ownership	Rooms per person	Log-rent
A) Continuous measure					
Δ Share of Syrians * Year after 2011	-0.183**	0.002	-0.010	-0.006	0.130***
	(0.088)	(0.026)	(0.025)	(0.011)	(0.046)
				[0.560]	[0.030]
Δ share of Syrians	-0.148***	0.041**	-1.034***	0.624***	1.172***
	(0.015)	(0.017)	(0.029)	(0.053)	(0.460)
				[0.250]	[0.190]
Year after 2011	-1.873***	-0.581***	0.037	0.264***	0.498***
	(0.285)	(0.080)	(0.028)	(0.030)	(0.045)
				[0.160]	[0.150]
B) Quartiles					
Quartile 2 * Year after 2011	0.106	-0.087	0.016	-0.003	0.130
	(0.118)	(0.059)	(0.039)	(0.049)	(0.155)
				[0.960]	[0.420]
Quartile 3 * Year after 2011	-0.196*	-0.094*	-0.036	-0.048	0.141
	(0.115)	(0.055)	(0.035)	(0.051)	(0.168)
				[0.390]	[0.500]
Quartile 4 * Year after 2011	-0.268**	-0.097*	0.009	0.076	0.323*
	(0.114)	(0.056)	(0.035)	(0.055)	(0.166)
				[0.250]	[0.080]
Quartile 2	-1.004***	0.988***	-0.027	0.087**	-0.485***
	(0.146)	(0.094)	(0.052)	(0.037)	(0.159)
				[0.160]	[0.120]
Quartile 3	0.027	0.402***	-0.010	0.421***	0.507***
	(0.070)	(0.035)	(0.023)	(0.032)	(0.176)
				[0.460]	[0.350]
Quartile 4	-0.728***	0.345***	1.035***	-0.160***	-1.258***
	(0.110)	(0.079)	(0.040)	(0.054)	(0.187)
				[0.230]	[0.010]
Year after 2011	0.307**	0.200***	0.029	0.269***	0.411*
	(0.120)	(0.060)	(0.038)	(0.039)	(0.237)
				[0.440]	[0.470]
Sample size	6,874	6,874	6,874	7,722	1,544
Mean for the treated group at baseline	0.100	1.449	0.831	0.860	3.261
HH FE	Yes	Yes	Yes	-	-
Locality FE (244 localities)	Yes	Yes	Yes	-	-
District FE (51 districts)	-	-	-	Yes	Yes
Governorate * Year after 2011 dummies	Yes	Yes	Yes	Yes	Yes

Notes: Δ share of Syrians is defined by the difference in the share of Syrian households between 2004 and 2015 across localities (ELMPS) or districts (HEIS). Regressions in JLMPS are weighted for panel attrition. Standard errors clustered by locality in JLMPS and district in HEIS *** p<0.01, ** p<0.05, * p<0.1. Wild bootstrapped p-values for HEIS estimates are reported in brackets.

Table 3. Impact of refugees' influx on housing of locals: coefficients from a panel data fixed effects model with instrumental variables (JLMPS) and a two-stage least squares model (HEIS).

	JLMPS			**HEIS**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
VARIABLES	HQI (std.)	Log-area per person	Dwelling ownership	Rooms per person	Log-rent
Δ Share of Syrians * Year after 2011	-0.201**	0.003	0.009	-0.062**	0.577***
	(0.092)	(0.081)	(0.053)	(0.030)	(0.095)
Observations	6,874	6,874	6,874	7,722	1,544
R-squared	0.314	0.145	0.111	0.058	0.507
Mean for the treated group at baseline	0.110	1.449	0.841	0.860	3.261
First stage coefficient (Distance to Za'atari refugee camp in Km)	-0.009***	-0.009***	-0.009***	-0.003***	-0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cragg-Donald Wald F- Test	510.52	510.52	510.52	605.36	107.68
Anderson Canon Chi-Square	490.59	490.59	490.59	561.72	278.12
Household FE	Yes	Yes	Yes	-	-
Locality FE	Yes	Yes	Yes	-	-
District FE	-	-	-	Yes	Yes`

Notes: Same as Table 2. Distance to Za'atari refugee camp is set to zero in the pre-shock period.

Table 4. Heterogeneity of impact of refugee influx on housing outcomes by wealth and education: coefficients from a panel data fixed effects model (JLMPS) and an OLS model (HEIS).

	JLMPS			HEIS	
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HQI (std.)	Log-area per person	Dwelling ownership	Rooms per person	Log-rent
A) Wealth					
Poor					
Δ Share of Syrians * Year after 2011	-0.161**	-0.008	0.023	-0.023*	0.094**
	(0.071)	(0.031)	(0.021)	(0.013)	(0.038)
Δ share of Syrians	1.436***	0.236***	-0.802***	0.328***	1.010***
	(0.287)	(0.065)	(0.040)	(0.022)	(0.050)
Year after 2011	1.216**	0.282***	-0.011	0.205***	0.046
	(0.497)	(0.107)	(0.068)	(0.027)	(0.033)
Observations	3,313	3,313	3,313	3,862	1,076
Rich					
Δ Share of Syrians * Year after 2011	-0.022	-0.004	-0.012	-0.021	0.024
	(0.052)	(0.027)	(0.014)	(0.014)	(0.129)
Δ share of Syrians	0.699***	0.385***	-0.746***	0.767***	0.571***
	(0.090)	(0.096)	(0.059)	(0.031)	(0.165)
Year after 2011	0.052	0.157*	-0.147***	0.111**	-0.051
	(0.076)	(0.081)	(0.049)	(0.042)	(0.092)
Observations	3,561	3,561	3,561	3,860	468
B) Education					
Low education					
Δ Share of Syrians * Year after 2011	-0.158***	0.007	0.007	-0.036***	0.116***
	(0.056)	(0.024)	(0.014)	(0.010)	(0.040)
Δ share of Syrians	-0.148***	0.051***	-0.726***	0.465***	0.973***
	(0.018)	(0.014)	(0.045)	(0.018)	(0.046)
Year after 2011	-1.336***	-0.302***	-0.084	0.147***	0.027
	(0.503)	(0.112)	(0.051)	(0.025)	(0.033)
Observations	4,398	4,398	4,398	5,229	1,011
High education					
Δ Share of Syrians * Year after 2011	-0.086*	-0.032	0.011	0.024	0.028
	(0.050)	(0.026)	(0.017)	(0.026)	(0.082)
Δ share of Syrians	0.202***	-0.887***	-0.402***	0.378***	0.647***
	(0.059)	(0.068)	(0.107)	(0.029)	(0.110)
Year after 2011	-0.815***	-0.327***	0.203	0.143***	0.084*
	(0.104)	(0.045)	(0.137)	(0.032)	(0.046)
Observations	2,476	2,476	2,476	2,493	533
Household FE	Yes	Yes	Yes	-	-
Locality FE	Yes	Yes	Yes	-	-
District FE	-	-	-	Yes	Yes

Notes: Δ share of Syrians is defined by the difference in the share of Syrian households between 2004 and 2015 across localities (ELMPS) or districts (HEIS). Poor is defined by below median wealth in JLMPs and below median household income in HEIS. Low-educated is defined by a dummy variable that takes the value 1 if below secondary, and zero otherwise. Standard errors clustered by locality in JLMPS and district in HEIS *** p<0.01, ** p<0.05, * p<0.1.

Table 5. Impact of refugee influx on residential mobility: coefficients from a linear probability model using JLMPS retrospective data.

VARIABLES	(1) 1 if moved 2011 or after	(2) 1 if moved between 2005 and 2010
Panel A: Baseline		
Locality with refugees above-median	0.017***	-0.001
	(0.005)	(0.003)
Panel B: Heterogeneity		
Wealth		
Locality with refugees above-median * Poor	0.014*	-0.001
	(0.008)	(0.005)
Locality with refugees above-median	0.011*	-0.001
	(0.006)	(0.004)
Poor	-0.009*	-0.005
	(0.004)	(0.003)
Education		
Locality with refugees above-median * Low-educated	0.010	0.006
	(0.009)	(0.007)
Locality with refugees above-median	0.011	-0.006
	(0.008)	(0.006)
Low educated	-0.012*	-0.012**
	(0.006)	(0.005)
Observations	6,080	6,080
Average mobility in treated localities before 2011	0.014	0.014
District FE	Yes	Yes

Notes: Based on the retrospective section in JLMPS 2016. Standard errors clustered by locality *** p<0.01, ** p<0.05, * p<0.1. Poor and low-educated dummies are defined similar to Table 4.

Online Appendix

Table A1. Items of Housing Quality Index, JLMPS.

Item	Question	Definition
Type of floor	What is the material of the floor?	= 1 if ceramic, tiles, etc. = 0 if dust or other
Source of utility water	What is the main source of the water used for utility?	= 1 if public water use or filter, = 0 if tank, spring, channel/pond/dam, well
Type of heating	What is the primary energy source for heating your dwelling?	= 1 if central heating, gas, or electric, = 0 if kerosene, firewood, solar, none or other
Sewage (drainage)	What is your sewage system?	= 1 if public sewage system, = 0 if hole/ground absorbency, none or other
Garbage disposal	What is the main method for garbage disposal?	= 1 if open or closed dumpster, public refuse collector, =0 if burnt, buried or other

Source: JLMPS 2010 and 2016.

Table A2. Mean and Range of shares of Syrian households across localities and districts before and after the Syrian refugee influx (for localities represented in our JLMPS sample and all districts in Jordan).

	Mean %	Min %	Max %
Locality level			
Before (2004 wave)	0.58	0.00	7.69
After (2015 wave)	9.34	0.00	52.31
N localities	224		
District level			
Before (2004 wave)	0.80	0.46	4.03
After (2015 wave)	10.93	0.76	60.27
N districts	51		

Notes: Authors' calculation based on the 2004 and 2015 rounds of the Jordanian population census.

Table A3. Test of the equal trends assumption at the governorate level: coefficients from an OLS model using HEIS data from 2002, 2006, 2010 and 2013.

VARIABLES	(1) Average number of rooms	(2) Log rent
Year 2002 * Δ Share of Syrians	0.023	-0.007
	(0.016)	(0.050)
	[0.410]	[0.880]
Year 2006 * Δ Share of Syrians	0.001	0.019
	(0.011)	(0.123)
	[0.910]	[0.830]
Year 2010 * Δ Share of Syrians	-	-
Year 2013 * Δ Share of Syrians	-0.007	0.064*
	(0.011)	(0.035)
	[0.560]	[0.270]
Year 2002	-0.045*	-0.487***
	(0.025)	(0.037)
	[0.240]	[0.000]
Year 2006	-0.008	-0.198***
	(0.013)	(0.026)
	[0.680]	[0.020]
Year 2010	-	-
Year 2013	-0.007	0.064*
	(0.011)	(0.035)
	[0.530]	[0.000]
Δ Share of Syrians	0.195***	0.885***
	(0.034)	(0.037)
	[0.880]	[0.000]
Observations	13,110	2,674
R-squared	0.485	0.302

Notes: Δ share of Syrians is defined by the difference in the share of Syrian households between 2004 and 2015 across governorates. It is time-constant for each governorate and standardized with a mean of zero and standard deviation of 1. The omitted category is year 2010. Robust standard errors clustered at the governorate level in parentheses *** p<0.01, ** p<0.05, * p<0.1 Wild bootstrapped p-values reported in brackets.

Table A4. Impact of refugees' influx on housing of locals: coefficients from a fixed effects panel data regression model (JLMPS) and an OLS regression model (HEIS) using district-level exposure to Syrian refugee influx.

	JLMPS (panel data FE estimates)			HEIS (OLS)	
	(1)	(2)	(3)	(4)	(5)
VARIABLES	HQI (std.)	Log-area per person	Dwelling ownership	Rooms per person	Log-rent
A) Continuous measure					
Δ Share of Syrians * Year after 2011	-0.186**	-0.013	-0.013	-0.008	0.120**
	(0.083)	(0.025)	(0.024)	(0.011)	(0.046)
	[0.010]	[0.700]	[0.690]	[0.870]	[0.040]
Δ share of Syrians	0.063	-0.040***	-0.325	0.770**	2.120***
	(0.039)	(0.013)	(0.257)	(0.066)	(0.569)
	[0.140]	[0.310]	[0.350]		
Year after 2011	-2.456***	-1.858***	0.027	0.262***	0.511*
	(0.190)	(0.150)	(0.032)	(0.030)	(0.264)
	[0.040]	[0.070]	[0.800]		
B) Quartiles					
Quartile 2 * Year after 2011	-0.355	-0.182***	-0.048	0.028	0.093
	(0.234)	(0.064)	(0.067)	(0.039)	(0.105)
	[0.210]	[0.010]	[0.500]	[0.470]	[0.480]
Quartile 3 * Year after 2011	-0.666**	-0.225***	-0.034	0.009	0.025
	(0.288)	(0.078)	(0.094)	(0.079)	(0.102)
	[0.020]	[0.010]	[0.760]	[0.850]	[0.900]
Quartile 4 * Year after 2011	-0.677**	-0.219***	-0.073	0.002	0.279***
	(0.308)	(0.071)	(0.095)	(0.038)	(0.068)
	[0.060]	[0.010]	[0.580]	[0.560]	[0.030]
Quartile 2	0.966***	1.121***	0.378***	0.064**	-0.452***
	(0.261)	(0.115)	(0.123)	(0.029)	(0.118)
	[0.070]	[0.020]	[0.280]		
Quartile 3	-0.256	0.732***	0.184**	0.403***	0.514***
	(0.265)	(0.115)	(0.079)	(0.034)	(0.182)
	[0.560]	[0.020]	[0.520]		
Quartile 4	0.093	1.011***	0.409***	-0.083**	-1.214***
	(0.275)	(0.141)	(0.096)	(0.039)	(0.102)
	[0.860]	[0.010]	[0.300]		
Year after 2011	-2.676***	-1.123***	0.040	0.253***	0.416*
	(0.237)	(0.111)	(0.028)	(0.027)	(0.245)
	[0.030]	[0.030]	[0.610]		
Sample size	6,356	6,356	6,356	7,747	1,569
Average before 2011	0.006	3.193	0.845	0.832	6.69
HH FE	Yes	Yes	Yes	-	-
Locality FE (244 localities)	Yes	Yes	Yes	-	-
District FE (51 districts)	-	-	-	Yes	Yes
Governorate * Year after 2011 dummies	Yes	Yes	Yes	Yes	Yes

Notes: : Δ share of Syrians is defined by the difference in the share of Syrian households between 2004 and 2015 across districts. Regressions in JLMPS are weighted for panel attrition. Standard errors clustered by locality in JLMPS and district in HEIS *** p<0.01, ** p<0.05, * p<0.1. Wild bootstrapped p-values reported in brackets.

Table A5. Balancing test for differences in pre-shock outcome variables between close and distant regions to Za'atari camp: coefficients from an OLS regression.

	JLMPS			HEIS	
VARIABLES	(1) HQI (std.)	(2) Log-area per person	(3) Dwelling ownership	(4) Rooms per person	(5) Log-rent
1 if distance to Za'atari camp is below median	0.127	-0.028	-0.005	0.102	0.404*
	(0.089)	(0.036)	(0.025)	(0.071)	(0.188)
Observations	3,437	3,437	3,437	2,897	670
R-squared	0.006	0.001	0.000	0.007	0.079

Notes: Outcome variables are estimated from the wave prior to the influx. No control variables are included.