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The Impact of Forced Displacement on Host Communities: A Review of the Empirical Literature in Economics

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Abstract: The paper reviews 54 empirical studies that estimated the impact of forced displacement on host communities. A review of the empirical models used by these studies and a meta-analysis of 868 separate results collected from these studies are the main contributions of the paper. Coverage extends to 18 major forced displacement crises that occurred between 1922 and 2016, to host countries at different levels of economic development and different types of forced migrants. The focus is on outcomes related to household well-being, prices, employment, and wages. All studies can be classified as ex-post quasi-natural experiments. The analysis on empirical modeling shows a preference for partial equilibrium modeling, differences-in-differences evaluation methods, and cross-section econometrics, with all these choices largely dependent on the type of data available. The meta-analysis on household well-being finds that the probability of a negative and statistically significant outcome for hosts (a decrease in well-being) is below 20%. The probability of finding a decrease in employment or wages for hosts is less than 30%. When this occurs, it is mostly related to female, informal and low-skilled workers. Results on prices show that the probability of finding changes in prices is around 80% equally distributed between increases and decreases in prices with increases mostly associated with food and rental prices. Overall, adverse effects are associated with larger crises and tend to vanish in the long-run.

Keywords: Refugees, Returnees, Expellees, Escapees, Internally Displaced Persons (IDPs), Forced Migration, Forced Displacement, Host Communities, Labor Markets, Wages, Prices, Employment, Unemployment, Well-being.

JEL Codes: D12; E24; F22; F66; J08; J1; J2; J3; J4; J7; J8; N3; O15; P46; R2

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1. Introduction

The question of whether forced displacement² is beneficial or detrimental to host communities³ has become a hotly debated issue in policy, political and media circles since the start of the Syrian refugee crisis in 2011 and the peak of the EU migration crisis in 2015. Economics has traditionally paid little attention to this phenomenon with only occasional studies of mostly historical interest until this issue became popular among media outlets. The first study of this kind dates back to 1990 (Card 1990) and between 1990 and 2011 an average of only one study per year reached publication. This changed after 2011 when the average number of studies per year started to increase to reach 14 publications in 2018. Thanks to these recent efforts, we now have a more solid body of evidence addressing this question: *What is the impact of forced displacement on host communities?* This paper provides a review of the empirical economics literature that addressed this question.

Forced displacement (FD) is a different phenomenon from economic migration (EM), justifying a separate review.⁴ By definition, FD is less of a choice and less voluntary than EM, although there is ultimately always a choice behind most (but not all) migration decisions. FD is a decision that is taken quickly following a sudden shock as opposed to EM, which is more often a carefully planned move. Forced migrants typically carry some small savings with them but little else because of the sudden nature of the shock whereas economic migrants tend to carry savings and assets or transfer these in advance of the move. Economic migrants tend to rely on extended networks in the place of origin and destination and plan their move in accordance with these networks. Forced migrants tend to move to destinations based on proximity and security criteria rather than personal networks, although networks can occasionally play a role. EM is a regular phenomenon with increasing and decreasing trends whereas FM happens in sudden and unexpected bursts of population movements which can be massive in nature.⁵ Behavioral characteristics can be very different between economic and forced migrants. FD is therefore a rather different phenomenon from EM, calling for different types of theoretical and empirical instruments (Verme 2016, Ceriani and Verme 2018).

The objective of this review is twofold. First, we wish to provide a review of the specific modeling and econometric challenges that this type of work entails for the benefit of social scientists who wish to work in this area. For this purpose, we provide a comparative analysis of models used across the 54 papers considered. Second, we review the empirical results emerged from this particular literature and provide a meta-analysis using a data set of 868 results extracted from this literature with the objective of summarizing results by selected outcome and provide initial leads on some of the factors that may drive these outcomes. By doing so we wish to bring some clarity to a very complex and controversial topic.

² Under the term Forced Displacement (FD) we include refugees, returnees, expellees, escapees and Internally Displaced Persons (IDPs). These populations may have different characteristics, but they represent groups that have been subjected to FD due to some form of conflict, violence, persecution, human rights violations or high levels of insecurity or uncertainty resulting in a sudden and massive movement of people. We exclude episodes of Forced Migration (FM) due to environmental or other types of disasters and occasional or small episodes of forced displacement. Forced displacement is sometimes referred to as forced migration. We use these terms interchangeably in this paper.

³ Host communities are defined as natives or existing residents who are affected by a sudden influx of forcibly displaced persons. For measurement purposes, these communities are generally identified by the literature in terms of administrative areas, but it is evident that these areas may include or exclude persons who are or are not affected by the displacement shock. To capture these potential heterogeneous effects, some papers assess impacts on different subgroups of the population.

⁴ The lines between forced migrants and economic migrants can be blurred and, over time, forced migrants might become similar to economic migrants, notably in the case of secondary movements. However, these two phenomena remain clearly distinguishable from both a theoretical and empirical perspective.

⁵ Sudden and massive movements are much more frequent in the context of forced displacement, but there are cases of sudden and massive inflows of migrant workers. One example is a new commuting policy that led to a sharp and unexpected inflow of Czech workers to areas along the German-Czech border (Dustmann, Schoenberg, and Stuhler 2017).

The focus of the review is on the consumer and labor markets and, more specifically, on four outcomes: household well-being, prices, employment and wages. This choice was dictated by the literature that has focused almost exclusively on these outcomes.⁶ Household well-being measured in terms of income, consumption or wealth is the main outcome of interest to understand whether the net effect of a FD crisis is positive or negative for the host population. Negative changes in market outcomes such as increases in consumer prices or decreases in wages damage consumers and workers but benefit producers and owners of assets. The net effect on household well-being is not obvious when wages and prices change. Besides increasing the labor supply and creating a demand stimulus on consumer markets, refugees can also have an impact on productivity and structural change (Paserman 2013; Hornung 2014; Braun and Kvasnicka 2014; Sarvimäki 2011; Peters 2017), innovation and new patents (Moser, Voena, and Waldinger 2014), create new enterprises (Akgündüz, van den Berg, and Hassink 2018; Altindag, Bakis, and Rozo 2018) or increase FDI (Mayda, Parsons, and Vézina 2017) and trade with their countries of origin (Parsons and Vezina 2018; Ghosha and Enamib 2015; Mayda, Parsons, and Steingress 2017). The overall impact on household well-being is evidently the product of a combination of multiple factors and labor market analyses capture only some of these factors.

In our knowledge, this is the first comprehensive review of its kind. Ruiz and Vargas-Silva (2013) carried out a literature review of the impact of forced displacement on the displaced and on host communities but the review on host communities provides a brief overview of only eight papers, as most of the available literature is more recent. Related reviews on migration or the impacts of war and violence are broader in scope and have only occasional references to papers covering the impact of forced migrants on host communities. The recent reviews by Özden and Wagner (2018) and Dustmann, Schönberg and Stuhler (2016) focus on the labor market impacts of migration and only cover some of the natural experiments included in this paper. Other reviews only cover one country or focus mainly on one region (e.g. Ogude 2017; Verwimp and Maystadt 2015; Maystadt et al. 2019). Some of the empirical papers we review offer an overview of the literature, such as Borjas and Monras (2017) and Clemens and Hunt (2019) who revisit several cases of large and sudden displacement crises in high-income countries, but none of these papers covers the range or scope of this work. The literature on the impacts of forced displacement on the displaced themselves was very limited until recently (see the reviews by Kondylis and Mueller 2014 and Ruiz and Vargas-Silva 2013) and started to grow in the last years (e.g. Gimenez-Nadal, Jose Ignacio, José Alberto Molina, and Edgar Silva-Quintero 2018; Fransén, Vargas-Silva, and Siegel 2018) but is clearly a separate topic from the impact of forced displacement on host communities. The only other recent and comprehensive review of this literature is Becker and Ferrara (2019) but this paper does not provide a comparative analysis of models or a meta-analysis of results.

Most of the papers considered are published in peer-reviewed international journals and most of these journals are top ranked journals in their respective disciplines. This set of papers is complemented by papers published as working papers in reputable series by known authors using standard modeling techniques. The oldest paper covered is dated 1990 and the newest 2018. The episodes of FD included in this literature span from 1922 to 2016 and cover 18 of the major FD crises of this period, those that received the most attention from scholars. These are distributed between high, medium and low-income host countries and include episodes of FD in the US and Europe, Middle East, North-Africa, Sub-Saharan Africa and Latin America. Only empirical papers in economics with original results are covered by this review.

Almost all studies are described as *natural experiments* by the authors but face major measurement and identification challenges. Availability of micro data is one of the challenges and the first explanation of

⁶ Few papers look at the impacts of refugees and IDPs on education (Semrad 2015; Assad, Ginn and Saleh 2018; Tumen 2018; Bilgili et al. 2019), health (Baez 2011), the environment (Martin et al. 2017) or at the impacts on crime and social cohesion in the host communities (Amuedo-Dorantes, Bansak and Pozo 2018; Depetris-Chauvin and Santos 2018; Masterson and Yasenov 2018).

why these types of studies have emerged only very recently.⁷ All studies have been undertaken *ex-post*, after the displacement crisis has taken place. The unexpected nature of the crisis and the randomness of the allocation of displaced persons are two elements used to defend the natural experiment assumption. However, all papers address the central question of endogeneity and unobserved heterogeneity. How random is the decision to leave, the choice of destination or the type of people who flee? What other unobserved concomitant factors such as growth, natural disasters or international aid have contributed to the observed outcomes? These studies are therefore better described as *quasi-natural experiments*.

There are several factors affecting results that should be considered when comparing these results across countries and across FD episodes. The income per capita of the host country is an obvious factor which has also implications on the economic structure of the labor and consumer markets' institutions and the degree of formality of these markets. It also determines whether international aid or increased government spending accompany these crises or not. Host countries may be big or small, some may be going through periods of growth and others through periods of recession. The legal framework and policies in place (right to work, freedom of movement) are different across countries and sometimes different within countries along space or time. Some studies focus on displaced populations hosted in camps and others on those outside camps, some of the displaced live in urban areas and others in rural areas. Some refugees move to countries with similar cultures, profiles and languages, others do not. Some of the FD episodes studied are massive in size while others are relatively small and the size relative to the host population can vary significantly across studies. Most inflows are sudden, but some are spread over a long period of time. Also, very few studies consider the role of international aid, which is a confounding factor to the displacement shock (Alix-Garcia and Saah, 2010).

The comparative analysis of the empirical models used by this literature shows a certain homogeneity in the choice of identification and modeling strategy. Double difference and linear elasticity models are the dominant choice. The key independent variable (FD shock) is generally used in both its natural form and its instrumented version where variables such as geographical distances and (forced) migrants' location or occupation prior to the shock are used to construct the instrument. Matching and placebo counterfactuals often support these choices. Cross-section econometrics is the predominant approach (largely dictated by the type of data available), few papers use time-series models and Computable General Equilibrium (CGE) models whereas panel data models are very rare.

The main results of the meta-analysis can be summarized as follows. Empirical results on household well-being - the only comprehensive indicator of the impact of forced displacement on hosts - shows that the probability of a negative and statistically significant outcome is less than 1 in 5. The majority of results show an increase in household well-being whereas negative results are associated with less accurate measures of well-being such as housing. The review of studies on employment and wages shows that, when taken together, 6 in 10 results are non-significant whereas 1-2 in 10 results are positive and significant meaning that employment and wages improve for the local population following a displacement crisis. When we focused on the remaining negative results on employment and wages (less than 3 in 10 results), we found that these related mostly to female, informal and low-skilled workers and that they are associated with larger crises. They also tend to disappear in the long-run. Results on prices show that the probability of finding changes in prices in the aftermath of a forced displacement crisis is high, almost 80%, but that predicting the direction of changes in prices is difficult and largely dependent on the items considered. Food and rental prices are more likely to increase as compared to other prices.

⁷ National household surveys do not normally cover displaced populations and humanitarian agencies in charge of displaced populations do not normally cover host populations in their surveys. These latter surveys also rarely contain socio-economic information of sufficient quality to be used in econometric studies, not least because issues such as sampling and questionnaire design are extremely difficult with mobile populations such as refugees and IDPs. Registration data do not always capture the whole displaced population, might be outdated and focus on the displaced rather than host communities. Displaced people are usually hosted in marginal areas where data are scarce or of poor quality.

The paper is organized as follows. The next section illustrates what basic economic theory would predict as an outcome of a mass forced displacement inflow in the consumer and labor markets. Section 3 reviews the empirical models and identification strategies used to address the question of impact on the various outcomes considered. Section 4 provides a statistical overview of the literature covered and a meta-analysis of all results from all papers considered. Section 5 concludes by summarizing results, providing a brief policy discussion and suggesting areas for future research. We also provide a complete review of the models used in this literature in Annex 1 and a discussion of results by FD crisis in Annex 2.

2. Basic theory

This section outlines in broad terms what standard economic theory would predict in terms of household well-being and labor market outcomes in the aftermath of a mass forced displacement shock. This will set the benchmark against which the results of the review can be discussed.

A forced displacement crisis typically results in two types of economic shocks. The first is a *population shock* with a sudden increase in population generated by an inflow of people in a particular geographical area. The second is an *expenditure shock* determined by the increased financial flows that a forced displacement crisis may attract, including aid from international donors and/or increased government spending on the part the host government. How these two components of the expenditure shock play out largely depends on the level of income per capita of host countries. In low income countries, displacement crises are typically accompanied by an almost simultaneous inflow of international aid. In middle income countries, international aid is usually accompanied by an increase in public spending on the part of the host government. In high income countries international aid is mostly absent whereas an increase in public spending would be the norm (social transfers to refugees or asylum seekers and subsidies to access education, health and other public services). In all these cases, we should think in terms of an expenditure shock channeled through an increase in welfare programs and the provision of public services targeting areas hosting refugees.

We consider the population and expenditure shocks as quasi simultaneous short-term shocks.⁸ International aid and public welfare programs would generally be established later than the first inflow of refugees or displacement of IDPs but international aid can flow in within a few weeks, sometimes days, and the increased use of national public services on the part of forcibly displaced people is often immediate where services exist. However, the impacts of these shocks on the consumer and labor market are not necessarily immediate. While consumer demand responds promptly to these shocks, consumer supply may be slower to adapt. Similarly, while labor supply may increase rather quickly there are several constraints that may slow down this supply and labor demand adjustments. Refugees require some time to adapt to the new labor market opportunities, if any, and access to the local labor market may also be severely constrained by regulations. International aid organizations and government services will take some time to be established, hire new local workers and have an impact on the local economy. Local firms will take additional time to react to the increased demand for goods and services and the increased labor supply by increasing production and hiring new workers and the degree of supply elasticity of goods and services varies. Local workers need time to reassess their situation and take decisions such as accept lower wages, drop out of the workforce or move out of the affected area.

Population and expenditure shocks should also be expected to operate differently in the consumer and labor markets. A population shock results first in a shock to consumer demand and labor supply whereas an expenditure shock results first in a shock to consumer and labor demand. In the absence of any other information regarding elasticities and the shape of the demand and supply curves, we consider the classic textbook approach with $D(p) = a - bp$ and $S(p) = c + dp$ with equilibrium price $p^* = \frac{a-c}{d+b}$ and

⁸ In this section and in the rest of the paper, short, medium and long-term can be loosely defined as one year, five years and more than five years' time-spans.

equilibrium quantity $q^* = \frac{ad+bc}{b+d}$, where D is demand, S is supply and p is price. The basic mechanics of the shocks to the consumer and labor markets are described as follows:

Shock to the consumer market (Figure 1, left-hand panel). The first shock to the system occurs via an increase in consumer demand induced by savings, aid, and public spending. Forced migrants usually carry a minimum amount of savings in kind or cash and these savings are typically spent on primary goods and services such as food, health services and shelter. Concomitantly, international aid or government spending boosts the spending capacity of the forcibly displaced via social transfers that are or can be monetized and via increased public spending that reduces living costs for the forcibly displaced.⁹ These factors are expected to push the consumer demand towards the right with a subsequent increase in prices and consumption.¹⁰ In a second round, local producers are then expected to expand production encouraged by higher prices and cheap labor available, with a consequent increase in supply and decrease in prices.¹¹ The net demand-supply effect is not easily predicted but expected to result in higher prices in the short-term as compared to the long-term with different types of items experiencing different changes in prices. Food and rental prices should be subject to an upward pressure in the short-run and a stabilization or downward pressure in the long-run whereas prices for services may decrease even in the short-run. During this process, we should expect to have winners and losers with winners concentrated among net producers in rural areas and asset owners in urban areas and losers concentrated among manual labor in rural areas and net consumers in urban areas.

Shock to the labor market (Figure 1, right-hand panel). An influx of forcibly displaced would generally increase labor supply with this effect varying significantly depending on where the displaced are hosted (in camps or outside camps, urban or rural areas), on the host country legislation in relation to work status and freedom of movement as well as on the socio-economic characteristics of the displaced. Whether employment of the hosts decreases or not, this will depend on the degree of substitutability between local and displaced workers, on the opportunity wage available to low skilled locals, and on whether the influx ultimately results in outmigration of locals from these areas. Firms might also adapt their technologies to the increased labor supply and substitute capital for labor. Investments will increase, and in the long term, labor-capital ratios can be expected to equalize. Concomitantly, an influx of aid, an increase in government spending, and an increase in public services increases the demand for skilled and unskilled labor. Humanitarian agencies typically recruit local staff for registering refugees and IDPs, distributing food, setting up camps, driving vehicles and various other skilled and non-skilled activities. International aid workers also generate a demand for domestic unskilled labor. National agencies would also need to recruit more staff to scale-up programs. On the other hand, the increase in consumer demand generates a second-round effect of an increase in production which generates new employment opportunities for locals. These elasticities are all largely unknown and the net effect of these different forces is hard to predict, but we can reasonably assume a displacement effect for some local workers, particularly workers with similar skills to the ones of forced migrants, at least in the short- to medium-term. We should also expect to see winners and losers in this process, with winners concentrated among high skilled formal workers and losers concentrated among low skilled informal workers.

[Figure 1]

⁹ Support for refugees and IDPs usually takes the form of cash, food vouchers, food in-kind, shelter, health and education services. Cash, food vouchers and food in-kind should be expected to have similar effects on consumer demand. Refugees are known to market food vouchers and when the vouchers are used to buy food, they tend to increase the demand for locally produced food just as cash would do. Humanitarian agencies tend to facilitate the availability of locally produced goods in stores that accept food vouchers and even when the food is delivered in-kind there is an effort to buy stocks from local producers. Moreover, humanitarian agencies have progressively shifted towards cash and food vouchers over the years as opposed to food in-kind. Free services such as health and education also increase the spending capacity of refugees by not diverting savings towards these expenditures.

¹⁰ When subsidies are in place for certain products, prices for these goods would not increase but fiscal costs would.

¹¹ Supply might be non-elastic, at least in the short-term, in very poor and isolated areas and notably for non-tradables, like housing.

Overall, the most important question is whether average household income for the host population increases or decreases. The growth of the consumer market and the arrival of aid and/or increase in government spending, and the subsequent growth of local production and employment drive household income upwards but the displacement effects and the decrease in employment and wages for some workers drive household income down. The net effect is difficult to predict and is likely to vary depending on the host country income per capita level and the substitutability of local workers with foreign workers. What is certain is that changes in relative prices and wages have distributional effects resulting in some low skilled/net consumer households to be worse off overall, at least in the short- to medium-term. Table 1 summarizes the basic predictions stated above.

[Table 1]

3. Empirical modeling and identification strategies

The purpose of this section is to provide some guidance to practitioners on the main models and identification strategies used by empirical economists. Table 2 provides a summary of the main equations used by each paper using comparable notation. Annex 1 provides a more detailed discussion of each model divided into a section on prices and consumption models and a section on wages and employment models.

As displacement crises are largely unpredictable, all the studies surveyed in this paper are evaluations conducted *ex-post*. In theory, a few of the crises studied could have been predicted but it would not be possible to allocate individuals to treated and non-treated groups randomly given that, by the definition of forced displacement we provided, people are fleeing violence, persecution or high levels of insecurity or uncertainty. Consequently, none of the papers reviewed is based on a Randomized Controlled Trial (RCT). Due to the randomness of the decision to leave (because of conflict, violence, insecurity or major political events) and/or the random allocation of displaced people in the country of destination (by policy or by default), some authors argue that they are in the presence of natural experiments. All authors do, however, address the question of endogeneity and, if one searches for a common thread, these evaluations would be better described as *quasi-natural experiments*.

The basic model used by the literature is a model of the following form:

$$y_i = \alpha + \beta FD_i + \gamma FE_t + \varepsilon_i$$

where i is the unit of observation, y is one of the four outcomes described (well-being, prices, employment or wages), FD is the forced displacement shock and FE are fixed effects with t representing the FE dimension considered. Most papers with few exceptions use standard OLS estimators or some of its variants (Table 2). Two papers use general equilibrium models (Bodvarsson, Van den Berg, and Lewer 2008; Hercowitz and Yashiv 2002) and two papers simply compare means between treated and non-treated groups resulting in simple difference estimations (Card, 1990 and Alix-Garcia and Bartlett, 2015).

[Table 2]

The unit of observation varies depending on the data at hand. Most studies rely on household survey data where individuals or households are the unit of observations and most studies include some regional dimension (more frequently administrative areas). Where longitudinal or panel data are available time is also included. Other choices for unit of observations include skills or education level, various types of population groups (based on gender, age etc.), and, in a few cases, economic sectors, industry or labor market segments. The use of fixed effects varies. Some papers use the full set of parameters depicting units of observation (for example, household, region and time fixed effects in equations where the unit of observation is constructed using household, region and time). Other papers use subsets of these parameters whereas some papers introduce variables that are not used to identify the unit of observation. Very few

papers provide explanations for these choices and there is no clear common approach to this choice. There are also only a handful of papers that discuss estimations of the error term and choices made in this regard.

The two prevalent evaluation methods used by these studies are Differences-in Difference (DD) methods and linear elasticities models. In the first case, the variable of interest (*FD*) is a discrete status variable (generally a pre/post- treated/non-treated interaction term) and the coefficient of interest measures the impact on outcomes in the presence or absence of displaced people after the inflow. In the second case, the model is typically in log form and is based on a shock variable that measures the intensity of the shock such as the number or share of refugees per geographical unit. In this case, the coefficient measures the elasticity of outcomes to the intensity of displacement. A few papers conduct simple differences illustrating results graphically or in tabular form. A few papers use ordinary matching methods (Alix-Garcia and Bartlett 2015, Aydemir and Kirdar 2018, Murard and Sakalli 2017; Mayda et al. 2017) and three papers use Synthetic Matching Methods (Peri and Yasenov 2019; Borjas 2017; Makela 2017). We could not find any paper using a discontinuity design.¹²

The essential ingredients used to measure the population shock are the number or presence of forcibly displaced persons, the size of the host population and the distance of the displaced from host communities if the displaced are clustered in camps or other forms of independent settlements. The literature covering high-income countries tends to focus on labor markets and the host population is often defined in terms of labor force whereas the literature covering middle and low-income countries often expands the work to household well-being and considers as host the entire population in a certain geographical area. Papers looking at labor market impacts either measure refugees or IDPs as a percentage of the population or labor force in a certain geographical area or as a percentage of the labor force in a certain education-experience group or both. The latter is used for the so-called skill-cell approach, which is prevalent in the economic migration literature and measures the impact of refugees or IDPs for specific population groups defined along education, skills or experience characteristics (see the recent reviews by Dustmann, Schönberg, and Stuhler 2016, and Özden and Wagner 2018). Table 2 shows how heterogeneous the definitions of the independent forced displacement variables are.

The outcome variables are usually measured at the sub-national level, but in a few cases nation-wide or across countries. They are measured across all sectors or, in three of the papers reviewed, for specific sectors of the economy (i.e. the construction sector in Portugal as in Carrington and de Lima 1996 and Makela 2017, or the retail sector in Miami as in Bodvarsson, Van den Berg and Lewer 2008). The authors aggregate results across all workers and types of employment or disaggregate them for specific groups of workers (based on their age, gender or experience and education level) and types of employment (formal or informal; as employee, employer, self-employed; full-time or part-time). Results either measure absolute effects or relative effects for certain groups compared to other groups. The studies also vary in terms of the time frame studied, with most of the studies looking at short- and, medium-term impacts and only few studies at long-term or dynamic impacts.

The question of endogeneity is central to all papers irrespective of claims related to natural experiments and the main approach to address this issue is the instrumental variable approach. The choice of instruments varies across contexts. The distance from the shock, such as the distance to the border with the country of origin of the refugees (Ruiz and Vargas-Silva 2016) or the distance from the capital or the nearest larger city in the country of origin (Angrist and Kugler 2003) are popular choices. Fallah et al. (2018) instrument for the locality share of refugees based on the distance from the main refugee camp. Ruiz and Vargas-Silva (2015) measure the distance between each host community and 13 refugee camps and their population over time. Loschmann, Bilgili and Siegel (2019) compare the households within a 10km radius to a refugee camp to those from 20km onwards. Distance is often combined with (proxies for) outflow numbers. Rozo and Sviatschi (2018) use the inverse distance of each geographic unit to each of the three main refugee camps

¹² Schumann (2014) is an exception, but only looks at the impacts on municipality size.

and the number of individuals fleeing the Syrian Arab Republic each year. Del Carpio and Wagner (2016) and Aksu, Erzan, and Kirdar (2018) combine the distance to the different governorates in Syria with the number of registered refugees from these governorates in Turkey. Depetris-Chauvin and Santos (2018) use the weighed sum of IDP outflows from all municipalities (except the receiving host city), where the weights are the inverse of the road distance between the host city and each municipality of origin. Ibanez and Calderon-Mejia (2016) use the number of deaths due to civil violence in the previous year, weighted by the distance between the urban labor market and the site of the violence. IV models using some form of distance to the border need to be cautious of potential correlations between distance to the shock and economic conditions, which violate the exclusion restriction. This is notably the case when border regions are very remote or are affected by the conflict in the neighboring country through a decline in trade and an increase in insecurity. Within a country, there might be spill-overs from violence in affected municipalities to municipalities nearby.

The other frequent approach to instruments is the prior refugee or migration stock in the area, based on Altonji and Card (1991) and the idea that previous migrants attract new migrants (network effect). Borjas and Monras (2017), for example, instrument for the refugee shock with prior migration to that region. Rozo and Sviatschi (2018) use the settlements of Syrians in Jordan before the start of the war in Syria in 2011. Hunt (1992) uses the share of early (1954-1962) repatriates as a share of the 1962 population to instrument the 1962-1968 repatriates as a share of the labor force. Like in the case of distance, this is often combined with (proxies for) outflow numbers. Morales (2018) uses an instrument for inflows of IDPs in municipalities that combines outflows with immigrant stock. A common criticism of the migrant stock instrument is that the settlement of previous immigrants or refugees may be correlated with economic conditions across these locations that may persist until today, which violates the exclusion restriction. To confront this criticism authors either use migrant stock data from a number of years before the influx they study or argue that the settlement of previous (forced) migrants was independent of economic conditions. Aydemir and Kirdar (2017), for example, use the share of earlier repatriates and show that the Turkish state took the decision where to settle them independently of economic conditions. Another criticism of this shift-share type of instrument is that if (forced) migrant inflows are stable over time, it conflates the short-run impacts of a new inflow with the long-run impacts of previous inflows (Jaeger, Ruist, and Stuhler 2018).

The previous occupational distribution of the refugees in their country of origin (Friedberg 2001) or the occupational distribution of previous immigrants or refugees in the country of destination (Borjas and Monras 2017) are also used. Authors who prefer the latter argue that refugees might experience occupational downgrading upon arrival and their previous occupation might only be a weak instrument for their current occupation. Braun and Mahmoud (2014) combine previous occupational distribution and distance when they instrument the share of male expellees in the total male labor force in state-occupation cell exploiting regional variations in pre-war distribution of occupations and the distance of the expellees' origin from West Germany. Hunt (1992) proposed the annual average temperature in each department in France, as repatriates from Algeria had a tendency to settle in areas in the South of France with higher annual average temperature. Sarvimäki (2011) uses the elements of the government's placement policy as instruments (i.e. the proportion of a municipality's population speaking Swedish and the hectares of potential agricultural land). Kürschner Rauck and Kvasnicka (2018) use the location of refugee reception centers and group quarters in German counties before the massive influx of 2015.

Other authors focus instead on the counterfactual group testing alternative designs of the control group, sometimes including placebo groups and other times recurring to matching methods. The choice of matching methods varies from ordinary methods such as nearest neighbor to more recent advances such as Synthetic Control Methods (Abadie and Gardeazabal, 2003).

The inclusion of fixed effects is common to almost all papers although the choice of fixed effects can be very different, as described above. Only one paper uses Fixed Effects (FE) and Random Effects (RE) formal models in conjunction and tests for differences (Esen and Binatli 2017). Cross-section econometrics is, by

far, the method of choice even if time is included into the equations but we also found three papers employing time-series models (Carrington and de Lima 1996, Makela 2017, Fakhri and Ibrahim 2015). Only few papers are able to exploit panel data (Foged and Peri 2015, Depetris-Chauvin and Santos 2017) and some of these papers use the same panel data set (Maystadt and Duranton 2018, Maystadt and Verwimp 2014; Ruiz and Vargas-Silva 2015, 2016, 2018). Not all cross-sectional studies have multiple rounds of comparable data, covering the period before and after the crisis. When comparing impacts between locations within a country, cross-sectional data usually does not allow to capture impacts on those who moved out and to differentiate impacts between those who were already there before the shock and those who moved in afterwards. Some of the models based on administrative areas qualify as spatial econometrics models in that they use estimation methods that derive from this literature and are published in spatial econometrics journals.

Studies that compare different areas within a country are not only confronted with the potential endogeneity of the size and skill composition of the inflow and the choice of destination, but also with the endogenous reactions of the host community. Local workers might respond to the labor supply shock by dropping out of the labor force, investing in education, occupational upgrading or moving to other areas and diffusing the impact of the inflow. Even if local workers do not respond to wage variations, capital flows may equalize capital/labor ratios within the country, labor-intensive industries might move towards the regions with a high refugee or IDP influx or firms might use more labor-intensive production technologies. The reactions of the host country workers, investors and firms are medium-to long-term in nature and will play less of a role in the short-term if there are large, sudden and geographically concentrated inflows. Some of the papers explicitly analyze these potential channels, notably migration of local workers, and, to a lesser extent, occupational upgrading. Outmigration of hosts is a critical complement to the labor market analysis and excluding this outcome can lead to an underestimation of the impacts of forced displacement on the labor market outcomes of natives. The papers we reviewed that looked at tasks complexities and the question of substitution vs complementarities between refugees and natives found occupational upgrading among natives as a result of the refugee inflow (Akgündüz, van den Berg, and Hassink 2018, Akgündüz and Torun 2018, Foged and Peri 2015, and Alix-Garcia and Bartlett 2015).

Measurement challenges also arise due to the phenomenon of skill downgrading (Ozden and Wagner 2018). Refugees are often not able to find jobs that correspond to their education level and previous work experience. This has an impact on the degree of substitution between refugees and natives with the same observable education and work experience. Papers using the skill-cell approach face these measurement challenges, while papers which look at the impacts of refugees or IDPs across all skills and experience levels do not have to address this issue.

There are two important questions related to endogeneity and spurious correlation that have been raised and addressed in two separate papers but are relevant for and have been largely ignored by the rest of the literature. The first question related to endogeneity was raised by Borjas and Monras (2017). The displacement shock has an impact on local wages and this affects native labor supply at the intensive margin (by affecting the amount of labor that working natives provide) and at the extensive margin (by affecting the number of natives who participate in the labor market). In order to address this issue, one has to consider a labor supply model that is able to measure both effects separately whereas most papers confound these two effects into one. Foged and Peri (2015) is one of the exceptions, as their paper looks at the intensive margin (fraction of year worked). Rozo and Sviastchi (2018) include the number of hours worked, and Ruiz and Vargas-Silva (2018) look at the changes in number of hours dedicated to a task (including employment outside the household). The second question relates to possible spurious correlations generated by how variables are combined in models. Linear models that use ratios of two variables as dependent variable (think of average prices or wages, employment rates or consumption per capita) and the denominator of this ratio as independent variables (think of the share of refugees on host communities or household size) can produce spurious correlations (Kronmal 1993). This is noted and addressed in Clemens and Hunt (2019) who show how addressing this issue changes results for several studies in the literature covered here.

Almost all models reviewed in this paper use the same population or household size on both sides of the equations but do not discuss this issue.

Finally, the expenditure shock which we discussed in the theory section (international aid or an increase in public spending associated with the forced displacement crisis) is considered by only a handful of papers. This is a possible confounding factor of the impact of forced displacement on host communities and one that is not easily addressed with the use of fixed effects. This is clearly a shortcoming of this literature that will require increased attention in the future.

4. Meta-analysis of empirical results

As it should be evident from the comparative analysis of the empirical models, the size of the coefficients estimated by the different papers is not comparable, not even for sub-samples of the literature, because of the diversity of models considered across the literature (Table 2). This forcibly limits the meta-analysis that follows to the sign (positive or negative) and significance level of the key parameters of interest. In the next section we present the data and in the following section we provide estimates of the aggregate probabilities of outcomes and of the odds ratios of negative versus positive results across a range of possible predictors considered by the literature.

4.1 Data

The literature review covers 54 papers spanning over a period of 29 years, from 1990 to 2016. We were not able to find published papers prior to the work by Card in 1990, which effectively started this literature, and there is a relatively low interest in this topic between 1990 and 2011 with only one or two papers published per year (Figure 2). With the Syrian crisis starting in 2011 and the peak of the EU crisis in 2015 the number of papers per year increased by several folds reaching 14 papers in 2018. Most of the papers and results considered in this review are therefore very recent. We used academic databases and search engines (EconLit, Social Science Research Network, JSTOR, Google Scholar) and searched websites of institutions with relevant working paper series (NBER, IZA, ERF and others). Relevant unpublished papers were included by searching agendas of workshops and conferences organized during the past few years.

[Figure 2]

From the papers reviewed, we selected a total of 868 results summarized in Tables 3 to 5. The results database was compiled as follows. For each paper we focused on the results that the authors considered the main and most reliable findings.¹³ For the same paper, results are considered different if the dependent, the key independent variable or the population group considered change. For each of these variations, we include two results, a minimum and a maximum value, derived from variations in estimators, set of regressors or modalities for the estimation of the standard error.¹⁴ The sample is therefore unbalanced with respect to papers and authors. The final database includes the following fields: authors, journal, host countries' income group (LICs, MICs, HIC), caseload (crisis), shock size (displaced population as a share of the host population), dependent variable, time-lag between crisis and the measurement of the impact, key independent variable, key coefficients with sign and significance level, reference tables in the papers and 36 dummy variables to identify population sub-groups, products or other relevant characteristics measured in the equations.

Employment is the outcome most studied with 412 results followed by wages (264), prices (128) and well-being (64) in this order (Table 3). Considering that well-being is the only indicator that captures the overall impact on host households, the relatively low number of outcomes is clearly a shortcoming of this literature.

¹³ When OLS and IV estimations are reported, for example, IV estimations are almost invariably preferred by the authors. Robustness checks are excluded from the list of results.

¹⁴ Only in a few cases, we considered a change in estimator a separate result. That is when the two estimators convey clearly different information.

Overall, there is a good spread of results across papers and outcomes. Most authors consider more than one outcome and all outcomes are covered by a significant number of authors. There is an average of between 13 and 27 papers per outcome and an average of between 4.9 and 15.3 results per paper.

[Table 3]

The literature covered includes 18 displacement crises well distributed across high, medium and low-income hosting countries (Table 4). There is a good coverage of all three groups of countries and there is a good coverage of most crises with a few exceptions. The single crisis that dominates the literature is the Syrian crisis. Other well studied crises are Burundian and Rwandan refugees in Tanzania, Cuban refugees in Miami, Former Soviet Union (FSU) escapees to Israel and IDPs in Colombia. One case (refugees in Denmark) has many results but they derive from a single paper (Foged and Peri, 2015). Table 4 also reports the share of refugees around the peak of the crises and the time-lag between the crisis and the time of outcomes considered in the studies.¹⁵ Depending on the crisis, the share of the displaced population varies between 0.1% and 53.3% of the host population whereas the approximate time-lag between the crisis and the outcome studied is between 0.6 years and 58 years.

[Table 4]

The coverage in terms of journals is of high quality (Table 5). The average recursive impact factor for the last ten years is 0.93 and journals include top journals such as the Quarterly Journal of Economics, the Journal of Political Economy, the Review of Economics and Statistics, the Journal of Labor Economics, the Journal of International Economics, the AEA: Applied Economics, the Journal of Development Economics, the Journal of Economic Geography and the World Bank Economic Review.¹⁶ The number of papers is well distributed across journals. The average number of papers per journal is 2.4. Industrial and Labor Relations Review, the review that published the first paper by Card, is the journal with more papers with five articles followed by the Journal of Development Economics and the Journal of Economic Geography with three articles each. The IZA Discussion Papers series is the non-journal series with the highest number of contributions (6 papers).

[Table 5]

All results are provided in weighted and non-weighted form with weights being the journals' impact factors. Given the wide range in impact factors across journals and working papers (0.01-8.4), we opted to use the squared root of impact factors as weights to avoid giving excessive relative weights to single papers published in top journals. This reduced the range of impact factors to 0.07-2.89.

4.2 Results

This section discusses the overall results by outcome considered using the database of 868 results. Table 6 provides frequencies and percentages with standard errors for the four outcomes classified into positive, non-significant and negative values where positive and negative values are intended as significant. Note that percentages can be interpreted as probabilities if we consider that the review covers the population of existing studies and results rather than a sample of studies. These percentages (probabilities) are also provided visually in Figure 3.

[Table 6]

¹⁵ The incidence of refugees and IDPs is estimated based on the peak stock value of refugees or IDPs divided by the host population, which can be a country or a smaller geographical area affected by refugees or IDPs. These data are mostly provided by the papers that cover these crises. We use the same number for all papers analyzing the same crisis.

¹⁶ The recursive impact factor for the last ten years is taken from the IDEAS/Repec repository as for September 10, 2018. The same listing includes journals and working papers. Working papers not included in the list were attributed an impact factor of 0.01.

[Figure 3]

Table 7 (a, b, c, d) reports the odds ratios of a negative result for the four outcomes by the available population sub-groups and by the income level of host countries, the size of the displacement shock and the short or long-run nature of the estimated effects.¹⁷ Table 7 is provided by outcome and is divided into four panels. The left-hand panel estimates are the odds ratios of negative versus positive and non-significant results whereas the right-hand panel estimates are the odds ratios of negative versus positive results only. In other words, in the left-hand panels we consider the odds ratios of finding a negative result overall whereas in the right-hand panels we consider the odds ratios of finding a negative result versus a positive result. We also consider independent variables in bivariate and trivariate form. The bivariate estimates in the top panel are the odds ratios contrasting opposite categories within groups (like females versus males for gender) whereas the bottom trivariate estimates add as base category results that are not tagged by group (relate to the whole population) or are simply a further disaggregation of a variable into three groups. In other words, the top panels show the odds ratios between the extremes ends of the independent variable whereas the bottom panels compare these extremes with a base category. We will see that this four panels' approach helps to nuance results. Table 7 is the key table to understand whether vulnerable groups such as informal workers or structural factors such as host countries' wealth help to explain negative or positive significant results. Note that the set of independent variables we consider varies across outcomes due to the nature of the outcome and the number of observations available.

For readers interested in selected forced displacement crises, Annex 2 provides a full discussion of results by crisis. Table A1 (a, b, c, d) in annex provides all frequencies by outcome disaggregated by all categories of variables used in the regressions. As we are working with a limited number of observations, these tables are important to put results into perspective.

4.2.1 Well-being

Among all the papers reviewed, 13 papers explicitly measure the impact of displacement on the economic well-being of host communities for a total of 64 distinct results. Of these, 34 are on income, consumption or output, 20 are on housing or assets, 6 are on night luminosity and 4 are on poverty. Only two of these results are on HICs, 26 are on MICs and 36 on LICs. In all these cases, a positive result is considered a good outcome meaning that household well-being has increased as a result of the forced displacement shock.¹⁸

Table 6 shows that between 45.3 and 53.2% of results are positive and significant depending on whether results are weighted for the journals' impact factor or not. This indicates a net improvement in household well-being according to about half of results. An additional, 34.4-37.2% of results are non-significant, and the remaining 9.7-20.3% of results are negative and significant. Looking more in details at the 13 negative results, these are equally split between income and consumption and assets and housing indicators. Results on assets and housing indicators refer to individual items such as construction materials of dwellings and are therefore less representative of household well-being as compared to aggregate income or expenditure.

Table 7a shows the odds ratios of a negative result with the table divided into the four panels as described above. We consider results robust if the z-stat is equal or above 1 and results are consistent between weighted and non-weighted estimates. Results that meet these criteria are highlighted in bold. As independent variables for well-being, we use the time-lag (short-run and long-run results), the size of the

¹⁷ The odds ratios are estimated with logit equations where the dependent variable takes the value of one for negative values and zero for positive values or positive plus non-significant values. Note that multivariate equations do not provide very useful estimates because some of the results may relate to multiple population groups such as females working in the informal sector generating multicollinearity. Multivariate estimations are available from a previous version of the paper published in the World Bank Policy Research Working Paper series (Verme and Schuettler, 2019).

¹⁸ Note that when poverty was used as an indicator of well-being, the sign of the coefficient was reversed to make it consistent with the other indicators of well-being where a positive sign indicates an improvement in well-being.

shock (small, medium and large), the level of income of host countries (LICs, MICs and HICs) and the type of well-being indicator (housing, monetary or other).

[Table 7a]

The number of observations is small (see Table A1) but a few significant results emerge from these regressions. According to the negative versus positive bivariate results (top-right panel), negative results are less likely to occur in low-income countries as opposed to middle or high-income countries. However, as shown in the trivariate estimations (bottom-right panel), this is due to medium rather than high-income countries, a result that is likely to be driven by the Syrian crisis. The odds ratios of MICs versus LICs are between 3.5 and 16 and significant indicating that household well-being is most likely to decrease in middle-income countries. Trivariate results also indicate that a medium shock (a share of forced displaced population between 10 and 30% of the population) is more likely to exhibit negative results as opposed to a small or a large shock. They also show that wellbeing measured with housing indicators is more likely to have negative results as opposed to monetary or other types of indicators and this with very high odds ratios.

Overall, between 79.7 and 90.3% of results are either positive or non-significant with the probability of a negative result being between 4.1. and 20.3% (Table 6). Negative results are more likely when a crisis is of medium size and in middle-income countries and when well-being is measured with housing indicators (Table 7a). Given that the majority of studies on well-being covers LICs, that results for LICs are mostly positive (Table A1a) and that the Syrian crisis predominates in MICs, we derive that the negative results are mainly driven by the Syrian crisis. Negative results in LICs are also mostly associated with housing indicators that typically provide a less accurate measurement of household well-being than monetary indicators. Therefore, the evidence on negative impacts of forced displacement on household well-being is weak and fragmented.

The basic theory illustrated at the outset of the paper could not predict these outcomes whereas such outcomes are clearly in contrast with the popular view that forced displacement is detrimental to host communities. However, available results on well-being are still scarce and well-being is under researched as compared to labor market outcomes such as employment and wages. Future research will need to provide more hard evidence based on income, consumption or expenditure indicators and expand its coverage to many more countries and situations, and possibly disaggregating results by type of households' income level to assess the distributional impacts of forced displacement.

4.2.2 Prices

The database includes 128 results on prices where prices refer to various types of prices which we classified into three categories: food, rents and others.

Results in Table 6 show that between 35.2 and 44% of results are positive and significant, between 21.9 and 23.1% are non-significant and between 32.9 and 43% are negative and significant. As before, these ranges are determined by whether results are weighted or not weighted and can be interpreted as probabilities. There is no good or bad interpretation as changes in prices benefit some hosts and damage others. What is noticeable is that, unlike other outcomes, the share of non-significant results is lower than either the share of positive or negative results. There is also no dominance of positive or negative prices if we compare weighted and unweighted results. Therefore, a forced displacement shock is most likely to affect prices with a probability of 77-78% but the direction of changes is unpredictable.

Table 7b provides some indications on the drivers of price changes. As before, we focus on results highlighted in bold which are those significant ($z\text{-stat} \geq 1$) and consistent across weighted and non-weighted estimations. As independent variables we use the time-lag, shock size and host countries income level as for well-being with the addition of the price categories (food prices, rents and other). We find that prices are more likely to decrease in the short-run than in the long-run with high odds ratios (top-left panel) and that this is explained by the higher likelihood of a price increase in the long-run (bottom-left panel).

These results are confirmed if we restrict the control group of the depend variable to positive signs only (right-hand panels). We also find that prices are more likely to decrease in HICs as compared to LICs or MICs although this result does not stand if we restrict the dependent variable control group to positive signs (bottom-right panel). Food prices and rents are most likely to increase as compared to other items (bottom-left panel) whereas we do not observe a significant difference between food prices and rents (top-left panel). If we restrict the dependent variable to negative and positive signs, we also find that large shocks are associated with a higher likelihood of a negative sign (bottom-right panel).

[Table 7b]

These results are at odds with conventional wisdom that would see prices increase right after a forced displacement crisis. Our findings indicate that prices are equally likely to increase or decrease and that they are more likely to increase in the long-run rather than in the short-run. We find instead evidence that prices are more likely to increase for food and rents as opposed to other types of items such as services. These findings remain working hypotheses based on very diverse data and a low number of observations. Future research will need to be more comprehensive in coverage of different products and countries. It will also be essential to expand research on price elasticities of demand and supply, including cross elasticities, and relate this research with the research on household well-being.

4.2.3 Employment

The database on employment contains 412 observations where employment can be a rate, a status or a probability. In all these cases a positive value indicates that employment among host communities has increased as a result of forced displacement.

Table 6 shows that between 12.9 and 15.1% of results are positive and significant, between 61.7 and 62.4% are non-significant and between 23.2 and 24.8% are negative and significant. Therefore, almost two-thirds of results are non-significant whereas negative results are more likely to occur than positive results.

Table 7c shows the odds ratios estimated from the logit equations. As independent variables, we use the time-lag, shock size and host countries' income as for well-being and prices. In addition, we use four population categories including gender (females and males), age (young and old), formality (informal and formal) and skills (low-skilled and high-skilled). Results on employment are often provided by population sub-groups and these are the groups for which we had sufficient numbers of observations to estimate the odds ratios. In bold are the results that are significant and consistent across weighted and unweighted estimations.

[Table 7c]

A medium or large shock is more likely to result in a decrease in employment than a small shock as we should expect (top-left panel) although this result is driven by medium size shocks (bottom-left panel). There are no robust results for the short-run but in the long-run negative results are less likely to occur (bottom-left panel). The host countries' level of income does not seem to make any difference for employment. Females are significantly more likely to experience a decrease in employment as compared to males with odds ratios around a value of two (top panels). There is no clear distinction between young and old and skilled and unskilled but workers in the informal sector are much more likely to experience a decrease in employment as compared to formal workers with odds ratios that are extremely high.

Overall, the main finding on employment is that in almost two-thirds of estimations authors do not find any significant result. We tested whether significant results (negative and positive) are more likely to occur in larger crises and this is what we found suggesting that detecting significant employment effects relates to the scale of the crisis. For the remaining third of estimations, a decrease in employment is more likely than an increase and this is mostly explained by larger size shocks, short-run results, females and informal workers. These findings are again at odds with popular views that see local workers experiencing an almost

invariable loss in employment as a result of forced displacement whereas it is consistent with theory and previous research on migration that finds lower-skilled, informal and female workers more at risk of losing employment after a migration inflow.

4.2.4 Wages

The database contains 264 observations on wages where wages can be expressed in different forms in terms of time unit, they can be gross or net, or can be defined as earnings. In all these cases, results with positive signs indicate an increase in wages.

Table 6 provides the number and shares of results divided into positive, non-significant and negative results. Between 12.5 and 17.2% of results are positive and significant, between 53.7 and 59.9% are non-significant and between 27.7 and 29.1% are negative and significant. As for employment, the majority of results are non-significant whereas negative and significant results are more likely to occur than positive and significant results.

Table 7d presents the results for the logit odds ratios estimations. For wages, we use the same independent variables used for employment with the exception of the host countries' income, the young-old group and the formal-informal group because of insufficient numbers of observations for these groups. For the remaining categories results are rather robust. Wages are more likely to decrease in the short-run as compared to the long-run with this result consistent across the four panels in Table 7d. Larger shocks are more likely to result in lower wages and, as for employment, this is explained by middle-size shocks. Again, this result is consistent across the four panels of the table. Females are more likely than males to experience decreasing wages with an odds ratio around two, similarly to employment. Also, low-skilled workers are more likely to see a reduction in their wages as compared to high-skilled workers with very high odds ratios.

[Table 7d]

The overall evidence for wages is that almost 6 in 10 results are non-significant. As for employment, we also estimated the odds ratio of obtaining a significant versus a non-significant result against the shock size variable and found that larger shocks are more likely to find negative and significant results. Therefore, it is clearly difficult to find significant results in the labor market if the displacement crisis is not large. If results are significant, these are more likely to be negative than positive and this is explained by short-run results, results for larger crises and for females and low-skilled workers. All these results are in line with what theory would predict and what the migration literature finds but again at odds with popular views that typically associate a forced displacement crisis with a decrease in local wages. We have seen that this is the exception rather than the rule with an estimated probability of less than 3 in 10 cases.

5. Conclusion

The paper reviewed 54 empirical studies that focused on estimating the impact of forced displacement on host communities. This literature covers 18 different displacement situations in high, medium and low-income countries covering the impact on the labor and consumer markets. A total of 868 results have been used for the meta-analysis. To our knowledge, this is the first comprehensive review of this literature providing a comparative analysis of models and a meta-analysis of results.

The empirical modeling analysis highlighted the main traits of this literature. By definition, all studies operate *ex-post*, after the displacement crisis has taken place. The unexpected nature of the crisis and the randomness of the allocation of displaced persons are two elements used to defend the natural experiment assumption. However, all papers address the central question of endogeneity. The instrumental variable approach is the dominant method to address endogeneity issues and instruments tend to focus on either distance from the forced migrants location of origin or previous location of migrants. Double difference and linear elasticity models are the dominant choice of estimation models with matching and placebo

counterfactuals often supporting these choices. Cross-section econometrics is the predominant approach (mostly dictated by the type of data available), few papers use time-series models whereas panel data models are the exception. Most papers are set in a partial equilibrium framework, but a few papers use Computable General Equilibrium (CGE) models.

The meta-analysis of empirical results on household well-being - the only comprehensive indicator of the impact of forced displacement on hosts - shows that the probability of a negative and significant outcome is less than 1 in 5. The majority of results show an increase in household well-being whereas negative results are associated with less accurate measures of well-being such as housing. The review of studies on employment and wages shows that, when taken together, 6 in 10 results are non-significant whereas 1-2 in 10 results are positive and significant meaning that employment and wages improve for the local population. When we zoomed in on the remaining negative results on employment and wages, we found that these related mostly to female, informal and low-skilled workers and that they are associated with larger crises and tend to disappear in the long-run. Results on prices show instead that the probability of finding changes in prices in the aftermath of a forced displacement crisis is high, almost 80%, but that predicting the direction of changes in prices is difficult and largely depend on the items considered. Food prices and rents are more likely to increase as compared to other prices.

Some selected evidence on policies can also be derived from the review by crisis provided in Annex 2, even if few studies analyze the mechanisms through which forced displacement impacts labor and consumer markets. Prices increase because supply might be non-elastic, at least in the short-term, in poor and isolated areas and for non-tradables, like housing. To increase the price elasticity of supply for food items in poor and isolated areas, investments by the government, donors and humanitarians can help connect these places to markets. The improved road network seems to have a positive impact on household welfare even after the forced migrants return (Maystadt and Verwimp 2018). An improved business and investment climate will also speed up the reaction of the private sector to an increase in demand. An increase in the issuance of construction permits, notably for social housing, can help buffer effects on the housing market, at least in the medium term. If construction permits for high-income housing crowd out construction permits for social housing instead, the negative income effects on lower income hosts are reinforced (Depetris-Chauvin and Santos 2018).

There is some evidence that negative impacts on employment of hosts might be stronger in countries with more rigid labor markets (Angrist and Kugeler 2003). Restrictions on the right to work usually mean that refugees of all skills are limited to compete with low-skilled workers in the informal sector, potentially increasing negative impacts on already vulnerable groups (as the studies on Turkey and Jordan show). Allowing refugees to work will disperse the impacts across different sectors and skill levels. As three papers on Turkey exemplify, enterprises created by refugees themselves can contribute to these efforts, if policies and regulations allow them to (Akgündüz, van den Berg, and Hassink 2018; Altindag, Bakis, and Roza 2018). The papers we reviewed that looked at task complexities and the question of substitution versus complementarities between refugees and natives found occupational upgrading among natives as a result of the refugee inflow (Akgündüz, van den Berg, and Hassink 2018, Akgündüz and Torun 2018, Foged and Peri 2015, and Alix-Garcia and Bartlett 2015). Policies can reinforce these complementarities between forced migrants and native workers and increase the productivity of native workers by providing incentives to upgrade their skills. As a number of studies showed, internal migration helps dissolve some of the impacts on the labor market and could be incentivized by policy makers. Capital flows can help re-equalize capital/labor ratios within the country, if allowed to do so. In general, policies are needed to counterbalance the distributional impacts of a forced displacement inflow on the labor and consumer markets.

Despite recent research efforts and the findings described, research in this area remains in its infancy. Studies have focused on selected markets, first round, short and medium-term effects, selected

methodologies and selected displacement crises. Very little work is available on second-round and long-term and dynamic effects, on the production side of the economy and on the impact of forced displacement on primary services such as water, electricity, education or health. Results on household well-being, which should be the most important outcome to study, remain few. Panel data, which are the most promising type of data for this type of analysis, covered only a few segments of a few crises. We could not find evaluations that used regression discontinuity designs even if forced displacement crises can potentially lend themselves to this type of evaluation. Some crises, such as the Rohingya or the Venezuelan crises, have not been covered by the literature because they may be too recent, but other major displacement crises, such as the repeated crises in the Democratic Republic of Congo, the Central African Republic, Afghanistan, Pakistan or Iraq, have been largely ignored by the economics profession. These are all areas that will require greater research efforts to complement the existing literature. Results are also derived from a multitude of models and case-studies and their comparability remains a challenge. We could not provide, for example, reliable summary figures on the size of the measured effects, forcibly limiting our analysis to the sign and significance level of the econometric estimates.

More research is also needed to help us understand the channels through which the influx of forced migrants determines impacts on outcomes and whether policies have had any role in this process, notably policies regarding the access to the labor market or the mobility of forced migrants as well as the general business and investment climate. None of the studies covered by this review explicitly measured the effects of policy changes on host communities. Policies affect outcomes and the different policies administered cross-country represent a confounding factor when results are pulled together and compared. Equally important is to have a much better understanding on the process of local integration of displaced persons among host communities in the medium and long-term to better understand when displaced persons can stop being considered as displaced and are finally counted as an integral part of the population. The level of their economic and social integration will also influence their impacts on the host community and change it over time. While our findings show that negative impacts on host communities tend to disappear in the long-term, the studies reviewed in this paper did not really expand on this issue. Only few papers studied changes in migration of locals into and out of the area affected by the forced migration inflow as one important adaptation mechanism and even fewer looked at skills-upgrading among hosts, changes in production technologies of firms, and new investments.

Finally, there can be noticeable differences between the measured impacts on host communities and perceptions of these impacts. The empirical evidence on the impact of forced displacement on host communities that we discussed in this paper is clearly at odds with the public discourse. To our knowledge, only two studies looked at these differences (Kreibaum 2015; Loschmann, Bilgili and Siegel 2019) and found it to be sizable. Subjective well-being can be a powerful driver for change and understanding its relation with objective well-being is key from a policy perspective. New data collection and research efforts should take this aspect into account.

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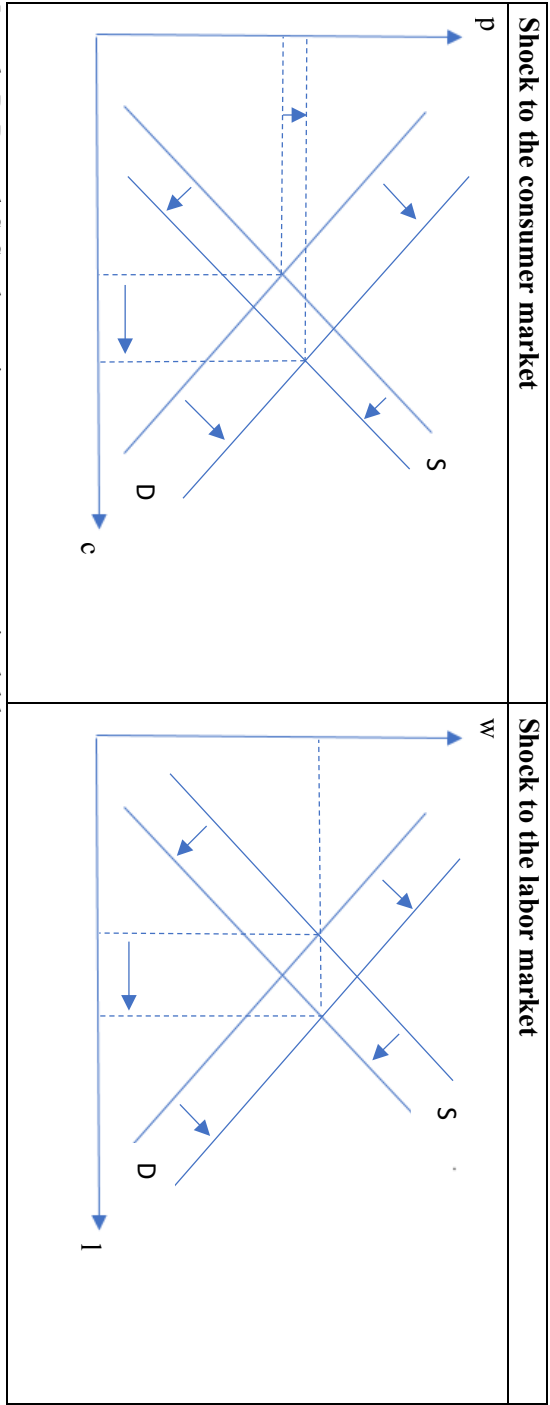
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Figure 1 – Shocks in the Consumer and Labor Market



Legenda: D=Demand; S=Supply; p=prices; w=wages; c=consumption; l=labor.

Table 1 – Summary of predicted outcomes (short to medium term)

Variable	Effect
Well-being	
Household well-being (owners)	Up
Household well-being (non-owners)	Down
Net household well-being	?
Prices	
Food prices	Up
Rents	Up
Other prices	?
Consumer price index	?
Employment	
Employment (skilled)	Up
Employment (unskilled)	Down
Net employment effect	?
Wages	
Wages (skilled)	Up
Wages (unskilled)	Down
Net wage effect	?

Table 2 – Comparative review of models' specification

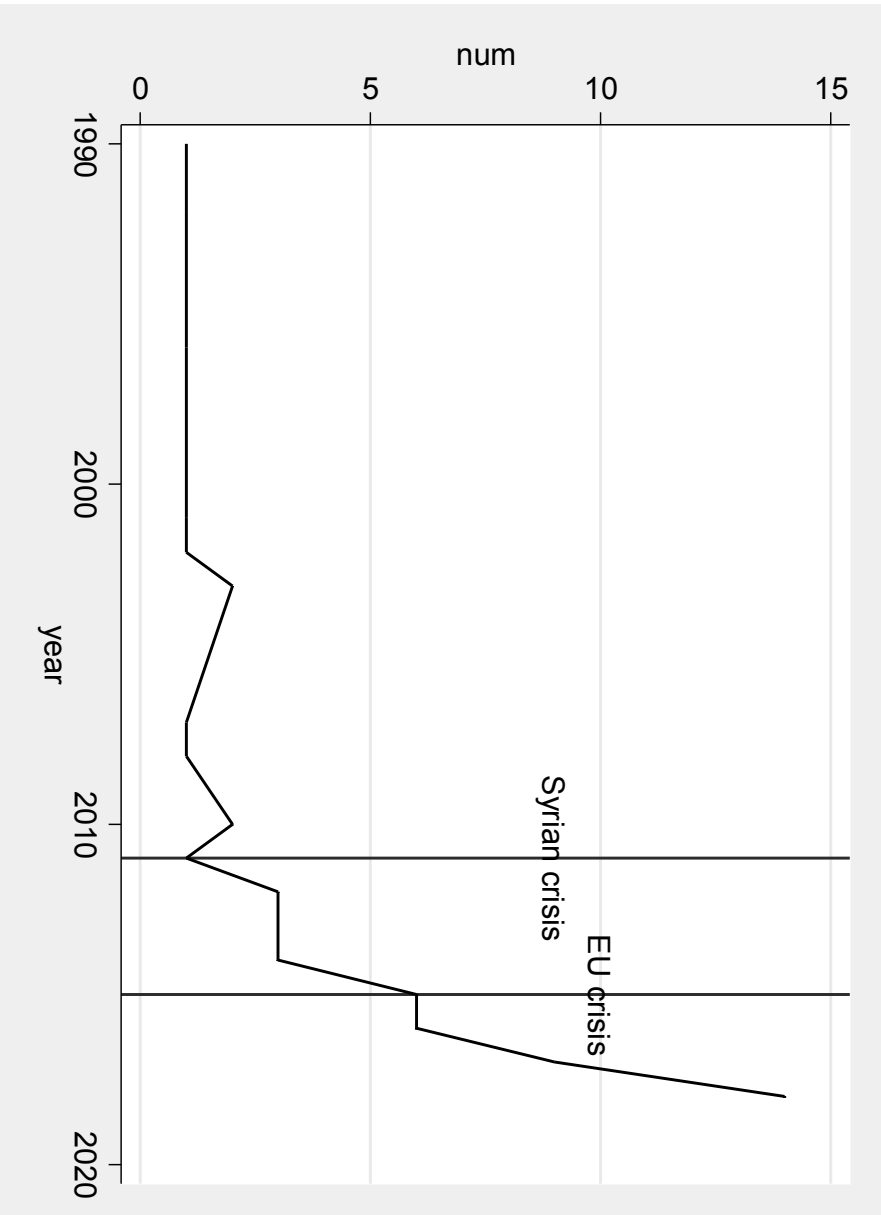
No.	Paper	Estimator	Unit	Fixed Eff.	Dep.Var.	Forced Displ. Var.	Instrumental Var.
1	Akgindüz et al. (2015)	OLS	i, t, r	t, r	EM, PR	FD presence; FD; $isr(FD)$	none
2	Akgindüz and Torun (2018)	2SLS	i, r, t	r, t	EM	FD/pop	$Sumn(((Syrians_{t-1}/pop)*FD)/d)$
3	Aksu et al. (2018)	OLS, 2SLS	i, r, t	r, t	EM, WG	FD/pop	$Sumn(((Syrians_{t-1}/pop)*FD)/d)$
4	Alhawarin et al. (2018)	OLS	i, t	i, r, t	WB	(FD/pop)*TM	none
5	Alix-Garcia and Bartlett (2015)	D	i	n.a.	WB	Simple diff with matching	none
6	Alix-Garcia and Saah (2010)	OLS	i, t	$mkt, y/m$	PR, WB	$1/d_mk*(FD/pop)$	none
7	Alix-Garcia et al. (2012)	OLS	w, m, t	t	PR	FD	none
8	Alix-Garcia et al. (2018)	DMSP-OLS	v, r, t	r, t	PR, WG, WB	$Sumn_d\{ihs(FD)*d\}$	none
9	Angrist and Kugler (2003)	OLS, 2SLS	g, r, t	g, r, t	EM	$ln(FD/g_t)$	d
10	Balkan and Tumen (2016)	OLS	$item, r, m, t$	$item, r, m, t$	PR	(FD/pop)*TM	none
11	Balkan et al. (2018)	OLS	h, r, t	r, t	PR, WB	(FD/pop)*TM	none
12	Braun and Kvasnicka (2014)	OLS	r	none	EM, WB	FD/pop	none
13	Bodvarsson et al. (2008)	3SLS, CGE	r	none	WG	FD/pop	FD_t-1
14	Borjas (2017)	OLS	r, t	r, t	WG	TR*TM	none
15	Borjas and Monras (2017)	OLS, 2SLS	r, s	r, s	EM, WG	FD/LF	(FD/WAP)_t-1
16	Bozzoli et al. (2012)	OLS, 2SLS	i, r, t	i, t	EM	Net FD	Estimated conflict indicator
17	Braun and Mahmoud (2014)	OLS, 2SLS	j, r	j	EM	FD/LF	$Sum_r(FD*occ)/(Sum_r(FD*occ)+na\ tives*occ)$
18	Calderon-Mejia and Ibanez (2016)	OLS, 2SLS	i, r, t	r^*, t	WG	FD/WAP	$Sum_r(Casualties/d)$

19	Card (1990)	D	r	n.a.	EM, WG	Simple diff with matching	none
20	Carrington and de Lima (1996)	OLS	t or r	none	EM, WG	FD/pop	none
21	Cengiz and Tekguc (2018)	OLS, 2SLS	i, t	t	EM, WG	TM or FD/pop	Various based on distance and language
22	Ceritoglu et al. (2017)	OLS	i, r, t	none	EM, WG	TR*TM	none
23	Clemens and Hunt (2019)	OLS, 2SLS	r, s	r, s	WG	ihS(FD)	stock of prior migrants
24	Cohen-Goldner and Paserman (2011)	OLS, 2SLS	i, j, t	j, t, j*t	EM, WG	FD/j	FD/E_t-1
25	Del Carpio and Wagner (2016)	OLS, 2SLS	i, r, t	r, t	EM	FD/WAP + d	Sum_r(FD*(FD_t-1/pop))/d
26	Depetris-Chauvin and Santos (2017)	OLS, 2SLS	r, t	r, t	PR, WB	FD flow_t-1	sum_r(FD outflow/d)
27	Depetris-Chauvin and Santos (2018)	OLS, 2SLS	r, t	r, t	PR	FD flow_t-1	sum_r(FD outflow/d)
28	Esen and Binati (2017)	OLS	t, r	r	EM	FD; FD/pop	none
29	Fakih and Ibrahim (2016)	VAR	t	none	EM	n.a.	none
30	Fallah et al. (2018)	OLS, 2SLS	i, r, t	none	EM, WG	FD/pop	(FD/pop)/d
31	Foged and Peri (2015)	OLS, 2SLS	i, j, r, t	t*j; t*r, i*u	EM, WG	FD/E	sum_r(FD/WAP)
32	Friedberg (2001)	OLS, 2SLS	i, j, t	j	EM, WG	FD/natives	FD/E_t-1
33	Gehrsitz and Ungerer (2018)	OLS	r, t	r	WG	FD	none
34	Glitz (2012)	OLS, 2SLS	s, r, t	s*t, r*t	EM, WG	Delta(s/LF)	(FD/s*FD/WAP*Delta(FD))/LF_s
35	Hercowitz and Yashiv (2002)	CGE	t	none	EM, PR	Delta(FD)/pop	none
36	Hunt (1992)	OLS, 2SLS	r, s	r	WG	FD/LF	Temperature and FD_t-1
37	Kreibbaum (2015)	LPB	hh, v, t	t, r	WB	Diff (t-t-1)/(FD/1000pop)	FD/d

38	Kurschner Rauck and Kvasnicka (2018)	OLS, SLS	i, r, t item, store, r, t	r, t item, store, r, t	PR	TM*FD/pop	1/log(1+d)
39	Lach (2007)	2SLS	store, r, t	store, r, t	PR	FD/natives	FD_t-1/natives
40	Makela (2017)	OLS	g, t	none	WG	TR*TM	none
41	Mansour (2010)	OLS	i, t	t, s, j, r	WG	FD dummy	migrants
42	Mayda et al. (2017)	2SLS	r, t	r, t	EM, WG	f(FD)	FD_t-1
43	Maystadt and Duranton (2018)	OLS, 2SLS	h, v, t	h, t t*strata	PR, WB	ln(Sum_c(FD/d))	none
44	Maystadt and Verwimp (2014)	OLS	h, v	t	WB	ln(1+FD/d)	none
45	Morales (2018)	OLS, 2SLS	i, r, t	r, t	WG	100*Delta(FD)/po p	100*(Sum[Delta(expulsions_j)*stock share_mj])/pop
46	Murard and Sakalli (2018)	OLS	r	r	WG, WB	FD/pop_t-1	none
47	Peri and Yasenov (2019)	OLS	g, t	none	WG	TR*TM	none
48	Rozo et al. (2018)	OLS, 2SLS	i, r, t	r, t	EM, WG, WB	FD/(FD_r*d)	(FD_t-1/pop_t-1)*FD
49	Ruiz and Vargas-Silva (2015)	2SLS	i, t	i, t	EM	ln(1/d)	none
50	Ruiz and Vargas-Silva (2016)	OLS, 2SLS	i, t	i, t	EM	ln(1/d)	none
51	Ruiz and Vargas-Silva (2018)	OLS, 2SLS	i, h, t	i, h, t	EM	ln(Sum(FD/d))	none
52	Saiz (2003)	OLS	r, t	none	PR	T	none
53	Taylor et al. (2016)	CGE	n.a.	n.a.	WB EM, PR, WG	n.a.	n.a.
54	Turnen (2016)	OLS	i, r, t	none	WG	TR*TM	none

Legenda: D=Dependent variable; FD=Forcibly Displaced population; AID=Monetary AID; EM=Employment or Employment Rate; WG=wages; PR=Prices; WB=Well-being (income, consumption or expenditure); LF=Labor Force; FE=Fixed Effects; OLS=Ordinary Least Square; 2SLS=Two-Stage Least Square; LPB=Linear probability Model; DD=Differences in Difference estimator; PSM=Propensity Score Matching; ATE=Average Treatment Effect; TR=Treatment dummy; TM=pre-post treatment dummy; TR*TM=Generally refers to DD estimators; i=individuals; h=households; p=prices; t=time or year; r=region or location; d=distance from shock (camp, country of origin); v=village or community; c=camp; hp=host population; w=week; m=month; y=year; mk=market; nl=night luminosity; inv=inverse hyperbolic sign; ae=adult equivalent; s=skills or education level; g=population group; s=sector; j=sector; occupation; industry or labor market segment.

Figure 2 – Number of papers per year of publication



Source: Elaborated from database of results.

Table 3 – Number of results by paper and outcome

N.	Paper	Wellbeing	Prices	Employment	Wages	Total
1	Akgündüz and Torun (2018)			14		14
2	Akgündüz et al. (2015)		12	20		32
3	Aksu et al. (2018)			68	12	80
4	Alhwarin et al. (2018)	8				8
5	Alix-Garcia and Bartlett (2015)	2				2
6	Alix-Garcia and Saah (2010)	4	4			8
7	Alix-Garcia et al. (2012)		4			4
8	Alix-Garcia et al. (2018)	6	2		2	10
9	Angrist and Kugler (2003)			12		12
10	Balkan and Tumen (2016)		14			14
11	Balkan et al. (2018)	2	14			16
12	Bodvarsson et al. (2008)				8	8
13	Borjas (2017)				8	8
14	Borjas and Momras (2017)			10	8	18
15	Bozzoli et al. (2012)			6	4	10
16	Braun and Kvasnicka (2014)	2		2		4
17	Braun and Mahmoud (2014)			18		18
18	Calderon-Mejia and Ibanez (2016)				44	44
19	Card (1990)			4	4	8
20	Carrington and de Lima (1996)			4	4	8
21	Cengiz and Tekguc (2018)			8	8	16
22	Certoglu et al. (2017)			20	20	40
23	Clemens and Hunt (2019)				6	6
24	Cohen-Goldner and Paserman (2011)			24	24	48
25	Del Carpio and Wagner (2016)			22		22
26	Depetris-Chauvin and Santos (2017)	2	12			14
27	Depetris-Chauvin and Santos (2018)		12			12
28	Esen and Binatti (2017)			8		8

N.	Paper	Wellbeing	Prices	Employment	Wages	Total
29	Fakih and Ibrahim (2016)			2		2
30	Fallah et al. (2018)			16	4	20
31	Foged and Peri (2015)			32	12	44
32	Friedberg (2001)			2	12	14
33	Gehrsitz and Ungerer (2018)			6	6	6
34	Glitz (2012)			6	6	12
35	Hercowitz and Yashiv (2002)		4	4		8
36	Hunt (1992)				2	2
37	Kreibbaum (2015)	2				2
38	Kurschner Rauck and Kvasnicka (2018)		8			8
39	Lach (2007)		4			4
40	Makela (2017)				12	12
41	Mansour (2010)				4	4
42	Mayda et al. (2017)			6	6	12
43	Maystadt and Duranton (2018)	16	12			28
44	Maystadt and Verwimp (2014)	2				2
45	Morales (2017)				20	20
46	Murard and Sakalli (2018)	2			2	4
47	Peri and Yasenov (2019)				8	8
48	Rozo et al. (2018)	12		28	16	56
49	Ruiz and Vargas-Silva (2015)			6		6
50	Ruiz and Vargas-Silva (2016)			10		10
51	Ruiz and Vargas-Silva (2018)			56		56
52	Saiz (2003)		10			10
53	Taylor et al. (2016)	4			2	4
54	Tumen (2016)		16	4		22
	Total results	64	128	412	264	868
	Total papers	13	14	27	27	54
	Results per paper	4.9	9.1	15.3	9.8	16.1

Table 4 – Crises by income group (in percentage of all results), size of the forced displacement shock (forced displacement in percentage of the population) and years between shock and measurement of the impact (time-lag)

	Caseload	HICs	LICs	MICs	Total	FD (%)	Time-lag
1	2015 Refugees in Germany	1.6	0.0	0.0	1.6	1.3	0.6
2	Burundian and Rwandan refugees in Tanzania	0.0	12.7	0.0	12.7	53.3	13.0
3	Congolese refugees in Rwanda and Uganda	0.0	0.7	0.0	0.7	17.4	16.7
4	Cuban refugees in Miami	6.5	0.0	0.0	6.5	8.1	5.8
5	Escapees from Algeria to France	0.5	0.0	0.0	0.5	3.1	6.0
6	Ethnic Germans from EE and FSU to Germany	1.4	0.0	0.0	1.4	3.5	5.0
7	Ethnic Greeks from Turkey to Greece	0.0	0.0	0.5	0.5	20.0	58.0
8	Expellees from East Europe to West Germany	2.5	0.0	0.0	2.5	16.5	7.0
9	FSU escapees to Israel	9.2	0.0	0.0	9.2	9.4	6.3
10	FY refugees to Europe	1.6	0.0	0.0	1.6	0.3	8.3
11	IDPs in Colombia	0.0	0.0	11.5	11.5	10.4	4.6
12	IDPs in Sudan (Darfur)	0.0	0.7	0.0	0.7	30.0	3.7
13	Palestinians in West Bank	0.0	0.0	0.5	0.5	50.0	4.0
14	Refugees in Denmark	5.1	0.0	0.0	5.1	4.7	14.0
15	Refugees in Kenya (Turkana)	0.0	1.2	0.0	1.2	10.0	20.0
16	Refugees in the USA	1.4	0.0	0.0	1.4	0.1	30.0
17	Returnees from Angola and Mozambique to Portugal	0.0	0.0	2.3	2.3	5.1	12.4
18	Syrian refugees in Jordan and Turkey	0.0	0.0	40.3	40.3	5.8	2.7
	Total/Average	29.7	15.2	55.1	100.0	13.8	12.1

Legend. FD (%) indicates the number of forcibly displaced persons (refugees or IDPs) as a percentage of the host population in a given geographical area affected by refugees or IDPs. (*) Est. Time shows the average time gap between the beginning of the influx and the year for which the impacts are measured in each study.

Table 5 – Papers, results and impact factor by journal

N.	Journal	Papers	Results	Imp.Fact.	Imp.Fac. Sqr.root
1	AEJ: Applied Economics	1	44	3.610	1.900
2	American Economic Review: Papers and Proceedings	2	28	0.010	0.100
3	Defense and Peace Economics	1	2	0.070	0.265
4	ERF Working Paper	1	8	0.054	0.232
5	Economic Development and Cultural Change	1	2	0.730	0.854
6	Economic Policy	1	18	2.250	1.500
7	Economic Research Forum Working Papers	1	20	0.050	0.224
8	European Economic Review	2	60	1.240	1.114
9	GLO Discussion Paper	1	14	0.013	0.114
10	IZA Discussion Papers	6	148	0.660	0.812
11	IZA Journal of Labor Policy	1	40	0.350	0.592
12	Industrial and Labor Relations Review	5	32	0.480	0.693
13	Journal of Conflict Resolution	1	10	0.110	0.332
14	Journal of Development Economics	3	42	1.900	1.378
15	Journal of Economic Geography	3	82	0.450	0.671
16	Journal of International Economics	1	4	2.848	1.688
17	Journal of Labor Economics	1	12	3.007	1.734
18	Journal of Political Economy	1	4	6.635	2.576
19	Journal of Population Economics	1	14	0.020	0.141
20	KNOMAD Working Paper	1	14	0.010	0.100
21	Labour Economics	2	12	0.013	0.114
22	SSRN Mimeo	1	56	0.010	0.100
23	Oxford Economic Papers	1	2	0.580	0.762
24	PERI Working Papers	1	16	0.010	0.100
25	Proceedings of the National Academy of Sciences	1	4	0.010	0.100
26	Quarterly Journal of Economics	1	14	8.400	2.898
27	Review of Development Economics	1	56	0.129	0.359
28	Social Sciences	1	8	0.020	0.141

29	The Economic Journal	1	12	2.270	1.507
30	The Journal of Economic History	1	18	0.270	0.520
31	The Journal of Human Resources	1	8	2.451	1.566
32	The Review of Economics and Statistics	1	10	2.380	1.543
33	US Department of State Chief Economist WP	1	12	0.010	0.100
34	World Bank Economic Review	1	8	0.570	0.755
35	World Bank Policy Research Working Paper	1	22	0.010	0.100
36	World Development	2	6	0.290	0.539
37	ZEW Discussion Papers	1	6	0.005	0.071
	Total/Average	2.41	868	0.928	0.963

Table 6 – Sign and significance of results by outcome

	Unweighted			Weighted by impact factor			
	Freq.	%	%(s.e.)	Freq.	%	%(s.e.)	Cum.
Wellbeing							
Positive	29	45.3	6.3	34.0	53.2	8.8	53.2
Nonsignificant	22	34.4	6.0	23.8	37.2	8.7	90.3
Negative	13	20.3	5.1	6.2	9.7	4.1	100.0
Total	64	100.0	0.0	64	100.0	0.0	
Prices							
Positive	45	35.2	4.2	56.3	44.0	4.7	44.0
Nonsignificant	28	21.9	3.7	29.5	23.1	3.6	67.1
Negative	55	43.0	4.4	42.2	32.9	4.6	100.0
Total	128.0	100.0	12.3	128.0	100.0	13.0	
Employment							
Positive	53	12.9	1.7	62.1	15.1	2.0	15.1
Nonsignificant	257	62.4	2.4	254.3	61.7	2.7	76.8
Negative	102	24.8	2.1	95.6	23.2	2.2	100.0
Total	412.0	100.0	6.2	412.0	100.0	6.9	
Wages							
Positive	33	12.5	2.0	45.5	17.2	2.2	17.2
Nonsignificant	158	59.9	3.0	141.6	53.7	2.7	70.9
Negative	73	27.7	2.8	76.9	29.1	2.3	100.0
Total	264.0	100.0	7.8	264.0	100.0	7.3	

Figure 3 – Share of results by outcome and significance

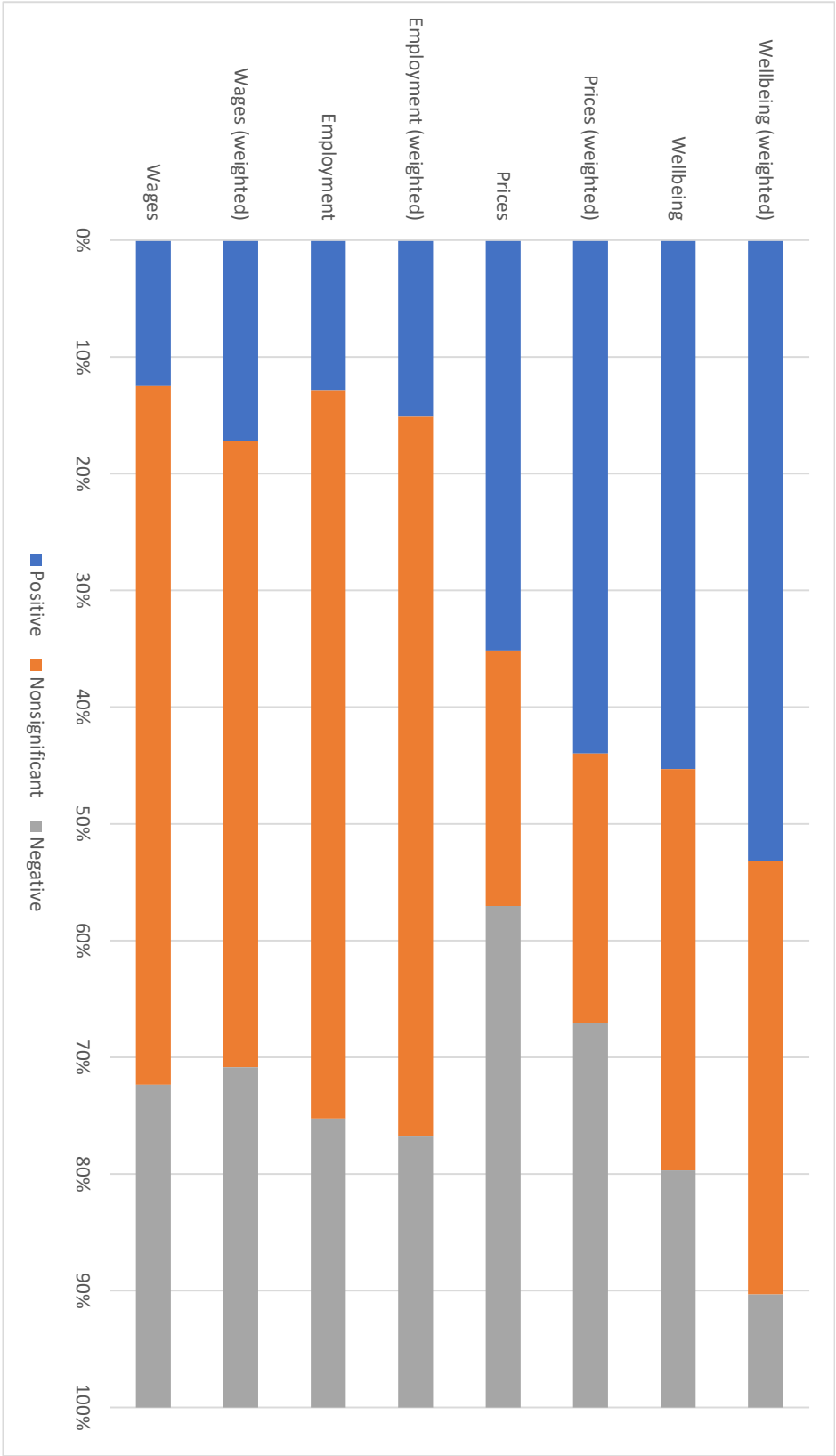


Table 7a – Well-being, logit odds ratios estimations (bivariate and trivariate independent variables)

	Dep. Var.: 1=Neg.Sign; 0=Pos.sign or Non signif.		Dep. Var.: 1=Neg.Sign; 0=Pos.sign	
	Non weighted	Weighted	Non weighted	Weighted
	Odds Ratio	z-stat	Odds Ratio	z-stat
Well-being (bivariate)				
shortrun_longrun	n.a.	n.a.	n.a.	n.a.
largeshock_smallshock	0.6	-0.9	1.4	0.3
LICs-MICs/HICs	0.2	-2.5	0.6	-0.4
monet-other	1.0	-0.1	0.4	-0.7
Well-being (trivariate)				
Short-run	n.a.	n.a.	n.a.	n.a.
Long-run	n.a.	n.a.	n.a.	n.a.
Medium-shock (>10% & <30%)	3.0	1.3	4.0	1.0
Large shock (>30%)	0.1	-1.9	0.6	-0.4
MICs	6.9	2.7	2.6	0.8
HICs	1.0	.	1.0	.
Wellbeing-housing	14.0	2.3	12.0	1.7
Wellbeing-monetary	4.7	1.4	1.1	0.1
			3.7	1.1
				0.6
				-0.3

Table 7b – Prices, logit odds ratios estimations (bivariate and trivariate independent variables)

	Dep. Var.: 1=Neg.Sign; 0=Pos.sign or Non signif.			Dep. Var.: 1=Neg.Sign; 0=Pos.sign				
	Non weighted	Weighted	Non weighted	Weighted	z-stat			
	Odds Ratio	z-stat	Odds Ratio	z-stat	Odds Ratio			
Prices (bivariate)								
shortrun_longrun	9.0	1.7	35.0	2.8	14.0	1.9	44.0	2.9
largeshock_smallshock	0.9	-0.3	1.0	0.1	1.1	0.2	1.3	0.6
lic_hic	0.4	-1.6	0.6	-0.7	0.8	-0.4	1.0	0.0
food_rents	3.6	2.7	0.9	-0.2	4.0	2.7	0.9	-0.1
Prices (trivariate)								
Short-run	1.2	0.3	5.0	2.6	1.4	0.4	4.6	2.1
Long-run	0.1	-1.9	0.1	-1.7	0.1	-2.1	0.1	-1.9
Shock size (>10% & <30%)	1.0	-0.1	1.0	-0.1	0.8	-0.4	0.9	-0.1
Shock size (>30%)	0.8	-0.5	1.2	0.2	2.5	1.1	3.9	1.4
MICs	2.2	1.5	0.8	-0.3	1.2	0.3	0.6	-0.8
HICs	2.7	1.6	2.9	1.6	1.4	0.5	1.7	0.7
Food	0.3	-2.3	0.1	-3.1	n.a.	n.a.	n.a.	n.a.
Rents	0.1	-4.9	0.1	-4.0	n.a.	n.a.	n.a.	n.a.

Table 7c – Employment, logit odds ratios estimations (bivariate and trivariate independent variables)

	Dep. Var.: 1=Neg.Sign; 0=Pos.sign or Non signif.				Dep. Var.: 1=Neg.Sign; 0=Pos.sign			
	Non weighted		Weighted		Non weighted		Weighted	
	Odds Ratio	z-stat	Odds Ratio	z-stat	Odds Ratio	z-stat	Odds Ratio	z-stat
Employment (bivariate)								
shortrun_longrun	3.9	2.9	1.5	0.5	3.0	1.4	1.6	0.4
largeshock_smallshock	1.4	1.3	1.7	1.5	1.1	0.3	1.0	0.0
lic_hic	0.84	-0.55	1.1	0.2	0.8	-0.5	1.1	0.1
female_male	2.1	2.2	1.6	1.2	2.6	2.0	2.4	1.6
young_old	1.5	0.64	2.9	1.5	1.0	.	1.0	.
informal_formal	4.1	3	5	2.4	56.0	3.7	43.0	3.0
lowskill_highskill	1.2	0.33	6.7	1.1	1.5	0.5	6.6	1.1
Employment (trivariate)								
Short-run	2.3	2.2	0.7	-0.5	2.6	1.4	1.2	0.1
Long-Run	0.6	-1.6	0.5	-1.5	0.9	-0.3	0.7	-0.4
Shock size (>10 & <=30)	3.3	2.9	3.1	2.1	1.7	0.9	1.0	0.0
Shock size (>30)	0.9	-0.2	1.2	0.4	0.9	-0.4	1.1	0.1
MICs	1.2	0.6	1.1	0.1	1.2	0.4	0.9	-0.1
HICs	1.2	0.4	0.8	-0.4	1.3	0.6	1.0	0.0
Female	1.7	2.0	3.3	3.6	1.3	0.7	3.4	2.4
Male	0.8	-0.7	2.1	2.1	0.5	-1.6	1.4	0.8
Young	2.7	2.1	5.3	3.2	1.0	.	1.0	.
Old	1.8	1.2	1.9	1.1	1.0	0.0	3.1	1.2
Informal	3.6	3.9	4.4	3.3	9.9	2.2	9.5	1.9
Formal	0.9	-0.4	0.9	-0.2	0.2	-3.9	0.2	-2.5
Low-skilled	0.2	-3.4	0.2	-3.5	0.4	-1.7	0.2	-2.6
High-skilled	0.2	-3.3	0.0	-2.3	0.2	-2.2	0.0	-2.1

Table 7d – Wages, logit odds ratios estimations (bivariate and trivariate independent variables)

	Dep. Var.: 1=Neg.Sign; 0=Pos.sign or Non signif.			Dep. Var.: 1=Neg.Sign; 0=Pos.sign		
	Non weighted	z-stat	Odds Ratio	Non weighted	z-stat	Odds Ratio
Wages (bivariate)						
shortrun_longrun	6.5	3.3	4.9	11.0	2.1	9.5
largeshock_smallshock	3.3	4.0	2.7	14.0	3.4	16.0
female_male	1.7	1.2	2.1	1.4	0.4	1.2
lowskill_highskill	8.5	2.7	5.4	16.0	2.8	7.6
Wages (trivariate)						
Short-run	6.1	4.1	5.5	9.4	2.1	14.0
Long-Run	0.9	-0.2	1.1	0.8	-0.3	1.4
Shock size (>10 & <=30)	3.3	3.9	2.7	13.0	3.3	16.0
Shock size (>30)	3.9	1.3	3.2	1.0	.	1.0
Female	2.1	2.1	2.9	2.2	1.4	3.8
Male	1.2	0.6	1.4	1.6	0.8	3.2
Low-skilled	1.2	0.7	0.8	1.9	1.0	0.9
High-skilled	0.2	-2.6	0.2	0.1	-2.5	0.1
						2.9

Table A1a - Well-being, frequencies

	Non-weighted			Weighted					
	Nonsig.	Neg.	Pos.	Nonsig.	Neg.	Pos.	Tot.		
Time-lag	Untagged	17	9	28	54	14.7	5.0	31.6	51.3
	Short-run	0	2	0	2	0.0	0.3	0.0	0.3
	Long-run	5	2	1	8	9.1	0.8	2.4	12.3
Shock size	Small-shock	13	8	11	32	9.4	1.9	12.1	23.3
	Medium-shock	2	4	2	8	5.9	3.0	2.8	11.8
	Large-shock	7	1	16	24	8.5	1.3	19.1	28.9
Host Income	LICs	9	3	24	36	13.3	4.0	29.4	46.7
	MICs	11	10	5	26	4.6	2.2	4.6	11.4
	HICs	2	0	0	2	5.9	0.0	0.0	5.9
Type of wellbeing	Wellbeing-other	9	1	10	20	16.9	1.3	12.8	31.0
	Wellbeing-housing	5	6	3	14	3.0	3.8	4.3	11.1
	Wellbeing-monetary	8	6	16	30	3.9	1.0	16.9	21.8
Total	22	13	29	64	23.8	6.2	34.0	64.0	

Table A1b - Prices, frequencies

		Nonsig.	Neg.	Pos.	Tot.	Nonsig.	Neg.	Pos.	Tot.
Time-lag	All	24	50	36	110	24.1	27.0	37.4	88.5
	Short-run	2	4	2	8	2.2	14.0	4.2	20.5
	Long-run	2	1	7	10	3.2	1.1	14.7	19.0
Shock size	Small-shock	16	37	31	84	16.8	28.1	40.9	85.8
	Medium-shock	4	12	12	28	5.2	8.6	13.3	27.1
	Large-shock	8	6	2	16	7.5	5.5	2.1	15.1
Host Income	LICs	10	6	6	22	9.0	5.5	7.3	21.8
	MICs	14	36	30	80	15.1	12.7	30.1	57.9
	HICs	4	13	9	26	5.4	24.0	18.9	48.4
	Prices-All	7	25	0	32	7.0	21.4	0.0	28.4
Price Items	Prices-Food	6	16	10	32	5.4	4.1	11.7	21.1
	Prices-Rents	15	14	35	64	17.2	16.6	44.6	78.4
	Total	28	55	45	128	29.5	42.2	56.3	128.0

Table A1c - Employment, frequencies

	Non weighted			Weighted					
	Nonsig.	Neg.	Pos.	tot.	Nonsig.	Neg.	Pos.	tot.	
Time-lag	Time-Untag	181	74	41	296	202.9	85.5	54.4	342.7
	Short-run	15	14	3	32	13.0	3.5	1.9	18.4
	Long-run	61	14	9	84	38.4	6.7	5.8	50.9
Shock size	Small-shock	202	73	39	314	225.4	76.0	49.6	351.0
	Medium-shock	9	13	4	26	5.1	9.8	6.4	21.3
	Large-shock	46	16	10	72	23.8	9.8	6.1	39.7
Host Income	LICs	46	16	10	72	23.8	9.8	6.1	39.7
	MICs	135	56	29	220	83.1	37.7	25.5	146.3
	HICs	76	30	14	120	147.5	48.1	30.5	226.0
Gender	Gender-Untag	149	52	25	226	154.3	33.6	33.7	221.6
	Gender-Fem-s	53	33	12	98	50.6	36.6	10.7	97.8
	Gender-Males	55	17	16	88	49.4	25.5	17.8	92.6
Age	Age-Untag	237	86	49	372	229.4	73.6	60.0	363.0
	Age-Young	11	9	0	20	10.4	14.1	0.0	24.5
	Age-Old	9	7	4	20	14.5	7.9	2.1	24.5
Formality	Formality-~g	220	70	30	320	228.6	70.6	42.8	342.0
	Informal	22	23	1	46	15.0	18.4	1.2	34.6
	Formal	15	9	22	46	10.6	6.6	18.1	35.3
Skills	Skills-Untag	161	92	39	292	146.3	87.5	38.7	272.6
	Skills-low	53	6	7	66	71.1	7.5	15.5	94.0
	Skills-high	43	4	7	54	36.9	0.6	7.9	45.4
Total	257	102	53	412	254.3	95.6	62.1	412.0	

Table A1d - Wages, frequencies

	Non weighted				Weighted				
	Nonsig.	Neg.	Pos.	Tot.	Nonsig.	Neg.	Pos.	Tot.	
Time-lag	Time-Untag	125	47	26	198	106.1	45.4	37.8	189.3
	Short-run	8	17	1	26	10.5	20.3	1.2	32.1
	Long-run	25	9	6	40	25.0	11.2	6.5	42.6
Shock size	Small-shock	120	39	31	190	106.8	46.7	43.7	197.2
	Medium-shock	36	32	2	70	34.6	30.0	1.8	66.3
	Large-shock	2	2	0	4	0.3	0.3	0.0	0.5
Host Income	LICs	1	0	1	2	1.5	0.0	1.5	3.0
	MICs	95	45	12	152	59.6	43.4	9.4	112.3
	HICs	62	28	20	110	80.5	33.5	34.6	148.6
Gender	Gender-Untag	103	40	23	166	90.4	38.5	35.5	164.4
	Gender-Fem~s	24	19	5	48	20.0	22.9	5.5	48.4
	Gender-Males	31	14	5	50	31.3	15.5	4.5	51.3
Age	Age-Untag	156	69	31	256	135.2	73.4	39.1	247.7
	Age-Young	2	4	0	6	6.4	3.5	0.0	9.9
	Age-Old	0	0	2	2	0.0	0.0	6.4	6.4
Formality	Formality-Untag	128	72	30	230	125.4	76.0	43.3	244.7
	Informal	19	1	0	20	9.9	0.9	0.0	10.8
	Formal	11	0	3	14	6.3	0.0	2.2	8.6
Skills	Skills-Untag	103	53	22	178	83.6	56.7	25.7	166.0
	Skills-low	30	18	4	52	31.5	17.2	8.4	57.1
	Skills-high	25	2	7	34	26.6	3.0	11.4	41.0
Total	158	73	33	264	141.6	76.9	45.5	264.0	

Annex 1 – Review of Empirical Models

1.1 Well-being and prices

The papers covering the consumer market and household well-being are predominantly related to low- and middle-income countries with few exceptions. They also either focus on consumer prices or on household well-being measured in terms of household expenditure or income per capita or some form of wealth indicator. In this section, we describe the main prototypes of these models by focusing on selected papers.

Alix-Garcia et al. (2018) study the impact of the Kakuma refugee camp in Kenya on the economic well-being of surrounding areas. They use an equation where the dependent variable is the inverse hyperbolic sine of the DMSP-OLS luminosity index at the village level:

$$Lights_{vlt} = \alpha + \sum_d \beta_d Refugees_t * f_d(km\ to\ Kakuma_{lv}) + \gamma road_{vlt} + \theta_v + \mu_t + \epsilon_{lt}$$

Where v is village, l is location, t is time, refugees is the inverse hyperbolic sine of the refugee population in camp in year t and road is the inverse hyperbolic sine of the distance of each village to the nearest road interacted with a year fixed effect. θ_v and μ_t are the village and time fixed effects. Standard errors are clustered by broad geographic regions. As a shock variable, the authors use parametric and semi-parametric measurements of the distance between the Kakuma refugee camp in Kenya and neighboring villages, which they interact with the refugee population in each year (the argument of the sum sign in the equation above). The parametric specifications of $f(.)$ are the inverse hyperbolic sine of the distance to Kakuma or the inverse distances where $d=1$, whereas the semi-parametric specification considers six bands of distances ($d=1, 2, \dots, 6$) where $f(.)$ is a series of dummy variables representing the bands. This is a cross-section village model estimated over time and the only paper that uses night luminosity as a proxy of economic well-being, which is suitable to study situations where the displaced people are all in camps and not dispersed among hosts. In this case, international aid is administered within the camp and its effect is captured in the overall luminosity effect.

Maystadt and Verwimp (2014) look at Burundian and Rwandan refugees in Tanzania during the 1993-1994 crisis with a consumption model described as follows:

$$\log(V_{h,t}) = \beta_0 + \beta_1 \log(1 + RI_{v(h),t}) + \beta_2 Activity_{h,1991} * \log(1 + RI_{v(h),t}) + \beta_3 Z_{h,t} + \beta_4 Q_{v(h),t} + \beta_5 \alpha_t + \epsilon_{h,t}$$

where V is household consumption per adult equivalent, h is household, v is village, t is time and RI is the refugee shock described as the population of refugees in camps divided by the distance of the host village from camps. $Activity$ is the main initial occupation of each household, Z and Q are household and village specific characteristics and α is a time dummy. This is therefore a household consumption model used to measure household well-being. It is suitable for situations where refugees are located in camps and hosts are located in separate villages.

Maystadt and Duranton (2018) look at the same crisis using a time-space variation equation to model consumption as follows:

$$\log\left(\frac{C_{h,t}}{P_{v(h,t),t}}\right) = \beta_0 + \beta_1 RI_{v(h,t),t} + \alpha_h + \alpha_t + \alpha_s * time + \epsilon_{h,t}$$

Where $C_{h,t}$ is household nominal consumption in year t ; $P_{v(h,t),t}$ is the price level in village v in year t ; $RI_{v(h,t),t}$ is a refugee index, α_h , α_t and α_s are household, time and strata*time fixed effects. The authors use robust standard errors clustered at the initial village level to account for correlation within villages. As for Maystadt and Verwimp (2014), the refugee index is constructed using the population of refugees in the

camps and the distance between refugee camps and villages nearby. More precisely, they take the log of the sum of the refugee population across refugee camps divided by the distance of these camps from neighboring villages:

$$R_{v,t} = \log \left(\sum_1^{13} \frac{pop_c}{d_{v,c}} \right),$$

where pop =population, c =camp, v =village, t =time. Therefore, this is a household real consumption model used as a measure of household well-being and, similarly to the previous paper, what is measured is the elasticity of household consumption in local villages to changes in the refugee camp index.

Kreibaum (2015) studies refugees in Uganda and estimates household consumption with a longitudinal linear probability model trying to capture short and long-term effects of the refugee shock as follows

$$Y_{i,c,t} = \beta_0 + \beta_1 \text{refugee_level}_{d,t} + \beta_2 \text{shock}_{d,t} + \beta_3 X_{i,t} + \beta_4 D_{d,t} + \delta_t + \delta_d + \epsilon_{d,t}$$

where Y is the log of consumption, i , c and t are household, communities and years respectively, d is district, refugee_level is the number of refugees per thousand local inhabitants (a measure interpreted as the long-term impact of refugees) and shock is the difference of this measure between two successive surveys (a measure interpreted as the short-term refugee impact). δ_t and δ_d are the time and district fixed effects. This is again a consumption model and one of a few papers that tries to distinguish between short-term and long-term shocks using the same equation.

Alix-Garcia and Saah (2010) model the impact of the refugee presence on prices as:

$$\log(p_{i,t}) = \alpha + \delta_1 B_t D_i + \delta_2 R_t D_i + \delta_3 F_t D_i + X_{i,t} \Gamma + \sum_{i=1}^{38} M_i + \sum_{t=1}^{84} \psi_t + u_{i,t}$$

Where B and R are the share of Burundian and Rwandan refugees in the population of the area, D is the inverse of the distance to the closest refugee camp from market i , p is price, F is food aid, X are weather controls, M are market-level fixed effects, and ψ are year/month fixed effects. More precisely, the shock is measured as the share of refugees over the total population of refugees weighted by the inverse of the distance of the refugees from the closest markets as follows:

$$R_t = \frac{1}{d_m} \left(\frac{\text{Refugees}}{\text{Host pop} + \text{Refugees}} \right) * 100$$

where t is time and m is market. The model estimates therefore price elasticities to changes in refugee stocks controlling for distance. Also noteworthy is the introduction of a control for food aid given the role of international aid in a low-income country such as Tanzania.

Alix-Garcia, Bartlett, and Saah (2012) model the impact of IDPs in South Sudan on prices as:

$$p_{w,m,y} = \alpha_0 + \alpha_1 a_{w,m,y} + \alpha_2 S_{w,m,y} + \alpha_3 r_{m,y} + \alpha_4 \text{yr2006} + \alpha_5 \text{yr2007} + \alpha_6 t + \alpha_7 \text{hungry} + e_t$$

Where p is the natural log of prices; w , m and y stand for week, month and year respectively, a is the total amount of aid, s is the natural log of the aid related to the good analyzed, r is the number of IDPs and “hungry” is a dummy variable for the hungry season. The equation is estimated with an OLS estimation where the error term has a flexible correlation structure that includes up to three lags correlations. The key identifying assumption is that there is no simultaneity between prices and IDPs or aid and the shock measure is simply the number of IDPs counted in any particular month. As for Alix-Garcia and Saah (2009), this is a price elasticity model controlling for international aid and also for seasonality. Unlike the previous paper, this is a weekly time model with no cross-section variation.

Akgündüz, van den Berg, and Hassink (2015) use a spatial-time equation to model all the outcomes they consider including inflation as follows

$$\pi_{it} = a + \rho I_{it} + T_t + R_i + e_{it}$$

Where π_{it} is inflation for food, housing or hospitality sectors, I_{it} is the refugee shock, i are provinces or regions; t is time, T and R are time and region fixed effects respectively. The shock or treatment effect is either a binary variable describing the presence of refugees, the number of refugees or the inverse sine function of the number of refugees (to normalize the variable with respect to wealth where many observations may take zero value). Unlike other price models that consider prices of individual products, this paper uses inflation indexes constructed on groups of products representing sectors.

Balkan and Tumen (2016) model the impact of immigration on prices with a DD approach as

$$\ln p_{i,r,y,m} = \delta + \beta(T_{i,r} * P_{i,y}) + f_i + f_r + f_y + f_m + \epsilon_{i,r,y,m}$$

Where i, r, y and m are consumption items, regions, years and months respectively, p is price, $f(.)$ are fixed effects, and P is the pre-post immigration period. The shock T is the share of immigrants over the local population and the parameter β gives the average impact of immigration on prices in the treatment region in logs.

Balkan et al. (2018) use the same difference-in-difference equation and adapt it to assess the impacts of Syrian refugees on housing rents in Turkey:

$$\ln(\text{rent}_{r,y,i}) = \alpha + \beta(T_r * P_y) + f_r + f_y + X_{r,y,i} + \epsilon_{r,y,i}$$

Where r and y are regions and years of observation, i indexes households, $f(.)$ are fixed effects, and X is a vector of dwelling characteristics (including size, number of rooms, and existence of kitchen, indoor toilet, bath or shower, piped water and hot water system). P is a dummy variable which is 1 in the post-immigration period, T is 1 for the treatment region Southeastern Anatolia (and in a second specification also includes the Mediterranean region), and 0 for all other regions in Turkey, except the Mediterranean and Southeastern Anatolia region. The parameter β gives the average impact of the refugee influx on housing rents in the treatment region in the post-immigration period in logs.

Saiz (2003) studies the Mariel boatlift case in Miami and looks at rental prices estimating the following DD model:

$$R_{it} = \alpha_i + \beta D_{after} + \gamma D_{after} D_{miami} + \epsilon_{it}$$

where R is the rent for unit i at year t , α_i is a unit fixed effect, and D are dummies for time and location taking values of 1 for the post-treatment period and Miami. In this case, we have a simple DD approach where the number or share of displaced persons do not have a role.

In contrast, Depetris-Chauvin and Santos (2018) exploit variation in the intensity of quarterly displacement inflows over time t and between 13 main cities c in Colombia to estimate the impact on rental prices P with the following equation:

$$\ln(P_{c,t}) = \alpha + \beta \ln(\text{Inflows}_{c,t-1}) + \eta' X_{c,t} + d_c + d_t + u_{c,t}$$

where d are city and quarter fixed effects. $X_{c,t}$ is a vector of controls, which includes city-level linear trends, and interactions between remoteness and time dummies. For robustness checks, they also included additional (potentially endogenous) determinants of rental prices. The error term $u_{c,t}$ is clustered at the city-year level. They weight all the regressions by population and lag IDP inflows by one quarter. The point estimate β can be interpreted as a standard elasticity. Inflows measures the total number of IDPs arriving in city c in quarter $t-1$. To address endogeneity concerns, they use the sum of IDP outflows from all

municipalities M (except the receiving host city c) during quarter t weighed by the inverse of the road distance between the host city c and each municipality of origin m . This describes the receptivity measure used as instrument:

$$receptivity_{c,t} = \sum_{m \in M \setminus \{c\}} outflows_{m,t} \times D_{m,c}^{-1}$$

1.2 Employment and wages

The first papers that explored the question of the impact of displaced people on host populations focused on labor markets effects in high-income countries using a simple Difference (D) or Differences-in-Difference (DD) approach. Card (1990) looked at the impact of the 1980 Mariel boatlift operation carrying Cubans to Miami on the local residents. The paper compares hourly wages, employment to population and unemployment rates before and after the boatlift covering the period 1979-1985. The author disaggregates by different population groups including Whites, Blacks, Hispanics and Cubans and benchmarks these indicators with those of other comparable US cities for the same population groups. The model used is not formally outlined but the paper estimates outcomes by year and for each ethnic group between treated (Miami) and non-treated (comparison cities) and provides simple differences (D) in tabular form.

Angrist and Krueger (1999) use the Card (1990) work to formalize a DD approach to such studies as follows:

$$Y_i = X_i' \beta_0 + \beta_t + \gamma_c + \delta M_i + \varepsilon_i$$

where Y is the individual (i) employment (unemployment) outcome, X is a vector of individual economic characteristics, M is an interaction term of the post-treatment period (after 1980) and the treated group (Miami) and β_t and γ_c are time and cities fixed effects. The coefficient of interest or the DD estimator is δ and the estimation method is generally a linear OLS model.

Borjas (2017) reassesses the wage effect of the Mariel boatlift case also using a DD approach described as

$$\log \bar{w}_{rt} = \theta_r + \theta_t + \beta(Miami * Post - Mariel) + \varepsilon$$

where \bar{w} is the mean age adjusted log wage of male high-school drop-outs, θ_r and θ_t are city and year fixed effects and β captures the DD effect interacting location (Miami) and time (post-Mariel) variables. Different constructed non-treated locations (placebos) are used as counterfactual to Miami. Among others, the author also uses the Synthetic Control Method (SCM, see also Peri and Yasenov 2019) to construct the synthetic city. The model is a DD model similar to Angrist and Krueger (1999) but is not an individual model. It is a spatial model based on city-time cells. This is a very significant departure from Card (1990) and Angrist and Krueger (1999) and one of the reasons why results of this paper cannot be compared to the previous two papers (see more on this in the empirical results section).

Clemens and Hunt (2019) looking at the Mariel boatlift and the FSU immigration to Israel argue that the wage effects estimated by Borjas (2017) are spurious (Kronmal, 1993)¹⁹ and that “*Because the city-year averages are pre-adjusted by city and year, the resulting regressions run by Borjas test not for a difference-in-difference of the average wage level, as Borjas incorrectly states, but instead for a difference-in-difference of the relative wage of workers with less than high school (compared to the average worker at any other education level).*” (p.13). The authors then propose a correction of the Borjas model described as

$$\Delta \log w_{rs} = \theta_r + \theta_s + \eta(asinh M_{rs1}) - \eta'(asinh L_{rs1}) + \varepsilon_{rs}$$

¹⁹ Among various other results, Kronmal (1993) shows how estimations that consider ratios with the same denominator on the two sides of a linear equation or a ratio as dependent variable and the denominator of this ratio as independent variable can be spurious.

Where r and s stand for region and skills level, $asinh$ is the inverse hyperbolic sine and the endogenous refugee supply shock ($asinhM_{rs1}$) is instrumented by the predetermined stock of prior migrants ($asinhM_{rs1}$). Worth noting is the fact that the spurious correlation discussed by Kronmal (1993) applies to many of the models reviewed in this paper as the dependent and independent variables are often ratios with population size on the denominator of both the dependent and independent variables.

Peri and Yasenov (2019) also reassessed the Mariel boatlift case using SCM methods (Abadie and Gardeazabal 2003) where wages for the treated group in Miami are compared with those of a synthetic control group constructed out 43 non-treated cities. Similar to matching methods, the synthetic panel is constructed using weights that minimize the difference between wage predictors for treated and control cities. Results are then simply illustrated graphically comparing average wages for treated and non treated groups to see whether the pre-post longitudinal series show any discrepancies between the two groups. The authors do not estimate confidence intervals and standard errors²⁰ and, as a complementary analysis, propose instead an estimator described as:

$$y_{it} = Miami_i + \sum_{P \in PRE-79} \alpha_p D_p + \sum_{P \in POST-79} \alpha_p D_p + \sum_{P \in PRE-79} \beta_p (D_p * Miami_i) + \sum_{P \in POST-79} \beta_p (D_p * Miami_i) + \varepsilon_{it}$$

where y_{it} is the average log weekly wage of high school dropouts in group i at time t , $Miami$ is a dummy for the treated group in Miami versus the Synthetic group, and D_p is a set of 3-year dummies representing three years' periods (p) before and after the shock. The shock year is in-built in the constant and the coefficients of interest are therefore β_p (β_{80-82} in particular as this is the first 3-year period after the 1979 shock). This model improves on the previous ones in that the SCM ensures a better matching between treated and non-treated groups whereas the differentiations by three-years time periods allow to capture short, medium and long-term effects. We remain, however, in the realm of D and DD models with the D estimations illustrated graphically or in tabular form and the DD estimations provided econometrically with linear modeling.

Hunt (1992) studies the effect of the French repatriates from Algeria after Algerian independence in 1962 on unemployment and wages of the local residents as follows:

$$\frac{non - repatriate\ unemployed_{1968,i}}{non - repatriate\ labor\ force_{1968,i}} = f(repatriate_{1968,i}, education_{1968,i}, age_{1968,i}, department\ structure_{1968,i})$$

where the repatriate variable is expressed as a proportion of the labor force in 1968 (post-treatment), education is the proportion of the population not in education with a secondary school degree or higher, age is the proportion of young people (15-24 y.o.) in the labor force, and the department structure refers to the employment shares across the main economic sectors. The empirical equation also includes regional dummies. The wage equation is the same with the exception of the dependent variable which is defined as the natural logarithm of wages in 1967 (the year before the one considered for the independent variables). The model is estimated for 1962 and 1968 and the first difference between coefficients of the two years is the measured effect. Therefore, here we have linear estimations of D followed by manual estimations of the DD effect.

²⁰ This is an anomaly of this paper given that stochastic dominance theory provides the theory and empirical tools that make these estimations possible (see for example Araar and Verme, 2016).

Friedberg (2001) studies immigration to Israel from the FSU and models wages of local residents on the national level in a cross-section framework as follows:

$$W_j = \alpha + X_j\beta + \gamma r_j + \epsilon_j$$

Where W is the average native log wage in occupation j , X is a vector of occupation-sepecific factors that could affect the level of wages and r is the ratio of immigrants to native workers. In this case r is the shock, γ is the coefficient of interest and the cross-occupation equation is the novelty. However, it is not a D or DD model. To address possible endogeneity issues, the same equation is also specified in dynamic terms where the change in wages over time is regressed on the inflow of immigrants over time (all the elements of the equation above are defined in terms of changes over time rather than stocks). In addition, the author uses an instrumental variable approach where the instrument is immigrants' previous occupation in the Russian Federation and a wage equation based on individual data specified as follows:

$$w_{ijt} = X_{it}\beta_t + \alpha_t + \sum_{k=1}^J \delta_k occ_{jk} + \gamma r_{jt} + \epsilon_{ijt}$$

where w is the log earnings of individual i in occupation j , X is a vector of control variables, α are year dummies, occ are a set of occupation dummies and r is the ratio of immigrant to native workers.

Cohen-Goldner and Paserman (2011) also study FSU migrants into Israel with the same specification for hourly wages and employment described as

$$y_{ijt} = \beta_0 + \beta_1 IMM_{jt} + \beta_2 Z_{jt} + \beta_3 X_{ijt} + \alpha_j + \delta_t + \eta_{jt} + \mu_{ijt}$$

where y is log of hourly wages or employment, i, j and t are individuals, labor markets (cells) and quarters respectively, IMM is the ratio of immigrants in segment j , Z and X are vectors of macroeconomic and individual characteristics α_j , δ_t and η_{jt} are the segment, quarter and segment-quarter combined fixed effects and μ_{ijt} is the error term. Standard errors are clustered at the segment-quarter level. The equation is also extended to take into account immigrants with different levels of tenure in Israel and to better capture long-term effects. Differently from previous discrete DD models that use pre- and post, treated and non-treated groups, this model use the immigrants' intensity by location as shock and can measure therefore the elasticity of wages and employment to the ratio of immigrants. Hence, the question is not whether immigration has an impact but how much of an impact has each level of immigration. As before, the estimation models are linear with fixed effects.

Borjas and Monras (2017) propose to use a standard model and empirical approach to study the employment, unemployment and wage impact of displaced people on host communities in the context of four different crises: The Mariel boatlift of Cubans to Miami, the Jewish immigration to Israel from the Former Soviet Union after the desegregation of the Union in 1991, the immigration of former Yugoslavia citizens to Europe during the Balkan wars of the 1990s and the exodus to France of French and Algerian people from Algeria after Algerian independence in 1962. The empirical model is:

$$\Delta \log w_{rs} = \theta_r + \theta_s - \eta \log \left(\frac{L_{rs1}}{L_{rs0}} \right) - \eta m_{rs} + \epsilon_{rs}$$

Where w is wage, r and s are regions (labor markets) and skill-type (educational level) respectively, $\theta_{(c)}$ are the fixed effects for these two dimensions, L is the number of workers before (0) and after (1) the shock, η is the wage elasticity and m is the share of immigrants in L . Therefore, this is also a linear model that aims at measuring elasticities of wages to immigration levels with fixed effects. To account for possible endogeneity, the authors also proposed a reduced form equation of th type

$$\Delta \log w_{rs} = \theta_r + \theta_s - \eta(1 + \gamma)m_{rs} + \epsilon_{rs}^*$$

The reduced form equation derives from the first-order Taylor's expansion of the log change in the size of the native workforce $\left(\frac{L_{rs1}-L_{rs0}}{L_{rs1}}\right)$ which is transformed, in turn, into a labor supply expression for natives $\gamma \frac{M_{rs1}}{L_{rs1}} + \mu_{rs}$ where γ is a parameter that measure the labor supply response. The reduced equation allows to desegregate the wage elasticity η and the labor supply parameter γ that would otherwise be confounded into one coefficient. This is the only paper we found that addresses specifically this issue.

Angrist and Kugler (2003) consider employment of natives and immigrants in high income EU countries hosting displaced people from former Yugoslavia during the 1990s and measure the short-run impact on natives' employment as

$$\ln(y_{ijt}) = \mu_i + \delta_t + \beta_j + \alpha_i \ln(s_{jt}) + \varepsilon_{ijt}$$

Where the dependent variable y is the log of the employment to population ratio for natives, i, j and t are demographic groups, country and year, and the shock is the log of the immigrant share s over the demographic group at year t . The estimation is a cross-country OLS model which includes fixed effects for demographic group i , country j and year t . The paper also uses a second equation where s is instrumented using distances of receiving countries from former Yugoslavia and a third equation where immigration is interacted with countries' institutions. As for previous models, the authors here use an OLS linear model with fixed effects complemented by an IV model to study the elasticity of natives' employment to immigration intensity.

Foged and Peri (2015) studied the inflow of refugees from conflict areas to Denmark between 1991 and 2008 using individual fixed effects regressions and a DD model based on municipality data. The FE model is described as

$$y_{ijmt}^{NAT} = x'_{it}\alpha + \beta S_{mt} + \phi_{t,IND} + \phi_{t,REG} + \gamma_{i,u} + \varepsilon_{ijmt}$$

where y is one of three outcomes for natives (NAT) including the complexity of the task performed, hourly wages and the fraction of a year worked (a measure of labor supply), i, j, m and t represents individuals, establishments, municipalities and time respectively, x is a vector of time-varying individual characteristics, S_{mt} is the refugee-country immigrant share of employment in municipality m at time t , $\phi_{t,IND}$ and $\phi_{t,REG}$ are industry by year and region by year effects and $\gamma_{i,u}$ are fixed effects for individuals and units (u) combined. By varying u one can measure the effect of S on outcomes y for different units of analysis. The paper estimates three equations where u is establishments, municipalities or nothing. The OLS estimation is also complemented by a 2SLS estimation where S_{mt} is instrumented using the refugee dispersal policy adopted by Denmark during the period considered. The instrument is the following

$$\hat{S}_{mt} = \left(\sum_{c \in \text{refugee}} \hat{F}_{cmt} \right) / P_{m1988}$$

where \hat{F}_{cmt} is the imputed working-age population of immigrants from refugee country c in municipality m at time t and P_{m1988} is the total working-age population in municipality m in 1988. The DD estimator is described as follows:

$$y_{imt}^{NAT} = x'_{it}\alpha + \sum_{s=-3}^{-1} \gamma_s M_m D(\text{year} = s) + \sum_{s=1}^{14} \gamma_s M_m D(\text{year} = s) + \phi_{t,IND} + \phi_{t,REG} + \phi_{t,EDU} + \phi_{t,OCC} + \phi_m + \varepsilon_{it}$$

where M is the treatment equal to 1 if individual i is in the upper quartile of the difference in predicted refugee flow and 0 if is in the lower quartile, D are year dummies and the rest are industry, region, education and occupation time specific fixed effects and municipalities fixed effects. The pre-treatment period is 1991-1994, a period that did not see a major inflow of refugees. Again, this model falls into the linear elasticity models group where the main innovation is represented by the structure of the instrument in the IV model that complements the OLS model.

Mayda et al. (2017) exploit the variation in the number of newly resettled refugees in the U.S. across commuting zones i and over time t to analyzes the impacts on wages and employment y_{it} with the following linear equation:

$$y_{it} = \beta f(refstock_{it}) + \delta_i + \delta_t + t * \delta_i + X_{it}Y + \varepsilon_{it}$$

Where $t = 1990, 2000, 2010$, δ_i and δ_t are commuting zone and year fixed effects, $t * \delta_i$ captures commuting zone time trends, and $X_{it}Y$ is a vector of additional time-varying control variables (such as initial commuting zone populations and the growth of local employment and wages predicted by industrial composition). $f(refstock_{it})$ is a function of the presence of refugees in a given commuting zone i and decade t . As the authors have only data on new refugee arrivals, they use changes in the stock of refugees due to these new arrivals as a proxy for overall changes in the refugee stock, and estimate the specification in first differences as follows:

$$\Delta y_{it} = \beta I_{it} + \delta_i + \delta_t + \Delta X_{it}Y + \varepsilon_{it}$$

where the treatment dummy I takes the value of 1 for those commuting zones and decades in which the change in refugee stock (standardized by the initial population of the commuting zone) was larger than the mean by 0.1%. To address endogeneity threats to identification, as refugees are likely to settle in commuting zones with better wage and employment prospects, the authors instrument refugee arrivals with the number of initial refugees with no U.S. ties. To control for non-random allocation of refugees on the part of the placement agency, these authors use matching to select a sample of control commuter zones in the pre-treatment period, an approach similar to Dustmann, Schoenberg, and Stuhler (2017).

Makela (2017) used the same SCM method used by Peri and Yasenov (2019) and Borjas (2017) to study the impact of returnees from Angola and Mozambique to Portugal in 1974. In this case, donors for the synthetic group are countries rather than cities and the analysis is based on comparing Portugal with comparable countries that did not experience similar levels of immigration during the period considered. The outcome variables considered are average annual labor productivity, average annual wage per worker and the unemployment rate. The same author also combines the SCM approach with a difference approach (essentially using the synthetic control group for an econometric difference estimation during the post-shock period) working with Portuguese regions rather than countries and focusing on the agriculture and construction sectors. Moreover, a fixed effects and a generalized synthetic control method are used as robustness tests.

Calderon-Mejia and Ibanez (2016) study the impact on IDPs in Colombia on hourly wages of the host populations using household data and an OLS and IV approach. The wage equation is defined as follows:

$$w_{ict} = \beta_{ct} + \beta_t + X_{ict}\delta + \pi S_{ct} + \varepsilon_{ict}$$

where w is the hourly wage, i , c and t denote individuals, cities and time, β_{ct} and β_t are the city-time and time fixed effects, X are individual characteristics and S is the supply shock defined as

$$S_{ct} = \ln \left(\frac{\sum_t^T M_{ct}}{Pop_{12-65_{ct}}} \right)$$

where the numerator is the cumulative sum of IDPs (M) entering city c starting from the year 1999 to year t and the denominator is the working-age population in city c at time t . The authors then instrument S using

$$l_{ct} = \sum_{\text{All origins } o}^{\text{City } c} \frac{\text{Massacre Victims}_{ot}}{\text{Distance origin to city } c}$$

which is the cumulative number of massacres in city c at time t weighted by the inverse of the distance from the site of the massacre to city c . Here again, the model falls into the OLS+IV approach designed to estimate elasticities of wages to immigration intensity with the original contribution being the particular instrument designed for the IV equation.

Looking also at the impact of IDPs in Colombia on wages, Morales (2018) uses a labor force survey, census data and registry data to study short and long-term effects as follows:

$$\text{Short - run: } y_{imt} = \alpha + \beta d_{mt-1} + \lambda_i X_{imt} + \lambda_m X_{mt} + \gamma_t + \delta_m + \delta_m T + \varepsilon_{imt}$$

$$\text{Long - run: } y_{im} = \alpha + \beta d_m + \lambda_i X_{im} + \lambda_m X_m + \delta_{Dm} + \varepsilon_{im}$$

where y is the log of wages, i , m , and t are individuals, municipalities and time respectively, X_{imt} are individual controls, X_{mt} is the log of total population or other municipality controls, γ_t and δ_m are time and municipality fixed effects, $\delta_m T$ are municipality time trends, δ_{Dm} are department fixed effects and d is the inflow of IDPs defined as

$$d_{mt} = \frac{100}{pop_{mt}} f_{mt}$$

where f_{mt} is the total number of IDPs arriving in municipality m at time t . The same variable without the t subscript is used for the long-run effects equation. The author also estimates an IV equation with a migration network or enclave type of instrument defined as

$$dIV_{mt} = \frac{100}{pop_{mt}} \left(\sum_j e_{jt} S_{mj1993} \right)$$

where e_{jt} is the total number of expulsions from municipality j at time i , S_{mj1993} is the share of migrants from municipality j who lived in municipality m in 1993. The instrument relates to migration decisions taken prior to 1993, which is precedent to the period considered in the study. As for the previous study, here we are again in the domain of OLS+IV estimations of wages-displaced elasticities with the major methodological contribution being the construction of the instrument.

A number of recent studies estimate the impact of Syrian refugees on neighboring countries' labor markets. As for other crises, we have a mix of DD and elasticities models. Ceritoglu et al. (2017) and Tumen (2016) study the influx of Syrian refugees in Turkey after the start of the Syrian civil war in 2011 and propose the following DD model:

$$y_{i,j,t} = \alpha + \beta * (R_i * T_i) + \theta' X_{i,j,t} + kZ_{j,t} + \gamma R_i + \varphi T_i + \varepsilon_{i,j,t}$$

where y is the labor market outcome of interest (formal and informal employment to population ratios, unemployment to population ratios, and labor force participation rate) R and T are the dummy variables for treatment and pre-post treatment periods respectively, i, j and t are individuals, regions and years, X is a vector of individual level characteristics and Z is a region and time specific proxy for economic activity. Note that, by dropping R and T and including region and year fixed effects, the equation can also be estimated as

$$y_{i,j,t} = \alpha + \beta * (R_i * T_i) + \theta' X_{i,j,t} + kZ_{j,t} + f_j + f_t + \epsilon_{i,j,t}.$$

Del Carpio and Wagner (2016) study the impact of Syrian refugees in Turkey using the following equation:

$$Y_{itr} = \gamma R_{rt} + f_t(D_r) + g(X_{irt}) + \delta_r + \delta_t + \epsilon_{irt}$$

where Y can be total employment in the working age population or various employment disaggregations including formal and informal, regular and irregular and full and part-time employment, i, t and r are individuals, subregions and year respectively. $f_t(D_r)$ is a function of the distance from the Syrian border which serves as a control to compare subregions that have equal chance of receiving Syrian refugees based on distance from the border. R is the shock defined as the number of Syrian refugees normalized by the working age population for each subregion in year t , and δ_r and δ_t are the subregion and year fixed effects. In a second model, R is also instrumented as $IV_{rt} = \sum_s \frac{1}{T_{sr}} \pi_s R_t$, where R_t is the total number of registered Syrians in Turkey and π_s is the fraction of the Syrian population in each Syrian governorate before the shock and T_{sr} is the travel distance from each Syrian governorate capital s to the most populous cities in the Turkish subregions r . These models fall in the OLS+IV tradition to estimate elasticities of various outcomes to the displacement crisis. Del Carpio and Wagner (2016) also study wages using a decomposition approach of mean wages into the part that is explained by changes in employment composition of Syrians and non-Syrians and the part that is explained by other factors. This is the only paper of this review that follows this approach.

Esen and Oğus Binatlı (2017) study the impact on employment and unemployment of Syrian refugees in Turkey using a fixed and a random effects models as follow:

$$FE = Y_{it} = \sum_k \beta_k X_{it,k} + \sum_i \gamma_i D_i + \epsilon_{it};$$

$$RE = Y_{it} = \mu + \sum_j \beta_j X_{it,j} + v_{it}$$

where Y is formal or informal employment or unemployment, X are the explanatory variables, D are dummies for regions and i and t represent regions and time. In the random effects model, v_{it} represents the composite error term for regions, time and random effects. The two equations are then compared with a Hausman test. The shock is represented by two variables as part of X . One is the total number of Syrian refugees per year and the second is a categorical variable based on classes of density of refugees values. Therefore, these authors follow the linear estimation approach but instead of using the OLS+IV approach they opt to compare FE and RE models. This is also the only paper using a RE model.

Akgündüz, van den Berg, and Hassink (2015) model the employment rate in Turkey with a DD equation:

$$S_{it} = a + \rho I_{it} + T_t + R_i + e_{it}$$

Where S_{it} is the employment rate, i =provinces or regions, t =time, T and R are time and region fixed effects. As for the price model of the same authors, the shock or treatment effect I is either a binary variable describing the presence of refugees, the number of refugees or the inverse sine function of the number of refugees. Therefore, the authors estimate both a DD estimator with the indicator variable and marginal changes with the continuous refugee variable. This is the only paper we found that follows this approach.

Fallah et al. (2018) study the impact of the Syrian refugees in Jordan on host communities covering wages, employment and unemployment. The model is a linear DD model and is the same for all these outcomes:

$$Y_{itl} = B_0 + \alpha_j X_{itj} + \gamma S_l + \delta_t t + \theta_t t * S_l + \varepsilon_{itl}$$

where Y is wage, unemployment or employment, i , t and l are individuals, time and locality respectively, S is the share of refugees in localities, X is a set of control variables, and θ_t is the DD coefficient of interest. In this case, the DD estimator includes a continuous variable rather than a dummy indicating the presence of refugees resulting as a sort of hybrid between the other DD estimators illustrated and the linear OLS+IV elasticities approaches although the variables are not in log form. The authors also instrument for the locality share of refugees based on the distance from the main refugee camp (Zaatari) and use a discrete-time hazard model to study duration of school to work transitions. This is another example of an instrument constructed with distances whereas the time hazard model is an innovation of this paper.

Ruiz and Vargas-Silva (2015, 2016) study the employment impact of the Burundian and Rwandan refugees on Tanzania host communities. They estimate a linear probability model as

$$Y_{it} = \beta_0 + \beta_1 \delta_i + \beta_2 \lambda_w + \beta_3 t + \beta_4 D(I)_{it} + \beta_5 X_{it} + \varepsilon_{it}$$

where Y is employment or occupation status, i are individuals, t is time, δ_i and λ_w are individual and area fixed effects, X is a set of individual, household and regional controls and D is a measure of intensity of forced migration. This is the log of the inverse of the distance between host communities and the border with the countries of origin of refugees. Ruiz and Vargas-Silva (2015) use the same components to measure the shock as Ruiz and Vargas-Silva (2016) but as an additional measure add a more elaborate index measuring the distance between the host community and the refugee camps over time. The index is described as

$$Shock_v = \log \left(\sum_{r=1}^{13} \left[\left(\frac{1}{d_{v,c}} \right) \left(\frac{pop_c}{\sum_1^{13} pop_c} \right) \left(\frac{years_c}{14} \right) \right] \right)$$

where d is the distance from the camp and pop is the population in camps where the total refugee population is the sum of the refugee population in the 13 camps considered. In this model, the refugee population and the distance from the refugee camps play an equally important role. This index is evidently suitable to study host populations who live around refugee camps rather than situations where the displaced people live among host communities.

Ruiz and Vargas-Silva (2018) study the same caseload but focus on differential impacts on engaging in household chores, farming, and employment outside the household across gender and skill level. To proxy the refugee shock S for each household j , they use the distance (D) of each host community to each refugee camp r weighted by the peak population P of each camp without adding a time dimension.

$$S_j = \log \left(\sum_{r=1}^{13} \frac{P_r}{D_{j,r}} \right)$$

They also add distance to the border of Burundi, Rwanda and Uganda $\log(1/\text{distance})$ as controls b_{jt} , r_{jt} , and u_{jt} to the following model:

$$H_{i,j,t} = \beta_1 \mu_j + \beta_2 b_{jt} + \beta_3 r_{jt} + \beta_4 u_{jt} + \beta_5 \tau_t + \beta_6 m_{ijt} + \beta_7 f_i + \beta_8 (\tau_t * S_{jt}) + \beta_9 (f_i * \tau_t * S_{jt}) + \theta X_{ijt} + \varepsilon_{ijt}$$

Where the dependent variable is either a dummy with the value of 1 if individual i from household j engaged in a given task during the previous week or the number of hours the individual dedicated to the task. They include the household fixed effect μ_j and the month m_{ijt} as a control to capture seasonal effects and X_{ijt}

as a series of individual and household controls. The time dummy τ_t takes the value 1 for 2004, and the gender dummy f_i if the individual is a woman. Note here the interest in employment at the extensive and intensive margin.

Braun and Mahmoud (2014) studied the Germans that fled or were expelled from Eastern Europe after World War 2 using OLS and IV models. The OLS estimation is described as

$$y_{ij} = \alpha + \beta m_{ij} + x_i \gamma + d_j + \varepsilon_{ij}$$

where y is the share of employed native males among all native males in occupation j and state i , m is the share of male expellees in the total male labor force in state-occupation cell ij , x is a vector of state specific control variables and d is a set of occupation dummies. The IV model instruments m exploiting regional variations in pre-war distribution of occupations and the distance of the expellees' origin from West Germany. The instrument is described as follows

$$\hat{m}_{ij} = \frac{\sum_s (\hat{e}_{si} * occ_{sj}^{1939})}{(\text{natives}_i^{1939} * occ_{ij}^{1939}) + \sum_s (\hat{e}_{si} * occ_{sj}^{1939})}$$

where \hat{e}_{si} is the estimated number of expellees from a sending region s who have settled in state i in West Germany, natives_i^{1939} is the pre-war population size in a state and occ_{ij}^{1939} is the occupational structure before the war.

Alix-Garcia et al. (2018) look at the impact of the Kakuma camp in Kenya on neighboring communities and model the probability of having a wage earner in the family and the wage earned during the previous 12 months with an OLS model. Alix-Garcia and Bartlett (2015) examine the impact of IDPs in the Darfur region of Sudan using a matching method comparing individuals in the treated town (those affected by internal displacement) with similar individuals in a non-treated town. They look at changes in employment between 2000 and 2010, which captures the period before and after the 2003-2009 conflict, therefore using a DD type of identification strategy. A variety of labor market outcomes are considered including the probability of becoming employed, unemployed, high and low skilled, and manual laborer and, vice-versa, the probability of abandoning manual labor or medium and high-skilled jobs. This is the only paper reviewed that uses a standard matching method on individuals.

Finally, a few authors used time-series econometric models to assess the impact of forced displacement on the local labor market. Carrington and de Lima (1996), for example, looked at the returnees from Angola and Mozambique to Portugal using several time-series models in an effort to establish the relation between the immigration rate and the unemployment rate, the employment to population rate and wages. Fakh and Ibrahim (2016) studied the impact of Syrian refugees on the Jordanian labor market using a Vector Autoregressive Model (VAR) attempting to capture Granger causality. A VAR system is made of a set of time series stationary variables expressed as a linear function of their lags as follows:

$$X_t = a_0 + a_1 X_{t-1} + a_2 X_{t-2} + \dots + a_p X_{t-p} + \varepsilon_t$$

using unemployment, employment and labor force status as outcomes of interest.

Bodvarsson, Van den Berg and Lewer (2008) develop a general equilibrium model for wages where the *ceteris paribus* effect of an immigration shock on native wages is the sum of a “consumer demand effect” and an “input substitution effect”. They test the model for retail wages in Miami after the Mariel Boatlift, using a simultaneous-equations regression model in which the independent variable (i.e. Cuban immigrant density θ_l in each city) affects the dependent variable (i.e. weighted average native retail wages W_N) through these two channels (i.e. the weighted average immigrant wage W_I and the retail sales per capita P). It consists of the aggregate equation:

$$W_N = a_0 + a_1(W_I) + a_2(P) + a_3(Z) + u$$

and the two channel equations

$$W_I = b_0 + b_1(\theta_I) + b_2(R) + u$$

$$P = c_0 + c_1(\theta_I) + c_2(S) + u$$

Each equation has an additional vector of controls (i.e. Z, R and S). They apply 3SLS to estimate the equations.

Annex 2 – Empirical Results by Crisis

Although many of the models reviewed share similarities, none of the results arising from these models are entirely comparable, either because of differences in the structure of the models or because of data, estimation techniques, instruments used or crisis treated. In this annex, we provide an overview of results organized by crisis on the ground that this is the most defining feature that could explain differences across results. In particular, the level of economic development of host countries, the absolute and relative scale of the crises and the timing of the inflow are very important factors in determining outcomes. We therefore group results by crisis and also by level of economic development of host countries.

2.1 High-income countries

Expellees from Eastern Europe to West Germany after World War II²¹

An estimated 12m Germans fled or were expelled from Eastern Europe between the last stages of World War 2 and 1950. This mass migration increased the population of West Germany from 39m in 1939 to 48m in 1950 and was seen by hosts as a major threat to their well-being during the difficult post-war reconstruction period. Expellees were close substitutes to workers from West Germany across the entire skill distribution, being German native speakers and having very similar education levels. The impact of this group of displaced people on their hosts has been recently studied in a few papers.

Braun and Mahmoud (2014) focus on male employment and find that a 10 percentage point increase in the share of German expellees is associated with a reduction in the native employment rate by 2.6 percentage points with an OLS estimation and by 4 percentage points with an IV estimation. These effects are mainly driven by labor market segments (defined by occupation and states) that experienced very high inflows of expellees and they are found to subside in later periods with the percentage change in the employment rate declining to 1.7 by 1953 from 3.8 percentage points in 1950. Based on their findings, the authors conclude that regions and occupations that experience relatively small inflows of refugees or migrants should show only small or no employment effects and that these effects should be expected to be short lived. The shortage of physical capital in West Germany after the war also limited the absorption capacity of the labor market.

Braun and Weber (2016) measure longer-term dynamic effects on employment and labor income until 1970 using a dynamic structural search and matching model that accounts for movements between regional labor markets. They show that it took regional labor markets at least a decade to adjust but that the expected discounted lifetime income of native workers declined by only 1.38 percent. Besides unemployment benefits, this was due to internal migration, which played an important role in diffusing the impacts over time. The inflow also seems to have contributed to sectoral change away from agriculture and thus to an increase in output per worker (between-sector effect), but to a decline in the output per worker within sectors (Braun and Kvasnicka 2014). Other papers also look at the longer-term impact of this inflow, exploiting the fact that the expellees were unevenly distributed across Germany based on available housing and that they were not allowed to settle in the French occupation zone. They find that the inflow had a positive impact on population growth and agglomeration that can still be measured several decades later (Wyrwich 2018; Schumann 2014), leading to increases in manufacturing employment and income per capita (Peters 2017). Braun, Kramer and Kvasnicka (2017) do, however, find that this effect is only persistent within large local labor markets.

²¹ This case is covered among high-income countries as West Germany was the receiving country but the income per capita in West Germany after the war may well have been considered as low or medium. We opted to keep it in this group as there was no optimal choice.

Ethnic Germans from Eastern Europe and Former Soviet Union to Germany after 1987

Ethnic Germans arriving in Germany with the lifting of emigration restrictions in central and eastern Europe and the Former Soviet Union (FSU) after 1987 did not face legal barriers on the labor market, as they were granted German citizenship upon arrival. Glitz (2012) exploits an exogenous placement policy by the government which did not take labor market needs or skill composition into account. Looking at annual effects in the period between 1996 and 2001, the author finds a positive and significant short-run displacement effect but no conclusive effect on relative wages between OLS and IV results. The lack of short-term wage effects in the IV results might be explained by Germany's strong union coverage at the time.

European Refugee Crisis: Asylum seekers to Germany 2014-2016

The influx of asylum seekers to the European Union increased sharply between 2014 and 2016. The conflict in Syria, but also conflicts in Afghanistan, Eritrea, Iraq, and Somalia, boosted the number of those attempting to reach Europe to seek asylum. In August 2015, Germany suspended the Dublin III Regulation procedure, according to which asylum seekers were required to ask for asylum in the first country of entry in the European Union. This allowed those asylum seekers who had crossed into Europe on boats from Turkey to Greece and had travelled along the so-called Balkan route to file asylum claims in Germany. With nearly 1 million applications in 2015, Germany received the largest number of asylum seekers in the European Union during the crisis and it was the largest inflow of asylum seekers into Germany since the beginning of the 1990s. These numbers started to decline from 2016 when travel through the Balkan Route was severely constrained.

Two papers aimed at assessing the short-term impacts of this influx, using a difference-in-difference approach, exploiting Germany's regional dispersal policy. Gehrsitz and Ungerer (2018) find no evidence of displacement on the labor market, as refugees themselves struggled to find work. Instead, they find a small decrease in unemployment for natives, potentially due to an increase in public spending. They also do not find a significant effect on median wages, except for a very small negative effect for young workers. Looking at the impacts on residential housing rents, Kürschner Rauck and Kvasnicka (2018) find a significant negative impact of an increase in refugee population at the county level on rental prices. The negative impact is smaller, if housing for refugees is more dispersed and less centralized facilities are used. Living next to refugees, notably refugee reception centers and group quarters, seems to be perceived as non-desirable, leading to an adverse effect on rental prices that is larger than any positive impact through an increase in demand.

Repatriates and escapees from Algeria to France

In the aftermath of Algerian independence in 1962, up to 900,000 people fled to France including 750,000 French nationals living in Algeria, about 100,000 naturalized Jews and several thousand pro-French Algerians who fought against the independentists. The French and Algerian caseloads were different in size but also in education level with the Algerians having the quasi totality of adults with less than primary education and the French having only about a quarter with this level of education. Both groups mostly settled in the Southern municipalities of France along the Mediterranean coast. A number of measures facilitated the integration of French repatriates into the labor market, including special benefits for up to a year to support the job search, a lump sum towards housing, and priority for certain jobs. Nevertheless, they had higher unemployment rates than natives in 1968 (Hunt 1992).

Using the 1962 and 1968 French censuses, Hunt (1992) studied this case focusing on French nationals and found a positive and significant small effect on the average locals' unemployment rate and a negative and weakly significant effect on salaries at the national level, but does not differentiate between skill groups. Borjas and Monras included this caseload in their 2017 study distinguishing between French repatriates and Algerian emigrants. They find that the Algerian low skilled emigrants had a positive and significant effect on the unemployment rate and a negative and significant effect on the employment rate of male locals

whereas the repatriation of French nationals had no effect on either employment or unemployment in the OLS regressions but a weak statistically significant positive effect on unemployment in their IV estimates. They also find that, for unemployment, these results are mainly driven by low skilled workers (less than primary education) whereas the impact on the employment rate affects all skills groups. They do not find any beneficial complementarities of skilled French natives with the low-skilled Algerians.

These two studies overlap only in relation to French repatriates and only unemployment and the results can be considered similar, even if the effect estimated is conceptually slightly different, as Clemens and Hunt (2019) note. Clemens and Hunt (2019) confirm the results of Borjas and Monras for Algerian nationals. We are not aware of any paper that contributes to the interpretation of these results. One of the reasons for the weak impact might have been the economic boom in France during the time of the influx and strong labor demand, as reflected by other important labor immigration trends happening around the same time. Hunt (1992), for example, shows that even if internal migration to areas with many repatriates might have decreased, this was offset by increased international migration to these same areas.

Cuban refugees in Miami

From May 1980 to June 1981 an estimated 120,000-126,000 Cubans arrived in Miami on boats as Castro suddenly allowed Cubans to leave the country from the Port of Mariel on April 20, 1980. Approximately half of this population settled in Miami contributing to increase the labor force by about 8 percent (Borjas and Monras 2017). Based on the Cuban Adjustment Act of 1966 and The Immigration and Nationality Act Amendments of 1976, Cubans were given refugee status, they were allowed to work and could also be granted permanent residency after one year. The high number of previous Cuban and other Hispanic immigrants meant that local networks were available to help with job seeking and that language was not an obstacle to work.

Card (1990) was the first to study the labor market impact of this caseload of refugees and concluded that there was no significant impact on the employment to population ratio, the unemployment rate or hourly wages for any population group including Whites, Blacks, Cubans or other Hispanics, and low skilled. Looking closer at these results one can observe differences for wages, employment and unemployment between Miami and comparison cities for selected years but these effects are not consistent in sign during the post-shock period with no clear trend.²² Angrist and Krueger (1999) expand these results using a Difference-in Differences approach whereas Peri and Yasenov (2019) use a synthetic control group to improve on the matching of the control group. Both papers find no effects on any of the labor market outcomes considered. Using the same four comparison cities and time frame (1979-1985) as Card (1990), Bodvarsson, Van den Berg, and Lewer (2008) find that the net effect of Cuban immigration on native wages in the retail industry is positive and significant on average for whites, and positive but non-significant for blacks and Hispanics.

Borjas and Monras (2017) analyze the same crisis and, similar to previous studies find no significant effect on employment or unemployment. However, both Borjas (2017) and Borjas and Monras (2017) find a negative and significant impact on relative wages for a certain subgroup of low skilled individuals defined as non-Hispanic male high-school dropouts aged 25-59 who have worked and received wages, in sharp contrast with high school graduates that show a positive and significant gain. Anastasopoulos et al. (2018) complement this work by showing that the number of help-wanted ads published in local newspapers, which are most strongly correlated with local labor market conditions for high-school dropouts, decreased in Miami until the end of 1982 relative to different alternative control cities.

The contrast between the Borjas (2017) study and other studies in relation to low-skilled local residents has been the object of debate. A closer look at these papers and more recent work shows that this is due to the different definitions of subgroups considered: different authors look at different subgroups of the low-

²² This is visible if one calculates the differences between Miami and comparison cities in Tables 3 and 4 (not shown in the paper).

skilled population in terms of the age range, sex (only men or men and women), and race (Blacks, non-Hispanic or non-Cuban). Card first makes an analysis subdividing Whites, Blacks, Cubans and other Hispanics and then focuses on Blacks low and high skilled whereas Borjas (2017) and Borjas and Monras (2017) consider all male non-Hispanic natives together and focus on desegregating skills levels and Peri and Yanesov (2019) focus on non-Cuban men and women with no high school degree between 19 and 65 years old. Card (1990) also divides all non-Cubans in Miami by predicted wage quartiles but finds no evidence of a decline in the wage of workers in the lowest quartile compared to workers in the upper quartile.

Peri and Yanesov (2019) showed that nearly all other sub-groups of individuals with less than high school education perform better than the sample selected by Borjas. They also argue that Borjas' results are not robust because the sample size for this subgroup is very small and the measurement error is sizable. Borjas (2017), however, argues that including other groups in the sample ignores the changing composition of the workforce which occurred at the same time, as new Hispanic immigrants arrived after 1980 and an increasing number of women entered the workforce in the 1980s. Clemens and Hunt (2019) criticize Borjas' population selection and the separation of those who never finished high school from those with only high school degree because the sample shifted to include substantially more Black male workers with relatively low wages. They show that this shift fully accounts for the decline in wages as found by Borjas.

Considering the different categorizations used, the results of Card (1990), Angrist and Krueger (1999), Peri and Yanesov (2017), Borjas (2017) and Borjas and Monras (2017) are in fact rather similar. All the authors agree that the Mariel boatlift to Miami in 1980 had no effect on employment and unemployment of natives overall or for different subgroups of natives. They also agree that there are no clear effects on wages overall and they also do not find negative impacts on low-skilled workers overall. The apparent discrepancy occurs only in relation to wages of a specific subset of low-skilled workers, for which Borjas (2017) and Borjas and Monras (2017) find a negative and significant effect on wages. Therefore, the negative effect of the refugee crisis, if any, is limited to a subset of low-skilled workers, a result that Peri and Yanesov (2017) and Clemens and Hunt (2019) also disputed.

Interestingly, all these papers ignore the question of household well-being. Whether the decrease in wages for a subset of low-skilled workers ultimately results in a decrease or increase in average household well-being depends on production and productivity. Therefore, these results do not provide any evidence on whether living standards of the local residents of Miami have improved or not in the aftermath of the Mariel boatlift. This has been an important gap in this specific debate.

The only paper that looks at outcomes beyond the labor market is Saiz (2003), who finds that rental prices increased in the short and medium run (1979-1983) by between 7 and 11 percent more in Miami than in comparison municipalities. These findings were limited to lower-quality housing and show that demand for this type of housing remained strong over the period. The literature also offers some explanations for the lack of impact of the Mariel boatlift on the labor outcomes of the host community. The structure of the industry in Miami (notably a relatively high share of textile and apparel industry) offered jobs for low-skilled non-English speaking labor (Card 1990). Using a confidential micro data version of the Annual Surveys of Manufacturers, Lewis (2004) finds little evidence that these industries expanded their production of labor intensive goods relative to other productions (like a Heckscher-Ohlin open economy model would have predicted). However, he also shows that these industries opted for labor intensive technologies in the aftermath of the crisis and adopted computers more slowly than industries in comparison cities expanding employment at the extensive rather than intensive margin. The new arrival of Cubans also helped to compensate for a net decline in internal migration to Miami (Card 1990) whereas the overall increase in population increased local consumer demand, which in turn increased labor demand. Bodvarsson, Van den Berg, and Lewer (2008) find that the positive impact of Cuban immigration on retail sales per capita (demand effect) outweighed the negative impact of the immigrant wage on native wages (substitution effect on the labor market).

Former Soviet Union (FSU) escapees to Israel

In the aftermath of the fall of the Berlin wall in 1989, the lifting of emigration restrictions in the Soviet Union and the collapse of the Soviet Union in 1991, many Jews from the Former Soviet Republics migrated to Israel. It is estimated that between 1989 and 1995, 610,100 immigrants arrived in Israel from the Former Soviet Union, increasing the size of the population by 13.6%, with nearly half of this population having tertiary education and significant work experience (Borjas and Monras 2017). Although these immigrants were not classified as refugees after 1989, the sudden nature of this phenomenon with the unexpected collapse of the Soviet Union in 1991, the substantial push and pull factors at play and the scale of the migration flow made this crisis a relevant case-study for several of the scholars working on forced displacement.

Friedberg (2001) was the first to assess the impact of this migration flow on the labor market of local residents. The paper finds a negative impact on wages and a nonsignificant impact on employment levels. However, when using an Instrumental Variable approach (IV) and subdividing the workforce into occupational groups, the author finds no evidence that the influx of FSU citizens has adversely affected the wage growth of local workers. When a distinction is made between high skilled and low skilled workers, it is found that high skilled workers' wages gained whereas the effect on low skilled workers and overall employment was nonsignificant.

Cohen-Goldner and Paserman (2011) also study FSU migrants to Israel and find a significant negative effect on wages in the short-term but not in the long-term. A 10 percent increase in the share of immigrants lowers native's wages in the short-run by 1-3 percent, an effect that disappears after 4-7 years. The short-term effect is explained by the impact on low skilled blue collars whereas there are no short or long-term effects on high skilled white-collar workers. These effects are also found to be similar for men and women. The differences in results between Friedberg (2001) and Cohen-Goldner and Paserman (2011) can be explained by the time frame studied: Friedberg looks at results after five years, and Cohen-Goldner and Paserman show that after four years the effect is close to zero.

By contrast, Borjas and Monras (2017) focus on earnings and find a negative and significant effect overall explained by the very high skilled (university completed education) whereas the low skilled (less than primary education) are found to benefit from the influx of immigrants. Friedberg (2001) and Borjas and Monras (2017) in particular have clearly opposite results in relation to high and low skilled workers although the two papers are not entirely comparable.²³ A study that attempted to understand these differences (Clemens and Hunt 2019) showed that the difference between the two papers can be explained by the difference in the specification of the instrument used. Using a placebo approach, these authors show that Borjas and Monras's IV results could be reproduced with a placebo instrument whereas Friedberg's results could not, providing some evidence in favour of the latter paper. However, both Borjas and Monras (2017) and Cohen-Goldner and Paserman (2011) criticize Friedberg's instrument on the ground that the occupation status in the FSU might only be weakly correlated with the actual occupation in Israel due to occupational downgrading (see also Eckstein and Weiss 2004 on this point).

Overall, the evidence presented in this section remains inconclusive. The three papers reviewed are not entirely comparable in terms of population groups and time-frame and they all reach different conclusions on high and low skilled workers. There is also no agreement on the optimal instrument to use. There are no discrepancies among these papers on the impact of the migration flow on native employment but, using a

²³ Both papers use an OLS and IV approach but using different observational units and equations (see empirical modeling part). Results are similar in the two papers for the OLS approach but Friedberg shows that this approach is biased (by immigrants entering occupations with low wages and low wage growth) whereas Borjas and Monras (2017) trust both OLS and IV approaches and further subdivide the unit of observation by education groups. Therefore, equation specifications, unit of observation and instruments are different. Yet, both authors consider occupations and different skills levels and they reach opposite conclusions about high and low skilled workers.

general equilibrium model, Hercowitz and Yashiv (2002) find a negative impact on native employment questioning whether partial equilibrium models are suitable for studying the overall impact on employment.

Results on prices are also inconclusive. Using data at the national level until 1999, Hercowitz and Yashiv (2002) find a negative impact on the relative price of imports lagged by 4-5 quarters, but results for other quarters are not significant. Exploiting city level variation in inflows and using a simple difference-approach with data from 1990, Lach (2007) finds a negative impact on prices in the short-run, which does not seem to be caused by the increased number of consumers (size effect) but by the high price elasticity and low search costs of this new group of consumers (composition effect).

Palestinians from West Bank to Israel

Two papers looked at the impact of the second Intifada of 2000 and the sudden inability of Palestinian workers to commute to their jobs in Israel. Asali (2013) studies the impacts of the sudden drop in labor supply in Israel. He finds no effect on the employment and wages of unskilled Israeli Jewish workers, positive effects on Israeli Arab workers with less than primary school mostly in the short-run, and negative effects on Israeli Arab workers with middle or high school.²⁴ Mansour (2010) studies the impacts of the increased supply of Palestinian workers on the labor market in the West Bank. He finds that an increase in the supply of low- and high-skilled workers both decrease the wages and increase unemployment of low-skilled workers but has no significant effects on high-skilled workers.

Refugees from Former Yugoslavia to the EU

After the fall of the Berlin wall in 1989 and the collapse of the Soviet Union in 1991, Yugoslavia split into the five constituent republics in 1991 and 1992 leading to a series of conflicts lasting a decade and generating outflows of refugees who mostly settled in selected European countries. It is uncertain how many refugees the Balkan wars generated but using census data from seven European countries Borjas and Monras (2017) find about 259,000 people who were born in former Yugoslavia and moved to Europe during the decade. All considered, this is not a massive inflow of people but certain municipalities had a sizable increase in labor supply. The refugees had similar levels of education compared to the native population, but were faced with a lack of language skills.²⁵ They were offered different types of residence status by the different host countries but most of them were allowed to work.

Angrist and Kugler (2003) studied this caseload and, measuring aggregate differences across 18 European countries, find a negative and significant effect on employment with both an OLS and an IV approach. An increase in the share of immigrants by 10 percent reduces native employment rates by 0.2-0.7 of a percentage point with men and younger workers being the most affected groups.²⁶ These effects tend to be accentuated in localities with more rigid labor and product markets, weak institutions and stagnant labor markets. Borjas and Monras (2017) also cover refugees from Former Yugoslavia in seven of the 18 European countries studied by Angrist and Kugler (2003) and, differentiating by education level and within-country regions, find a significant positive effect on the unemployment rate of the locals with an OLS estimation and no significant effect with an IV estimation and a non significant effect on the employment rate. The results of these two papers are not comparable because of the models used, categorizations of variables and sample covered, and they also provide different results on employment. Clemens and Hunt (2019), carrying out a Kronmal correction on the instrument used by Borjas and Monras (2017), find a statistically insignificant effect on unemployment.

²⁴ This is an interesting counterfactual to the increase in labor supply studied by the other papers in this review. As the results are not directly comparable, they are, however, not included in the data set used for the meta-analysis.

²⁵ In the countries analyzed by Borjas and Monras (2017) they were disproportionately middle-skilled (secondary education).

²⁶ Note that, in a country where 5 percent of the labor force is foreign, a 0.5 reduction of a percentage point implies 83 native workers losing their jobs for every 100 immigrant workers finding a job. Therefore, at the higher end of this estimations, the rate of substitution between native and foreign workers is around one to one, a very large effect on a per capita basis.

Refugees in Denmark

Foged and Peri (2015) studied the inflow of refugees from conflict areas to Denmark between 1991 and 2008 accounting for up to 4.7 percent of the labor force in 2008. The paper exploits labor market administrative data following individuals continuously over time in a panel setting and a refugee dispersal policy that allocated refugees across the country between 1986 and 1998. Using OLS and 2SLS models, the paper finds that immigration increases the complexity and wages of jobs for the low-skilled natives. An increase in refugee-country immigrants by 1 percentage point increases the complexity of native jobs between 1.3 and 3.1 percent and wages by 1-1.8 percent. The authors interpret these results as immigrants pushing natives to more complex and better paid occupations either within the same establishments or by migrating to other establishments. They also find that total labor supply of natives either increases or is stable. These effects are not very large when compared to the overall changes of these parameters over the period considered but they show complementarities rather than competition between immigrants and natives. Similar effects are observed for high-skilled natives. In this case, the effects are smaller in terms of occupational complexity but larger for wages. These results are also supported by the DD cohort-municipality model proposed by the same authors. Those cohorts living in municipalities with higher immigration experience a larger shift towards more complex occupations and better wages with these effects persisting in the short and long-run. Young and low-tenure, low-skilled natives are also shown to respond to immigration with stronger transitions towards higher occupational complexity and better wages with no negative effect on employment supply.

Refugees in the United States

Similar to Foged and Peri (2015), Mayda et al. (2017) look at the long-term labor-market impacts of refugee inflows and exploit a refugee placement policy in the country of destination. They study the impact of resettled refugees on natives' wages and employment in commuter zones in the U.S. over three decades, between 1980 and 2010. They find very small, mostly insignificant effects on wages and employment on average for both low skilled and high skilled native workers. The point estimates do not vary much between the full control sample and the matched control samples. The reduced form and 2SLS regressions are also robust to broader or narrower definitions of the treatment shock (i.e. commuter zones with refugee inflows larger than 0.05% or 0.2% of the population) and the omission of some controls. They note that the average refugee inflow was small, and that the different skill-set of resettled refugees compared to natives might have led to a high complementarity between the two groups.

2.2 Middle-income countries

Returnees from Angola and Mozambique to Portugal

After the 1974 military coup, the newly installed government of Portugal granted independence to Angola and Mozambique generating a flow of "retornados" (returnees), people of Portuguese or European descent who felt unsecure in the former colonies and decided to return to Portugal. Prior to 1974, the population of Portugal was decreasing due to emigration whereas it grew by 5 percent per year in 1974 and 1975. Estimates of the total number of returnees during the period vary between 0.5 and 1m people but many returnees moved on to other countries. According to the census, there were about 0.5 m returnees in 1981, predominantly working age males formerly engaged in service activities, and relatively well educated as compared to the local population. Together with returning soldiers, they increased the Portuguese labor force by over 15 percent in three years.²⁷ Most of them were native Portuguese speakers. They arrived with few resources but received benefits, including cash subsidies, which made up about 11 percent of total government spending at the time (Makala 2017). Compared to France, who received a comparable returnee flow from Algeria, Portugal was less developed at the time, and the economy was in a downturn.

²⁷ It should also be noted that the emigration of Portuguese guest workers ended in 1973 with the oil crisis. This added to the labor supply shock caused by the returnees from the former colonies.

Two published studies looked at the impact of these returnees on the local labor market. Carrington and de Lima (1996) used time series econometrics to observe the evolution of the Portuguese labor market before and after 1974. They find a sharp deterioration of labor market indicators after 1974. However, the immigration rate had no impact on the unemployment rate, the employment to population rate or wages except for a small one year lagged effect on the unemployment rate and real wages. Interestingly, these results hold whether the authors control for Portuguese macroeconomic indicators or the Spanish labor market, which had similar characteristics to the Portuguese labor market in the 1970s. Using a separate longitudinal model and focusing on the construction sector, the same authors find a large and significant effect on earnings in this sector. However, the authors' challenge their own results considering the unobserved heterogeneity that affects the latter model leaving conclusions somewhat open to interpretation. They also argue that the persistence of the effects raises question if the returnees were the cause.

Makela (2017) uses a SCM approach based on comparator countries (see empirical models section) to estimate the impact of the returnees on average annual productivity, wages and the unemployment rate. The author finds a significant negative effect of immigration on all three outcomes. The estimate impact on productivity is around 26 percent in the five years after the shock, the one on wages is from 8 up to 55 percent from 1977 to 1985 whereas the unemployment rate rises by about 2.3 percentage points between 1975 and 1980 but declines by a similar amount between 1980 and 1985. The author also combines the SCM approach with a Difference approach working with Portuguese regions rather than countries and focusing on the agriculture and construction sectors. In addition, a fixed effects and a generalized synthetic control method are used as robustness tests. All these estimations are consistent in finding a significant negative effect on agricultural and construction wages. On average, a one percentage increase in the returnees population share leads to a decrease in wages of 4.13-9.53 percent in these sectors.

In summary, the two available studies for the 1974 returnees to Portugal are rather consistent in finding a significant negative effect on wages in the years following 1974 for the agriculture and construction sectors whereas the evidence on employment and unemployment is nonconclusive.

IDPs in Colombia

Colombia has a long history of internal violence that claimed hundreds of thousands of lives since the late 1950s. Such violence has been mainly linked to the emergence of powerful revolutionary groups including the Revolutionary Armed Forces of Colombia (FARC) and the National Liberation Army (ELN) and to paramilitary groups that initially emerged to contrast these revolutionary groups. In the 1980s, internal violence intensified due to the expansionary ambitions of the revolutionary groups that led to a civil war against the state and the increasing violence perpetrated by military and paramilitary groups. As a consequence of this violence, many civilians who had been caught in the fighting were forced to flee. The conflict affected mostly the North-East of Colombia and almost five million people have been estimated to have fled this area since the early 1980s. These internally displaced persons were mostly from rural areas and settled mostly in urban areas and had a level of education comparable with low-skilled workers in urban areas.

Calderon-Mejia and Ibanez (2016) use household survey data and an IV approach to assess the impact of IDPs on the hourly wages of host communities. They find that a 10 percent increase in the share of IDPs reduces hourly wages by 0.88% with this effect being larger for women as compared to men. The effect is smaller (0.63%) but still negative and significant for manual male workers and management and professional female workers (0.64%) whereas is non-significant for female manual labor and male management/professional labor. The most affected workers are independent/self-employed workers with females (2.28%) suffering more than males (1.31%), particularly those with high school education or less (2.0%).

Morales (2018) use survey, census and registry data covering the 1993-2005 period to study the same caseload of IDPs in Colombia. Short-run effects indicate a negative impact on wages. A one percent

increase in population due to IDPs results in a 1.4 % reduction in local wages with this effect being larger for women, particularly low skilled women (2.2%). The effect is non-significant for high skilled men. In this case, OLS and IV estimations concord with IV estimations showing larger effects. The long-run estimates show instead a positive correlation with OLS estimations and a negative effect for low-skilled women and no effects for other groups with IV estimations. There is therefore some evidence that the negative effects tend to disappear in the long-run but not for all groups. This study is also one of the few studies that considers the potential impact on outmigration. It finds that an increase of 1% in population due to IDPs generates an outmigration of 0.2-0.3 people per 100 residents.

Using OLS and IV fixed effects, Bozzoli, Brücker and Wald (2012) find that the inflow of internally displaced persons increases the probability of being self-employment in the service sector, but not in the agricultural sector. They also find a sharp reduction in the hourly income in the self-employed sector.

The three studies reviewed on labor market impacts in Colombia are therefore very consistent in finding a negative effect on wages with the effect being larger for women and low skilled workers, notably in the informal sector. This effect also seems to be attenuated in the long-run, possibly due to outmigration and other labor market adjustments.

Depetris-Chauvin's and Santos' (2018) study the impacts on rental prices, using administrative panel data on quarterly IDP flows and rental prices by income level between 1999-2014 for 13 cities in Colombia (which received 66% of all IDPs). Their OLS estimates show a significant positive impact of IDP inflows on average rental prices for low- and middle-income housing, which may last up to 10 quarters. Results for high-income housing are non-significant. Their IV approach does not show statistically significant impacts on rental prices on average; but rental prices for low-income housing increase while they decrease for high-income housing. This is one of the few papers that explores potential channels through which the IDP inflow might impact the variable of interest. They provide evidence that the heterogeneous impact on rental prices might be due to an increase in supply of high-income housing, as licenses for new non-social interest housing increase while those for social interest housing decrease, and wages in the construction sector decrease, reducing construction costs. At the same time, they find evidence of a large housing deficit in the low-income areas of the host cities. The second channel might be an increase in crime associated with the inflows of IDPs, measured by the homicide rate in the host cities, which has a negative impact on high-income rental prices. In a separate paper from Depetris-Chauvin and Santos (2017), the authors' OLS and IV estimates indicate that the inflow of IDPs decreases food prices, although the authors express concern about reverse causality, as lower food prices might increase violence and internal displacement. They also find some evidence of a decrease in per capita consumption expenditures. This might be the result of increased rental prices and negative impacts on labor market outcomes.

Syrian refugees in Turkey and Jordan

Following a stream of mass protests in central Syrian Arab Republic and the subsequent crackdown on the part of the Syrian authorities in the spring of 2011, Syria slid into a complex civil war that is still raging at the time of writing in 2019. Within three years from the beginning of the conflict over five million Syrians had left the country most of which settled as refugees in neighboring countries including Jordan, Lebanon, Turkey and Iraq. The bulk of the exodus occurred between 2011 and 2013 resulting in approximately 0.25 m refugees in Iraq, 0.67m in Jordan, 0.95m in Lebanon and 3.6m in Turkey.²⁸ It is also estimated that an additional 6m people have been displaced within Syria. Overall, more than 10m people – about half of the pre-conflict Syrian population - has been displaced during the conflict thus far.

The impact of refugees on host communities has been studied mainly for Turkey in a string of studies that focused on labor market outcomes. Akgündüz et al. (2015) study the influx of Syrian refugees in South-East Turkey and find a non-significant effect on employment whether employment is broken down by

²⁸ Based on UNHCR data as of January 2019 (<https://data2.unhcr.org/en/situations/syria>).

region, province or skill level. Cengiz and Tekguc (2018) confirm these results, finding no negative employment or wage effects overall, as well as none for those without high school degree. Del Carpio and Wagner (2016) using the Turkish Labor Force Survey (LFS) and an IV approach find a negative and significant impact on local employment in the informal sector but a positive and significant impact on the formal sector. Similarly, Ceritoglu et al. (2017) and Tumen (2016) find Syrian refugees to have a positive and significant effect on formal employment explained by the performance of older workers and a negative effect on informal employment explained by a negative performance of younger workers. Relaxing the common-trend assumption across regions, Aksu, Erzan, and Kirdar (2018) confirm adverse impacts on those working in the informal sector, and positive impacts on wages and employment in the formal sector, notably for men. Both effects are stronger for less educated and younger workers. Using a regional panel data set for the period 2004-2016, Esen and Binatli (2017) is the only study that finds an increase in unemployment and a decrease not only in informal but also in formal employment as a result of the refugee influx. The results of Akgündüz and Torun (2018) suggest that the refugee inflow led to occupational upgrading of natives, as their task complexity increased, particularly for medium-skilled natives.

Three studies on Turkey also looked at the impact on prices. Akgündüz et al. (2015) find a positive and significant effect on food and housing prices and a non-significant effect on hospitality prices. Balkan and Tumen (2016) find instead that prices have declined as a result of the refugee influx due to an increase in cheap labor supply particularly in the informal sector. Using a simple DD approach, Balkan et al. (2018) find that housing rents increased in the range of an additional 3.5-5.5 percent in refugee receiving regions in the short run (2012-2013) compared to control regions, as housing supply is inelastic in the short run. The effect is negative and statistically insignificant for below-median rents, but positive and statistically significant for high-rent housing. They interpret this as a sign of residential segregation, with natives moving out of lower-priced neighborhoods where refugees settled.

The only other country affected by the Syrian crisis where studies are available is Jordan. Fallah et al. (2018) look at Syrian refugees in Jordan and find that locals have not experienced negative labor market outcomes if one considers labor market participation, employment, employment by type or wages. They find no difference between the labor market outcomes of locals living in areas with a high share of refugees and those who do not. Fakihi and Ibrahim (2016) look at Syrian refugees in three governorates of Jordan and use a longitudinal vector autoregressive model (VAR) to assess the impact of refugee flows on local employment. Similarly to Fallah et al. (2018) they find no correlation between refugee flows and local trends in employment, unemployment or labor force participation. On the other hand, results by Malaeb and Wahba (2018) show that previous immigrants to Jordan were more likely to work informally, work fewer hours and had lower wages after the influx of Syrian refugees. In Jordan's segregated labor market, Syrian refugees seem to be closer substitutes to immigrants than to natives. El-Mallakh and Wahba (2018), however, show that the probability of Jordanians migrating out of the regions with higher numbers of Syrian refugees increased. While confirming no significant effect on labor market outcomes of salaried Jordanians, Rozo and Sviastchi (2018) find negative effects of refugee exposure on self-employment.

Two papers looked at the impact of Syrian refugees on prices in Jordan. Alhwarin et al. (2018), find no evidence of impacts on predicted rental prices on average. Depending on the data set used, the impact on rental prices in regions closer to the Syrian border was insignificant or positive, and in regions distant from the border insignificant or negative. They do, however, find a negative and significant impact on a housing quality index. Rozo and Sviastchi (2018) confirm these results, finding larger expenditures on housing for individuals living closer to refugee camps, at the expense of other types of expenditures, and higher rental and property income in these areas. These latter authors do not find any evidence of impacts on overall consumption expenditures.

Overall, the evidence on the Syrian crisis points to no visible overall effects on the labor market in neighboring countries although there is evidence of competition between former immigrants and informal workers on the one side and the new wave of Syrian immigrants on the other side. Most studies show a

positive impact on formal employment of natives in Turkey, also providing evidence for professional upgrading. The absorption of Syrian refugees in the Turkish labor market seems facilitated by an increase in the number of new Syrian-owned businesses (Altindag, Bakis and Rozo 2018; Akgündüz, van den Berg, and Hassink 2018; Cengiz and Tekguc 2018) with firms substituting capital with Syrian workers (Akgündüz and Torun 2018). The rise in construction activity also helped absorb the labor supply shock (Cengiz and Tekguc 2018). Results on prices in Turkey remain unclear with different studies showing positive, negative or non-significant results. Only in Jordan there is some evidence for increases in rental prices in areas closer to refugee camps.

Ethnic Greeks from Turkey to Greece

After the Greco-Turkish war of 1919–1922, 1.2 million Greek Orthodox were forcibly resettled from Turkey to Greece, increasing the Greek population by more than 20 percent within a few months. Murard and Sakalli (2018) look at the impact of this resettlement on local municipalities almost 100 years after the event. They find that localities with a greater share of refugees in 1923 have today higher earnings, higher levels of household wealth, greater educational attainment and larger financial and manufacturing sectors. The long-run beneficial effects arise from the introduction of entirely new industries in the textile sector by refugees, and the new agricultural know-how and crop varieties that forced migrants brought with them. Both fostered industrialization and economic growth. These results are similar to the positive long-term effects found for German expellees (Braun and Kvasnicka 2014; Schumann 2014; Wyrwich 2018) and for the forced population relocation in rural areas within Finland after World War II (Sarvimäki 2011).

2.3 Low-income countries

Burundian and Rwandan refugees in Tanzania

Following the assassination of the Burundian president in 1993 and the Rwandan genocide in 1994, a large number of Burundian and Rwandan refugees settled in the Kagera and neighborhood regions in Tanzania. By 1995, this region of 1.5 m inhabitants hosted about 0.7 m refugees from these two countries alone. This is the largest crisis in terms of incidence of refugees over the host population and also the crisis that has the largest number of empirical studies in Sub-Saharan Africa thanks to the considerable number of household surveys that have been conducted in the affected region over the years.

Alix-Garcia and Saah (2009) was one of the first studies that looked at the impact of the Burundian and Rwandan refugees in Tanzania using a mix of USAID, WFP and DHS data sets on food aid, prices and household assets. They find positive effects on prices of non-aid foods and smaller but positive effects on aid-related food items. This is one of the few studies that looked at both aid and refugee effects separately finding that the aid effect is considerably smaller than the refugee effect. The authors also find a positive and significant household wealth effect (measured in terms of household assets) for rural households living close to refugee camps and negative wealth effects for households in urban areas.

Thanks to the World Bank Kagera Health and Development panel Survey (KHDS) a number of studies were able to assess the impact of these refugees on host communities focusing mainly on household well-being and labor market outcomes. Maystadt and Duranton (2018) find that all types of local workers gained from the refugee presence, although the positive effects are weaker for agricultural workers and the self-employed in non-agricultural activities. They find a positive and significant effect on household consumption in 9 of the 16 models' specifications they propose with the rest of the results being all positive and non-significant. Maystadt and Verwimp (2014) use six different specifications of a similar model and find four of these specifications with a positive and significant effect on consumption with the remaining two specifications being positive and non-significant. They also show a differentiated impact between agricultural laborers and self-employed with the former suffering from high prices and competition on jobs and the latter benefitting from higher prices and cheap labor. Overall, doubling the refugee presence is found to increase per adult equivalent consumption of host households by 6-8 percent. The effect is also positive but lower (2-3 percent) for agricultural workers and self-employed in non-agricultural activities.

Using the same data, Ruiz and Vargas-Silva (2016) find that the forced migration shock led to an increase in the likelihood of Tanzanians working outside the household as caretakers and a lower likelihood of working outside the household as employees. This is particularly true for agricultural employees suggesting a certain substitution effect between locals and refugees. Ruiz and Vargas-Silva (2015) complement these results by finding that the general impact on employees is negative and significant but the impact on professionals and government employees is positive and significant. Looking closer at the relative differential impacts by gender and skill-level, Ruiz and Vargas-Silva (2018) find that, on average, the refugee influx led to women being less likely to engage in employment outside the household and to work fewer hours outside the household relative to men. The results seem to be driven by those of 30 years of age or younger. Women who were literate and had basic math skills, however, were more likely to engage in outside employment. The authors suggest that the channel for this impact is that the refugee influx increased the availability of cheap domestic workers.

Overall, findings for the Kagera region of Tanzania show that the employment effects tend to be positive for formal high skilled workers and negative for informal unskilled workers. Unlike other studies on high- and middle-income countries these studies also looked at household well-being and generally find a positive impact, particularly for self-employed and residents close to camps.

Refugees in Kenya (Turkana)

One study (Alix-Garcia et al., 2018) focused on the impact of the Kakuma refugee camp in Kenya on neighboring communities using night lights as a measure of economic activity and distance from the camp as identification strategy. The Kakuma refugee camp in Kenya was initially established in 1991 to host refugee children fleeing Somalia. Its population grew steadily over the years due to conflict in neighboring countries and by 2016 the camp hosted more than 180,000 refugees, one of the largest refugee camps that ever existed. The study finds that the Kakuma refugee camp increases economic activity of neighboring villages. A linear DD estimation finds that a one percent increase in the distance to the Kakuma refugee camp (~ 1.2 km) at the mean level of refugee inflows (~ 69,000 refugees) results in a 1.8 percent reduction in the nighttime lights index. For the sample of villages with a population of 5,000 or more in 1989, a one percent increase in the distance to Kakuma at the mean level of refugee inflows is associated with a 2.3 percent reduction in the nighttime lights index. Using a Tobit specification, the authors find that a 10% increase in distance from Kakuma (12 km) at the average population of refugees corresponds to a 3.3 to 4.2 percentage point reduction in the probability of observing any nighttime lights.

In essence, the closer a village is to the refugee camp, the higher is the nighttime luminosity. The authors are also able to transform these estimates into the impact on household consumption. If a 10% increase in refugee population is associated with a 3.7% increase in the luminosity index within 10 km of the camp, the equivalent effect on consumption is approximately $(0.015 \times 0.037) * 100 = 5.5\%$. Therefore, the paper provides rather strong evidence that vicinity to the camp increases economic activity and household consumption for local residents. These findings are also consistent with those outlined above for the Kagera region of Tanzania.

Congolese refugees in Uganda and Rwanda

The Democratic Republic of Congo (DRC, ex-Zaire) has been the center of the first (1996-1997) and second (1998-2003) Congo wars that saw several countries and several armed groups involved and the largest death toll for a single war since World War II. Up to 5.4 m people may have perished as a consequence of these wars, although the actual number of casualties remains a disputed issue. In addition to generating death and mass displacement within Congo, hundreds of thousands of Congolese fled to neighboring countries including Uganda and Rwanda. Three studies looked at the impact of these refugees on host communities in these two countries.

Kreibaum (2015) looked at Uganda and finds that, overall, the refugee presence increases monthly consumption of the host population. Increasing the number of refugees per 1,000 inhabitants by 10 increases

consumption on average by 3 percent, which is about equivalent to one day's income for the local population. Interestingly, this does not match the perception of the local population which feels that the presence of refugees decreases well-being. Taylor et al. (2016) look at Congolese refugees in Rwanda and find a positive effect of aid on the local economy. This is the only paper in our knowledge that uses a general equilibrium model supported by microeconomic survey data to assess the impact of cash and food aid assistance to refugees in camps on the local economy identified as host communities living in a 10 km radius from the camps. They find that each adult refugee receiving cash assistance increases the annual real income of host households by 205 to 253 USD, which is more than the value of cash assistance provided to refugees of 120—126 USD. They also find positive impacts on local trade and food aid, although the latter impact is smaller than the impact of cash assistance. Using a 2016 household survey, Loschmann, Bilgili, and Siegel (2019) compare households living within a 10km radius of one of the three largest refugee camps in Rwanda with households living more than 20km away from these camps. They find that those living closer to the camps are on average more likely to be engaged in wage employment compared to farming or livestock activities. Women are also more likely to engage in self-employment, as a primary or secondary activity. The households living closer to the camps have greater asset ownership. Even if those living closer to the camps are better off, there is no statistically significant difference in the households' subjective measure of their economic situation between those closer to and further away from the camps.

Therefore, all three studies find a positive impact of refugees on household well-being of local communities, which is in line with the studies on Burundian and Rwandan refugees in Tanzania and the work on the Kakuma refugee camp in Kenya.

IDPs in Sudan

The wars ravaging across Sub-Saharan Africa have led to the internal displacement of millions of people, particularly in countries such as Nigeria, Sudan, South-Sudan, the Democratic Republic of Congo and Somalia due to the prolonged nature of conflict in these countries. These populations are very difficult to study, or even count, because access to IDPs is limited due to war and restrictions are imposed by governments who often share responsibility for displacement. Population surveys are very scarce and published studies are rare. One exception is represented by two studies on internal displacement in the Sudanese region of Darfur, particularly the city of Nyala, a city that counted almost 3 m residents in 2010. This city became the epicenter of internal displacement in the Darfur region with up to 700,000 IDPs located in camps on the outskirts of the city or scattered around the city.

Alix-Garcia, Bartlett and Saah (2011) studied the impact of IDPs on local prices and find a significant association between the growth in IDPs and the rise in food prices. The impact varies across products, from an IDPs/prices elasticity of 0.4 for fava beans to 2.9 for wheat. This relation is found to be significant for key products like sorghum, wheat, fava beans and oil but not for other products such as millet or sugar. Alix-Garcia and Bartlett (2015) return to study the same case focusing this time on occupations. They find that local residents living in Nyala had a higher likelihood of being employed in skilled sectors and a lower likelihood of becoming unemployed relative to a control group drawn from a comparable city not affected by IDPs (el Obeid). Such effect is particularly visible for male older workers but also present for females. The same paper also uses house improvements as a proxy of wealth and finds that people living in Nyala made significantly lower house improvements than people living in el Obeid during the IDPs crisis. The study also finds that this is explained by households dominated by low skilled workers.