

AUTHOR ACCEPTED MANUSCRIPT

FINAL PUBLICATION INFORMATION

How Does Poverty Differ among Refugees? Taking a Gender Lens to the Data on Syrian Refugees in Jordan

The definitive version of the text was subsequently published in

Middle East Development Journal, 12(2), 2020-05-12

Published by Taylor and Francis and found at <http://dx.doi.org/10.1080/17938120.2020.1753995>

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How Does Poverty Differ Among Refugees? Taking a Gender Lens to the Data on Syrian Refugees in Jordan

Abstract

Many reports document the hardships experienced by refugees, highlighting that women and children are a highly vulnerable group. However, empirical analysis of how gender inequality impacts poverty among refugees is limited. We combine registration data for Syrian refugees in Jordan collected by the United Nations High Commissioner for Refugees with data from its Home Visit surveys to analyze income poverty rates among refugee households. We use an approach that captures the disruption to household structures that results from displacement to evaluate the poverty impacts, comparing refugee households with male and female principal applicants (PAs). We find that distinguishing between different types of principal applicant households is important. Half of the female PAs for nonnuclear households live below the poverty line compared to only one fifth of male PAs for nonnuclear household. PAs who are widows and widowers also face high poverty risks. Households that have formed because of the unpredictable dynamics of forced displacement, such as unaccompanied children and single caregivers, emerge as extremely vulnerable groups. We show that differences in household composition and individual attributes of male and female PAs are not the only factors driving increased poverty risk. Gender-specific barriers which prevent women accessing labor markets are also a factor. Our findings show that gender inequality amplifies the poverty experienced by a significant number of refugees. Our approach can be used to help policy makers design more effective programs of assistance and find durable solutions for displaced populations.

Keywords: Refugees; Gender; Poverty; Vulnerability; Syria

JEL Codes: O53, D10, I32, J16

1. Introduction

Conflict, persecution, natural disasters, and violence force millions to flee from their homes. The United Nations High Commissioner for Refugees (UNHCR) reported that there were approximately 70.8 million people who were forced to flee, 25.9 million of whom were refugees at the end of 2018.¹ The civil war in Syria has created one of the worst humanitarian crises of our times and more than half of Syria's pre-war population of 11 million has been displaced, either across borders or within the country. The crisis is now in its ninth year and many people have been displaced multiple times. By 2018, over 6 million Syrians were refugees with UNHCR, many of whom fled to Jordan².

Jordan is ranked as the country with the tenth largest refugee population in the world and has the second largest number of refugees relative to its population size with 72 refugees per 1,000 inhabitants. It hosts over 745,00 registered Syrian refugees, the majority of whom (83 percent) live outside refugee camps³; 47 percent of refugees are children, and 5 percent are elderly persons. As of June 2018, UNHCR estimated that over 85 percent of Syrian refugees in Jordan lived below the poverty line⁴.

The purpose of this paper is to understand how gender inequality affects poverty among Syrian refugees in Jordan. Many reports document the hardships and human rights violations experienced by refugees, highlighting that women and children are a highly vulnerable group among refugees. However, to date, there is a dearth of research and empirical analysis in this field, in part because there are few datasets available for this task. Hence, there is little evidence pertaining to refugee settings on how gender-based differences affect poverty rates. Further, as Jordan and the international community develop new approaches that respond holistically to the specific needs of refugee and host communities, more evidence is needed about how gender-based constraints affect refugee women's ability to take up economic opportunities and access the services and resources they need to enable their families to move out of poverty.

We apply a gender lens to a rich set of microdata on Syrian refugees in Jordan that registered as refugees with UNHCR between 2011 and 2014. Our aim is to devise an approach that can provide greater insights into gender-specific barriers, based on the premise that the experiences and potential vulnerabilities of women, men, and children are significantly different in refugee settings.

Our approach is informed by a body of work in the academic literature that analyzes the relationship between the gender of the household head and household income poverty. One result that has emerged from this literature is that female-headed households are extremely heterogeneous and so reliance on the correlation between the sex of the household head and poverty rates to capture gender-based differences is often misleading (Chant, 2003; Chant, 2008). The route to becoming a female household head reflects a variety of circumstances, including for example, widowhood, divorce, desertion, and separation, which entail different degrees or complete absence of choice about becoming a household head. And, as women's access to incomes and assets varies

¹ <http://www.unhcr.org/globaltrends2018/>, accessed Jan 27, 2020.

² <http://www.unhcr.org/globaltrends2018/>, accessed Jan 27, 2020.

³ <https://data2.unhcr.org/en/documents/download/73473>, accessed Jan 27, 2020.

⁴ <https://reliefweb.int/sites/reliefweb.int/files/resources/64114.pdf>, accessed August 2, 2018.

according to socio-economic class there is no necessary correlation between female headship and poverty. Also, the means to meet household needs include the "moral economy" of community and kinship rules (Kabeer, 1997) and these rules accord different entitlements to different types of female household heads, for example widows versus single mothers, depending on social norms. So, whether female-headed households are disproportionately represented among the poor or not will depend on the circumstance leading to their headship and their socio-economic class as well as the broader social context, including the access to incomes and assets, prevailing social norms, kinship-based claims and other entitlements.

The UNHCR data identify principal applicants (PAs) for each household and our analysis examines differences in poverty between households with a female rather than male PA⁵. The PA is the person who receives assistance from UNHCR for the household and is self-selected or selected by the household. This way of attributing headship has advantages over the way that household headship is commonly identified in household surveys. Household survey data on headship may reflect the enumerators' perception about who should be considered a household head rather than who has the most responsibility for the household's welfare in practice. Also, social norms can affect whether female respondents self-identify as household heads introducing another source of inaccuracy⁶. For example, research on Eritrea found that some Eritrean returnees, who would in other cultural settings be regarded as de jure female-headed (single mothers, widows, divorcees, separated women) reported being male-headed. Other Eritrean female returnees who would be considered de facto heads reported headship by absent husbands or male relatives (Kibreab, 2003).

We find that distinguishing between different types of female PA households is important in the setting of Syrian refugees in Jordan. One third of Syrian refugee households had a female PA between 2011 and 2014 and the demographic characteristics of the households they head are very different from those of male PA households. Female PAs live for the most part in nonnuclear households, often as single caregivers. They have markedly less access to daily and irregular work than male PAs and are less educated; 29 percent of female PAs have less than six years of education compared to 17 percent of male PAs.

Disaggregation by household type reveals that women PAs of non-nuclear household types have a higher risk of poverty than households with male PAs in the same circumstances. Half of all refugee households (53 percent) registered with UNHCR assessed by the Home Visits survey are poor before humanitarian assistance is received and there is no overall difference between the poverty rates of male and female PA households. However, disaggregation by household type shows that before humanitarian assistance, one half of nonnuclear households with female PAs live below the poverty line compared to only one fifth of nonnuclear households with male PAs.

⁵ Identification of the head of the case (as household groupings are referred to in the UNHCR ProGres database) is determined by who best represents the household for case management purposes. It is not assumed that the household will be best represented by a man; a woman or even a child can be a head of a case, depending on standard operating procedures.

⁶ Even when conventional household survey data are gathered at the individual level, the information is often collected from a single respondent. The respondent is usually the self-identified 'most knowledgeable' household member, which overwhelmingly corresponds to the 'head' of the household. In the case of a household survey that solicits information on 'headship', this information is gathered often through the question: "Who is the head of this household?"

Households that have formed because of the unpredictable dynamics of forced displacement, such as sibling households, unaccompanied children, and single caregivers, emerge as an extremely vulnerable group, especially if the PA is a woman or girl. Moreover, poverty gaps between male and female PAs for these vulnerable households remain after humanitarian assistance is received.

Households with female PAs that have similar characteristics as households with male PAs are inherently more vulnerable to poverty than those with male PAs. Our analysis shows that the higher risk of poverty experienced by female PAs mostly comes from the inherent differences in their household composition. The presence of more able bodied working age males in the household as well as more family members, for example, help female PA households exit poverty. We interpret this effect as being due to able bodied males acting as an asset to female PA households as they do not face the same barriers to accessing labor and other markets and institutions as women.

2. Gender, and Household Poverty among Forcibly Displaced Persons

Many of the challenges faced by the poor are intensified for Forcibly Displaced Persons (FDPs). The fragile and conflict-affected situations that led to forced displacement are frequently characterized by extreme suffering, catastrophic personal losses, illness, trauma, the infliction of disability, subjection to increased gender-based violence (GBV) and post-traumatic shock. At times families are separated and children lost. Such experiences are often combined with economic losses, for example, loss of assets and incomes, which can exacerbate poverty for some households and tip many previously middle-class into sudden poverty. Furthermore, refugees often face legal and regulatory barriers to economic and educational opportunities in the host environment that can prevent them from becoming self-reliant (loss of identity papers during flight or their confiscation at borders has been reported as a barrier). The situation is often made worse by the destruction of social networks (Buvinic et al., 2013). Thus, the stress of forced displacement can impair people's ability to take the actions needed to escape poverty (Christensen and Harild, 2009).

Household poverty analysis establishes that individuals within a household are not equally vulnerable to shocks, whether the shock is to themselves or to the household (Dercon, 2000). The ability of individuals to protect themselves from shocks is hence differentiated, with gender and age being probably the most prominent individual attributes along which differentiation takes place (Van de Walle, 2015). Thus, people's ability to act to escape poverty is impaired not only by the stress of forced displacement, but also by their gender and other individual characteristics.

The gender and age composition of forcibly displaced people's households varies according to the crisis, its duration, and the countries concerned. Households' structure may change markedly in response to the crisis. Excess male mortality and morbidity as a direct and indirect result of conflict often leads to a higher incidence of widowhood (Buvinic et al., 2013). In chaotic situations of displacement, household structures are disrupted, leading to refugees traveling as unaccompanied minors, households composed of only siblings, and child-headed households, for example. Often, women and children leave conflict zones before adult males and older boys. For example, in Bosnia, women and children fled to seek refuge, whereas the men stayed behind, either to join the Bosnian armed forces or to protect their houses and community (Curtis, 1995). More recently, two-thirds of refugees from South Sudan in 2016 were children under the age of 18, while adult women and men made up 21 percent and 13 percent of the refugee population, respectively

(UNHCR, 2017). In 2017, three-quarters of Congolese refugees were women and children (UNHCR, 2018). In other crises such as the one in Syria, more men and women leave together. Despite these examples of the variation in the age and gender composition of forcibly displaced populations, microdata on refugees are scarce and we still know relatively little on the demographic structure of refugee populations and its implications for poverty.

A common approach to thinking about the relationship between poverty and gender is to examine differences between male- and female-headed households. Many studies have found that poverty rates among female-headed households are higher than those of male-headed households in many parts of the world (Buvinic and Gupta, 1997; Chant, 2003; Quisumbing et al, 2001; Van de Walle, 2013). However, the link between household poverty and female headship is not straightforward due to the heterogeneity of female-headed households (Chant, 2003; Chant, 2008). Female-headed households include women who are widows, divorced or separated as well as women abandoned by their husbands and married women with a nonresident (polygynous or migrant) husband. They can also encompass married women or women living with a male partner who self-report as household heads (Klasen and Povel, 2015; Ruwanpura and Humphries, 2004). Whether these female-headed households are poor or not will depend on the broader social context, including the gender norms that determine women's access to markets (including labor markets) and other institutions and, their kinship-based claims and other entitlements (Kabeer, 1997). One strand of the literature has therefore focused on more homogenous groups of female-headed households, for example, widows or single mothers (Appleton, 1996; Horrell and Krishnan, 2006; Van de Walle, 2013) or explored alternative classifications of households to female headship alone, encompassing demographics or household structure and ethnic group in specific country settings (Ruwanpura and Humphries, 2004; Van de Valle, 2013).

There has been little research on the link between household female headship and poverty in fragile and conflict-affected settings. A study of Sri Lanka found that displacement caused precipitous income losses for both female- and male-headed families but that losses for male-headed households were higher. On average, female-headed households lost 76 percent of their income while male-headed households lost 80 percent. However, this resulted in a larger share of female-headed than male-headed households falling below the poverty line (Amirthalingam and Lakshman, 2012). Widows are especially vulnerable in situations of conflict and forced displacement due to the loss of resources tied to husbands and the destruction of social networks (Brück and Schindler, 2009). Widow-headed households in post-genocide rural Rwanda were found to have a higher incidence of poverty than male-headed households, even after controlling for the distribution of size and composition of these types of households (Schindler, 2010).

3. Syrian Refugees in Jordan

Many analyses of income poverty in developing countries find that household size, location, dependency ratios (ratios of adults to children and others needing care) and access to labor markets are important correlates of poverty (see for example, World Bank, 2018). We compare the characteristics of the Syrian refugee population to the host population and the Syrian population pre-crisis to understand more about the challenges they face.

At the time of the data for this research the vast majority of refugees came from rural areas in Syria and constituted a relatively young and less educated population compared to both the Jordanian host population (Stave and Hillesund, 2015) and the pre-crisis Syrian population (Verme et al. 2016). Hence any differences in demographic characteristics of Syrian populations pre and post displacement may be due to a selection bias – the people who left Syria came from governorates where demographic characteristics differed from the national average (see Kraftt et al., 2018, 2019) -- or they may reflect the impact of displacement or some combination of both.

Dependency ratios⁷ are higher among refugees than their host communities. In 2014, on average 40 percent of Jordanian household members are either below or above working age, compared to 45 percent of Syrian refugee household members (Stave and Hillesund, 2015). Refugees receiving UNHCR assistance have much higher dependency ratios.⁸ 50 percent of households have more than 1.8 dependents to non-dependents, a ratio that has remained unchanged since 2015 (UNHCR UNHCR, Action Against Hunger, ILO, 2019). Refugee women's ability to contribute to their families' standard of living became increasingly important and many women took on whatever income-generating activities they could (CARE 2016). But, lack of economic opportunities meant that refugees were often reliant on running down savings while also depending on humanitarian aid and assistance (ILO, 2017).

At the end of 2015, only 5,700 Syrian refugees were working legally in Jordan. A much larger number worked in the informal sector; estimates range from 42,000 to 150,000 (World Bank, 2016). Survey data from 2014 show one in five household members in the average Jordanian household was employed, compared to 7 per cent of household members in the average Syrian refugee household living outside camps and 3 per cent in refugee households living in the Zaatari camp. In 71 per cent of Syrian refugee households living outside camps, and 87 per cent of Zaatari camp households, not a single household member was employed. The corresponding figure for Jordanian households was 24 per cent (Stave and Hillesund, 2015). It is estimated that unemployment among the Syrian refugee community stood at 57 percent (ILO, 2017) with unemployment for refugee women living outside camps at 88 percent (Stave and Hillesund, 2015), compared to 13 percent in Jordan nationally with women's unemployment at 23 percent (World Bank, 2019)⁹.

⁷ Calculated as the share of household members that are below or above working age (15–64).

⁸ Calculated as the share of household members who are above or below working age (18 to 60). The ratio is disability adjusted (i.e. if a household member of age 18 to 60 is chronically ill or is disabled, the person has a condition which affects their ability to be economically active or manage daily activities (UNHCR, VAF Baseline Study Report, 2015). The data is gathered from refugees through periodic home visits and refugees requesting UNHCR multi-purpose cash assistance.

⁹ Unemployment rate for 2015. <https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS?locations=JO>

Gender-based norms about female labor market participation, in addition to the lack of work permits outside camps, are additional barriers faced by female refugees wanting to find a job and integrate into the Jordanian labor market. Female labor force participation is extremely low in both Jordan and Syria. Before the conflict in 2010, female labor force participation was 15.4 percent in Jordan and 13.3 percent in Syria compared to 67.6 percent and 72.7 percent for males, respectively (ILO, 2015). Results of focus group discussions indicate that both men and women in Jordan resist the idea of women working. While many women highlighted the role of women in the workforce, others said that the idea of women's work clashed with traditional values. Men, on the other hand, justified their resistance to women's labor force participation by stating that job opportunities were scarce, salaries were low, and they were treated poorly (European Regional Development and Protection Programme, the United Nations High Commissioner for Refugees, and World Bank, 2016). Gender-based violence may be another barrier to women's labor market participation by limiting their mobility outside the home. Small-scale needs assessments of Syrian refugees¹⁰ show high levels of sexual and gender-based violence including rape, assault, harassment, and intimate partner violence (Masterson 2014, Samari 2017).

In this context, women are especially vulnerable, often reliant on the income of male household members and facing barriers to labor market participation. For example, very few Syrian women initially applied for work permits; 95 percent of work permits issued by 2016 had been issued to men. Qualitative research suggests that women who work are more likely to be the household's PA, suggesting that lack of an adult male in the household that can work is an important driver of female refugees' labor market participation (International Rescue Committee, 2014; ILO, 2017).

The lack of economic opportunities for men and women has had repercussions for their children. For many refugee families, marriage is a source of financial security, protection, and status, and they are willing to marry their daughters at a young age. With data collected from 2014 onwards by humanitarian agencies and researchers we have begun to understand the reasons for increasingly high rates of child marriage among Syrian refugees in Jordan, Lebanon, Iraq and Turkey. Sieverding et al (2019) find that many Syrian refugees in Jordan came from areas of Syria where child marriage was higher than the national average before the conflict and argue empirical evidence supports the conclusion that rates of child marriage have not increased. However, while empirical data are limited, a large body of qualitative work points to the link between high rates of child marriage and forced displacement from Syria (UN Women 2013, IRC 2014, Save the Children 2014, UNICEF 2014, UNFPA 2014, CARE 2015, Girls Not Brides 2016, IRC 2017, Swan, 2018). While child marriage was prevalent prior to the conflict and forced displacement, these qualitative studies conclude that child marriages of Syrian refugees are linked to ongoing economic insecurity, overcrowding and lack of social safety. They also find refugee families are marrying young daughters to older men in an attempt to strengthen their economic and social mobility prospects and to gain an economic advantage for the rest of the family in a time of widespread uncertainty (IRC 2014, UNFPA 2016). In addition, displacement creates conditions where many refugee families are less likely to report the marriage, making the empirical data more difficult to find (Bartels et al 2018). It is important to understand and address the drivers of child marriage in refugee settings as its effects are long-lasting. Child marriage puts present and future generations at risk as girls who marry under the age of 18 may be disempowered in ways that deprive them of their basic rights to health, education, and safety, including lack of access to

¹⁰ In Lebanon, Jordan, and Turkey.

education and later, to employment opportunities. Additionally, there is an increased likelihood that girls who marry early will experience physical, sexual, or emotional intimate partner violence; have their physical mobility restricted; and/or have only limited decision-making power (Klugman et al 2014, Wodon 2017).¹¹ Recent research among Syrian refugees in Lebanon reveals that contributing factors include Syrian parents thinking that the risks of gender-based violence and harassment are higher in Lebanon than they were in Syria and that some Syrian girls choose to marry as a way to exit unfavorable living conditions (Bartels et al., 2018).

4. Data and Methodology

4.1.Data

Our analysis uses cross sectional data on individuals and households who arrived and registered in Jordan between 2011 and 2014 drawn from two UNHCR datasets: The Profile Global Registration System (ProGres) database and the Jordanian Home-Visits (JD-HV) dataset. The ProGres dataset records all Syrians arriving in Jordan who register as refugees with UNHCR, which by 2014 contained more than 911,000 individual records in about 250,000 households. It contains demographic information on the PA and all the other individuals registered under the PA, including the relationship to the PA, age, sex, and marital status¹². We refer to the PA and the individuals registered with them as a household. Each individual in the ProGres is uniquely identified by their case ID and the individual ID.¹³

The JD-HV dataset is a non-randomized sample of ProGres. It contains information on the socioeconomic characteristics of households and individuals, and data on household expenditure, which are used to measure poverty. The data were collected between November 2013 and October 2014 from refugees that registered with UNHCR between 2011 and 2014. The JD-HV database has information for a total of 54,408 Syrian refugee households, comprising 208,014 individuals. We create a new dataset by linking these households with the ProGres data using a unique case identifier, hereafter referred to as data collected between 2011 and 2014. The data collected by JD-HV surveys are designed for targeting. Registered refugees are included in the Home Visits survey if they are: newly registered cases; cases due for reassessment; or, cases that require a visit for urgent needs (Verme et al, 2016).¹⁴

¹¹ It is worth noting that these documented consequences of child marriage are drawn from populations that are not forcibly displaced. The impact of displacement is likely to exacerbate some of the profound consequences of early marriage.

¹² While there is no specific guidance on who should be designated as the principal applicant, UNHCR benefits and food assistance are allocated to this person. It is therefore reasonable to consider the principal applicant as the household head.

¹³ The UNHCR defines a case as: “A processing unit similar to a family headed by a Principal Applicant. It comprises (biological and non-biological) sons and daughters up to the age 18 (or 21) years, but also includes first degree family members emotionally and/or economically dependent and for whom a living on their own and whose ability to function independently in society/in the community and/or to pursue an occupation is not granted, and/or who require assistance from a caregiver.” (Verme et al. 2016).

¹⁴ Verme et al (2016) note that the non-random nature of the JD-HV sample means that it is not necessarily representative of the population (ProGres). However, they also note that it is not possible to draw a sample of refugees

Poverty rates are computed using an aggregate of expenditure data from JD-HV. Expenditure categories include six items: rent, utilities, food, health treatment, education, and others. The poverty line is Jordanian dinars (JD) 50 per capita per month (US\$5.25 purchasing power parity [PPP] per capita per day). It was set using the monetary threshold that UNHCR used to target its cash assistance program at the time. UNHCR assistance was JD50 per month for households with one or two members, JD100 for households with three to five people, and JD120 for households that have more than five members. WFP assistance was JD24 per person per month.

Construction of Household Types

Using the ProGres data first we track the relationships between the different members of the household and the PA so households can be sorted according to their size and composition. Next, we categorize all households into six types, and separate households into those with male and female PAs.

Our categorization is informed by the indicators of vulnerability used by UNHCR¹⁵ and the poverty literature. Research finds that children and other dependents are important vulnerability factors, particularly for working age women who have no partner to contribute to the household income (United Nations, 2015; Munoz-Boudet et al., 2018). Because care responsibilities—looking after elderly people and children—overlap with prime productive years, women who shoulder the responsibility for unpaid care and domestic work often have limited labor market access (Deutsch, 1998; Chant & Pedwell, 2008; Connelly et al., 2018) and are thus particularly vulnerable to poverty (World Bank, 2012; Qi & Dong, 2017). Our categorization therefore encompasses variations in dependency ratios, which may become more salient for a household's vulnerability to poverty when the household PA is a woman as opposed to a man.

The household categories are:

- *Couple with children*: Married couple (at least one of whom is over the age of 18, not disabled and/or not elderly persons) with children (below the age of 18) of their own and/or the children of others (classified by UNHCR as separated children).
- *Single person*: One adult (person 18 years or older) reporting no other dependents or cohabitants. If the single person is under 18 years old, the household is classified as *unaccompanied children*.
- *Single caregiver*: One adult living with children of his/her own below the age of 18; and/or separated children; and/or one or more elderly persons and/or disabled persons.
- *Couple without children*: Married couple (at least one of whom is over the age of 18, not disabled and/or not elderly persons) without children or members of their extended household in their household.

which is perfectly representative of the refugee population as the exact refugee population is not known and one does not have a master sample for sampling purposes.

¹⁵ For example, UNHCR specifically identifies single woman at risk, single older person, and single parent or caregiver.

- *Unaccompanied children*: Person or group of people below the age of 18 without an accompanying adult (person over the age of 18).
- *Non-nuclear and other households*: Includes extended family households, households of siblings, polygamous households and all other types of households that differ from the categories listed above. We further split this category into two groups;
 - *Non-nuclear and other households without children*: Non-nuclear and other households that consist of only adults.
 - *Non-nuclear and other households with children*: Non-nuclear and other households that have at least one child.

4.2. Empirical Strategy

Our analysis focuses on two research questions. First, are certain household structures more likely to be poor when they have a female-PA? Second, once we use a sample of households with similar characteristics, are there gender-specific barriers that make certain household structures more likely to be poor?

To answer the first question, we estimate econometric models of the probability of being poor separately for households with male and female PAs. We estimate Linear Probability Models (LPMs)¹⁶ with clustered standard errors. A Wald test rejects the hypothesis that the male and female PA households are drawn from the same distribution, so we run separate regressions to allow for heterogeneous effects of the independent variables on the incidence of household poverty for male and female PA households. As our aim is to identify correlates and not to forecast poverty rates, the LPM supported by robustness checks is a legitimate choice (Friedman, 2012).

Our model is:

$$P_i = \beta_0 + X_i' \beta_1 + W_i' \beta_2 + \varepsilon_i \quad (1)$$

where i represents a household; $P_i = 1$ if the household i is below the poverty line and $P_i = 0$ if the household is on or above the poverty line; X_i represents a vector of individual characteristics of the PA; W_i is a vector of household characteristics; and ε_i is a normally distributed error term. We select the set of explanatory variables based on theory and run models adding them progressively. We found that the sign of the coefficients and the significance level of individual variables were stable across models. All the estimations use the most comprehensive set of regressors.¹⁷ We run separate regressions for male and female PA households before and after

¹⁶ LPM models produce approximately the same estimates as marginal effects calculated using probit and logit models. However, there are three main differences between the LPM and logit and probit models. First, the error term of the model may have a Bernoulli structure. However, LPM models that correct for heteroskedasticity can address this issue. Second, predicted values of LPM models can lead to predictions below 0 or above 1, which is problematic in forecasting models. However, we do not intend to forecast poverty likelihoods. Third, LPM models impose a linear relationship between dependent and independent variables while logit/probit models impose a nonlinear relationship. However, as there is no way to know whether a nonlinear structure or a linear structure is the most appropriate structure to impose on the model, OLS estimation is as valid a choice as a logit/probit. Because of its simplicity, its computational efficiency, and the straightforward interpretation of the coefficients, many authors use LPM models.

¹⁷ The results of the model selection exercise for the other poverty models are available on request.

UNHCR and World Food Programme (WFP) cash assistance to account for the effect of humanitarian aid on poverty. As a robustness check, we run a logit regression. Results are reported in Appendix 1.¹⁸

To examine the second question, we create a sample of female and male PA households matched on observable characteristics using Propensity Score Matching (PSM). The sample in the common support, although slightly smaller, is potentially better at identifying vulnerability risk factors¹⁹. One of the main drawbacks of this specification is that we must assume that the likelihood of being registered as PA depends only on observable characteristics rather than unobservables. We use a Mahalanobis distance combined with a Kernel measure as an alternative technique to control for the potential non-random selection of observable variables for male and female PAs.

We match households that are similar in a set of individual- and household-level covariates correlated with the likelihood of being a female- or male PA, including: household size, education of the PA, marital status of the PA, the presence of elderly people in the household, and the presence of children in the household. We find a good match for approximately 46,000 households in the database; 27 percent are female PAs and 73 percent are male PAs.²⁰ We proceed with the analysis by estimating equation (1) using the matched sample, adding a dummy for female PA and interacting it with variables that are associated with strong poverty risk impacts.

5. Descriptive statistics and results

This section describes the demographic and economic characteristics of Syrian refugee households, including a discussion of poverty rates and presents the results of the econometric estimations. First, we compare poverty rates of male and female PA households before and after assistance, disaggregating by marital status and household type. Next, we turn to the correlates of poverty, presenting the estimations for male and female PAs separately. Finally, we discuss the results of the estimation using PSM and the interacted model.

5.1. Characteristics of Syrian refugee households

Twenty seven percent of Syrian refugee households in our sample have female PAs with the corresponding 73 percent of households having a male PA. There are clear differences between the characteristics of male and female PA households in terms of education, marital status, and household type (Table 1).

Female PA households are more likely to be seniors (over 65 years old) than male PAs. Most female PAs are married (64 percent) but they are less likely to be living without their spouse than

¹⁸ Estimates produced by the logit models confirmed that the marginal effects were nearly identical to the estimates of the LPM models. As only few estimates lie outside the unit interval, an LPM is expected to produce largely unbiased and consistent estimates (see Appendix 1).

¹⁹ PSM is increasingly used to preprocess data before applying parametric techniques. Evidence suggests that this approach makes parametric models produce more accurate and inferences less dependent on the model.

²⁰ The density function of the matched male principal applicant households resembles the density function of female principal applicant households, as confirmed by the balancing test, which shows a reduction of 100 percent in the differences between the matched households across all covariates. (See Appendix 3)

a male PA; 54 percent of female PAs are living without their spouse compared to only 9 percent of male PAs. More female than male PAs are widowed; 23 percent of female PAs compared to less than 1 percent of male PAs. Overall, 90 percent of female PAs either have no spouse or their spouse is not living with them, suggesting that this is an important route to becoming a PA for a woman.

Most household PAs (62 percent) have between 6 and 11 years of education and only 18 percent have more than 12 years of education. Female PAs are less educated than their male counterparts, 29 percent of female PAs have less than 6 years of education, and only 15 percent of them have more than 12 years of education. In contrast, only 17 percent of male PAs have less than 6 years of education and 19 percent have more than 12 years of education.

Turning to household composition, the disruption caused by displacement is clearly illustrated by the household types. One in six households is a single caregiver household, and single-person households account for nearly one in five of all refugee households. Only half of all households are couples with children.

[Table 1 here]

Male and female PAs are clustered in different household types. While most male PA are in a couples with children (66 percent), 48 percent of female PAs are single caregivers. The corresponding percentage for male PAs is much lower with only 5 percent being single caregivers. 14 percent of female PAs head nonnuclear household groups with children, often siblings and other extended families living together with children. Again, far fewer male PAs (< 3 percent) are in these types of households. Similar proportions of male and female PAs are single persons, 17 percent of male PAs and 20 percent of female PAs).

In sum, the characteristics of male and female PA households are very different. Being a female PA is very often associated with having no male partner or an absent one whereas being a male PA is mostly associated with living with a spouse and the majority live in a nuclear family. Combining the marital categories where there is no spouse (widows, single or engaged, and divorced or separated) with those where the spouse is absent shows that 90 percent of female PAs fall into this category compared to only 25 percent of male PAs. Similarly, while most male PAs fall into the couple with children household type, almost all female PAs (91 percent) live in nonnuclear household types.

Table 2 provides more details about the different household types for male and female PAs. We include information on children under five and girls under the age of 18 who are married as they are considered individuals who are particularly vulnerable and face heightened protection risk.²¹ Panel A shows that on average Syrian refugee households have four household members. On average, households have only one or no children under 5 and two children between the ages of 5 and 18. Male PA households are slightly larger on average than female PA households (four compared to three people) and on average have more than one adult male in the household. In contrast, female PA households have on average less than one adult male household member. On

²¹ See, for example, UNHCR's Emergency Handbook. <https://emergency.unhcr.org/entry/125333/identifying-persons-with-specific-needs-pwsn>.

average, couples with children have the largest households (approximately five people) and the most children (approximately four). There is little difference between male and female PA households in this household type (but note that female PA households account for only 9 percent of this household type). Non-nuclear and other households are on average slightly smaller and less likely to have children than couples with children.

Panel B of Table 2 shows that there are 714 girls who are married and under 18 years old. More than half of these adolescent girls already have children (385 are in a couple with children) and nearly one in five of female PAs that are unaccompanied children are already married

[Table 2 here]

[Table 3 here]

Table 3 shows the differences in the sources of income and amounts of expenditure between male and female PA households, according to household type. Regardless of the household type and gender of the PA, humanitarian aid, charity, and World Food Programme (WFP) vouchers are a source of income for most households; more than 90 percent of households' report receiving incomes of this type. The second most important source of income for most household types is daily or irregular work. More than one third of households receive income from this source but, regardless of household type, fewer female PA households receive income from this type of work than male PA households. The difference is largest for single-person and unaccompanied- children households where less than 10 percent of female PA households have daily or irregular work compared with over half of the male PA households in these categories. The next most important source of income is UNHCR financial assistance. For several household types, this income source is more important when the PA of the household is a woman, especially for female PAs of households without children – couples without children and single person households. One in 20 households receives remittances with female PAs being more likely to receive remittance in all household types. The largest gender gap is for single caregiver households where 13 percent of female PAs receive remittances compared to 5 percent of male PAs. Before assistance is received, income and expenditure per capita is higher for male PA households than for female PA across all household types. Differences in expenditure are especially large for couples without children and single caregivers.

Assistance lifts most refugees out of poverty by increasing their purchase power by about 45 percent. Increases in per capita expenditure after assistance are also larger for female PA than male PA households. Thus, assistance closes the gap in expenditure per capita between male and female PA households in all type of households. But not everyone benefits equally from assistance. While assistance boosts expenditure per capita by about 71 percent for a couple with children, a single person's purchasing power increases by only 21 percent.

Tables 1, 2, and 3 show that there are differences in characteristics, composition, and income and expenditure between the household types. There are several notable gender gaps that can be expected to influence the poverty risk faced by households. First, a higher proportion of males reside in households with a male PA and the opposite is true for households with a female PA. As male labor force participation is less constrained than female labor force participation, this is a likely risk factor for female PA households. Second, some categories of household types appear

to be especially vulnerable if the PA is a woman or girl. Single-caregiver households with female PAs have more children on average but less access to daily and irregular work than male PA single caregiver households. While more of these female PA households receive remittances from relatives than male single caregiver PAs (13 percent versus 5 percent), their expenditure per capita is considerably lower than that of households with male PAs. Unaccompanied children with a female PA also emerge as a very vulnerable group. Many are married to an absentee spouse and, compared to unaccompanied children with a male PA, unaccompanied children with a female PA have little access to irregular and daily work compared to other household types.

5.2. Poverty rates of male and female PA Syrian refugee households

We begin with a comparison of poverty rates between male and female PA households before and after UNHCR and World Food Programme (WFP) assistance.²²

Table 4 shows that over half of all refugee households (53 percent) registered with UNHCR are poor before UNHCR and WFP assistance. There is no difference between the poverty rates of male and female PA households overall. UNHCR and WFP assistance reduces overall poverty rates by large amounts; household poverty falls from 53 percent to 11 percent for households on average.

Before assistance, nearly two-thirds of households of married PAs who are living with their spouses are poor. Single or engaged PAs have the lowest poverty rates; around one in five are poor. Over half of all female PAs are married but living apart from their spouse and a further 22 percent are widows. Overall 49 percent for PAs who are married but living without their spouse are poor but there is a considerable gender poverty gap, with 57 percent of female PAs in this category falling below the poverty line compared to 30 percent of comparable male PAs. One in five female PAs is a widow (compared to less than one percent of male PAs) and nearly half of this group is poor so, in addition to couples with children and female PAs living apart from their spouse, widows emerge as a vulnerable category. Turning to household types, over two-thirds of households with children (who account for over 50 percent of households) are poor before assistance and there is no difference between the poverty rates of male and female PA households. However, there are poverty gaps between all other household types. Over half of single care givers who account for nearly half of all female PAs, (16 per cent of the database) are poor. Poverty rates are considerably higher for female single care givers than for male single caregivers, 60 percent versus 45 percent. Unaccompanied children (less than one percent of the database) emerge as a small but very vulnerable group, especially if headed by a girl; 61 percent of female PAs who are unaccompanied children are poor compared to 41 percent of male PAs in this category. Households with children and child headed households are clearly very vulnerable to poverty and female single caregivers also emerge as a vulnerable group.

After UNHCR and WFP assistance, poverty rates fall for all. However, the rate of reduction varies between male and female PAs according to their marital status and household type. A gender-poverty gap in favor of male PA households emerges over all (poverty rates for male PAs are 11 per cent versus 13 percent for female PAs). Poverty gaps in favor of male PA households remain for PAs who are married but living without their spouse, single or engaged, widowers/widows, or divorced or separated. Turning to household types, there is a large reduction in poverty for all

²² Verme et al. (2015) calculated these indexes using reported expenditure during the home visits.

household types, regardless of the sex of the PA. The largest reduction is for couples with children; poverty rates decrease from 68 percent to 13 percent (an 80 percent reduction). However, the gender-poverty gap remains: female PA households have significantly higher rates of poverty than male PA households in all household types except for couples with children .

[Table 4 here]

In sum, humanitarian assistance makes a great difference, substantially reducing poverty for all. However, as Figure 1 shows, the extent to which assistance reduces poverty rates varies across household types and after assistance a gender-poverty gap with female PAs at a disadvantage appears. The gender poverty gap is largest for nonnuclear household types (with the exception of nonnuclear and other households without children). Compared to the gender-poverty gap before assistance, the gender-poverty gap after assistance increases most for couples without children. Large gender-poverty gaps emerge for couples without children, single person households and unaccompanied children.

[Figure 1 here]

5.3. Why are nonnuclear households more likely to be poor when they have a female-PA?

Our analysis shows that female PAs sort into particular types of household. For the most part they have no spouse or are living apart from their spouse. The vast majority are living in nonnuclear households. Gender-poverty gaps against female PAs exist for nonnuclear households which account for 50 percent of the total number of households in our database.²³ We use a household poverty model to control for the impact of different individual and household characteristic and examine the correlates of poverty for male and female PA households respectively²⁴. Results are shown before UNHCR and WFP assistance (columns (1) and (2)) and after UNHCR and WFP assistance (columns (3) and (4)) (Table 5).

Many of the household characteristics that are associated with lower (or higher) risk of household poverty are the same for both male and female PA households before and after receiving assistance. However, sometimes the strength of the association (size of the coefficients) differs according to the sex of the PA.²⁵ The marital status of individuals and household types that are associated with poverty risk differ between male and female PAs. We discuss below the associations that are significant and have a large impact on poverty risk.

Looking at the results before assistance, marital status is significantly linked to household poverty for both male and female PAs. Compared to being married with a spouse in the household, single people are more likely to be poor. Single persons aside, male PAs face increased risk of poverty only when single or engaged or married but living apart from their spouse, compared to PAs who are married and living with their spouse. In contrast, female PAs who are separated, divorced or widows are more likely to face poverty than those who are married living with their spouse. Interestingly, once other factors are controlled for female PAs living apart from their spouses are not at higher risk of poverty than female PAs who are married and living with their spouses.

As is commonly found, individual education attainment is associated with lower poverty risk. Compared to having less than six years education a longer time spent in education reduces poverty risk for both male and female PA household. There is no difference between the impact of having six or more years of education for male and female PAs however, more than 12 years of education is associated with an 8-percentage point poverty risk reduction for male PAs compared with only a 5-percentage point reduction for female PAs.

Both household size and the number of males over 16 years in the household have large and significant associations with poverty. Larger household size is associated with increased poverty risk for both male and female PA households; the impact is slightly higher for female PAs. The number of able-bodied males over 16 years old is included to capture household access to labor markets. It is significantly associated with a lower likelihood of poverty for both male and female

²³ Gender poverty gaps against female PAs exist for all nonnuclear households apart from nonnuclear households without children where a gender poverty gap against males exists (5 percent of households) and couples without children where there is no gender poverty gap (50 per cent of households).

²⁴ Definitions of the variables included in the main models as well as in the robustness checks are available in Appendix 4.

²⁵ We estimate whether differences between the coefficients obtained for female and male principal applicant models are statistically significant from 0. Results are included as part of the text and the exact calculations are available upon request.

PAs, but the effect is much larger when the PA is a man. Once other factors are controlled for the number of elderly people in the household is not associated with poverty risk.

[Table 5 here]

Receipt of wages and remittances reduces poverty risk for both female and male PA households. Entering the country legally as opposed to informally crossing the border is associated with lower household poverty, especially for male PA households.

Compared to female PAs of couples with children, only female PAs who are single or part of a nonnuclear household without children are less likely to be poor. In contrast, several other household types with male PAs are less likely to be poor than male PAs of couples with children; male PAs for couples without children, male PAs who are single caregivers, single person households or applicants for nonnuclear households without children. Interestingly, male unaccompanied children are more likely to be poor than male PAs for couples without children once other factors are controlled for, although female unaccompanied children are not more likely to be poor than female PAs of couples with children. Nonnuclear and other households with children (6 percent of households) are no more likely to be poor than couples with children whether they have a female or male PA. Broadly, households without children (and male PA single caregivers (5 percent of households)) are less likely to be poor than couples with children.

We turn next to the impact of having assistance from UNHCR and WFP. Looking first at the characteristics that reduce poverty risk, we see that education continues to reduce poverty risk and the effect of having education over and above primary now has a stronger impact for both male and female PA households. There is no difference between the impact of more than 12 years education on poverty risk reduction for male and female PAs after assistance. The number of able-bodied males remains associated with lower poverty risk for both male and female PAs although the impact is lower. Wage income continues to be linked to a lower likelihood of household poverty for male PA households although its impact is now smaller, but it is no longer correlated with lower poverty risk for female PA households. Given that women's access to jobs is particularly constrained, UNHCR and WFP assistance appears to play an important protective role. Receiving remittances from relatives remains an important factor in reducing poverty risk for both male and female PA households with stronger effects for male PAs.

Looking at the characteristics that are associated with higher poverty risk, we see that for female PAs being single, divorced or a widow remains associated with higher risk of poverty risk after humanitarian assistance. In contrast the association between marital status and poverty is removed for male PAs although a small and weak association between being single or engaged and higher poverty risk remains. Household size continues to be linked to a higher likelihood of household poverty for both male and female PA households although its impact is now halved. Higher rates of poverty are associated with having elderly people in the household for female PAs (but not for male PAs) suggesting that assistance could be better targeted to these households.

Other factors that continue to have large links to the likelihood of poverty after assistance relate to household type. Compared to couples with children, couples without children and unaccompanied children with either male or female PAs are more likely to be poor. Male and female unaccompanied children are about 20 percentage points more likely to be poor than couples with

children. These household types are clearly very vulnerable. After assistance, increased poverty risk is associated with male PAs who are single caregivers and single person households. Only a small proportion of male PAs (5 percent) are single caregivers, nevertheless the emergence of male single caregivers and single men as a category with high risk of poverty in the context of humanitarian assistance needs further examination.

Results of a Blinder-Oaxaca decomposition of poverty-gender gap after assistance reinforces these findings.²⁶ Household size and variables related to marital status and household type statistically explain most of the gender-poverty gap. The decomposition shows that the larger the differences in household size between male and female PAs, the smaller the gender-poverty gap is, suggesting that large households are a poverty risk for male PA households, narrowing a gap in poverty between them and female PA households who are otherwise more likely to be poor. In contrast, the presence of children under 5 in female PA households increases the gender-poverty gap. Differences in education between male and female PAs are translated into larger differences in the poverty-gender gap.

5.4. Do female PAs face gender-specific barriers?

Table 6 shows the results of the model for poverty outcomes using matched data before and after assistance. The data for male and female PAs are pooled as differences between the distributions have been removed by the matching process. We include a dummy for female PA and interact it with the number of able-bodied adult males, household size, and the dummies for the type of income received by the household, wage and remittance income. These variables are selected as our analysis suggests that access to labor markets and income from wages and remittances are strongly associated with poverty risk for female PAs

We find that both before and after humanitarian assistance, after controlling for household and individual characteristics, households with female PAs have a higher poverty risk than those with male PAs. This suggests that female PAs have gender-specific risks that cannot be accounted for by differences between their household and individual characteristics (as captured by the variables in the model) and those of male PAs. Female PAs are at 7 percentage points higher poverty risk before assistance and 8 percentage points higher poverty risk after assistance compared to male PAs, all else equal.

Our model shows that the percentage of able-bodied males in a female PA household has no additional effect on reducing poverty risk compared to male PAs before assistance is received. For male and female PAs a one percent increase in the proportion of adult males is associated with a 13 percentage point reduction in poverty risk. After assistance the impact of higher proportions of adult males is associated with a 7 percentage point lower poverty risk for female PAs.

[Table 6 here]

Larger household size is strongly associated with higher poverty risk both before and after assistance, but the risks are different for female and male PA households. Before assistance on average one additional person in the household is associated with a 14 percentage point increase

²⁶ See Appendix 2 for details.

in poverty risk which falls to 5 percentage points after assistance, compared to 12 and 4 percent before and after assistance for female PAs.

Remittances reduce poverty risk for both male and female PA households. A one percentage point increase is associated with a 16 percent reduction in poverty risk. After assistance this association is removed for both male and female PA households. Education remains linked to poverty reduction both before and after assistance.

Before assistance, compared with PAs who are married and living with their spouse and children, PAs living without their spouse, or who are single, widowed or divorced are at increased risk of poverty. However, these associations are removed once assistance is received. As female PAs are overrepresented the categories of widowed and divorced and separated this suggested that assistance has reduced some gender-based vulnerability.

In the matched dataset family types are not associated with poverty risk with one exception – unaccompanied children have higher associated poverty risks everything else held constant.

In sum households of female PAs face gender specific risks to poverty which can be explained by differences between the demographic characteristics of their households compared to male PAs. The association of larger proportions of able-bodied males with reduction of poverty risk for female PAs is consistent with barriers to female labor market participation acting as an additional constraint to keeping households out of poverty for female PA households.

6. Conclusion

Numerous reports about refugees say that women and children are especially vulnerable. By combining UNHCR's ProGres data with household survey data, we have been able to shed more light on one aspect of this vulnerability—its association with income poverty for Syrian refugee households in Jordan whose PA is a woman. Our data are gathered from UNHCR databases. They combine registration data and data on households that have received a home visit survey to assess their eligibility for assistance. They are hence not a random sample of refugees and results from this sample cannot be generalized to the refugee population as a whole. Nevertheless, the analysis presented in this paper is based on a large number of observations comprising 208,000 individuals or about 54,000 refugee households and are likely a good representation of the more vulnerable among the refugee population in Jordan.

Our analysis sheds some light on some of the drivers of vulnerability of Syrian refugees in Jordan by establishing links between household poverty, female headship, and the demographic characteristics of households. One-third of registered Syrian refugee households in Jordan have female PAs. Analysis of the demographic characteristics of male and female PA households show that they are very different. Over half of all married female PAs are living without their spouse, a further quarter are widows and many others have no spouse as they are single, divorced or separated. In contrast, most male PAs (69 percent) are one of a married couple who are living together and only 13 per cent have an absent spouse. Altogether 93 percent of female PAs either have an absent spouse or no spouse, only 31 percent of male PAs are in this situation.

The disruption that forced displacement causes to household structures makes the composition of male and female PA households markedly different. First, a higher proportion of adult males resides in households with a male PA and the opposite is true for households with a female PA. As male labor force participation is less constrained than female labor force participation, this is a risk factor for female PA households. Second, some categories of household types appear to be especially vulnerable if the PA is a woman or girl. Single caregiver households with female PAs have more children on average but less access to daily and irregular work than male PA single caregiver households. While more of these female PA households receive remittances from relatives than male single caregiver PAs (10 percent versus 4 percent), their expenditure per capita is considerably lower than that of households with male PAs. Unaccompanied children with a female PA also emerge as a very vulnerable group. Many are married to an absentee spouse, are mothers and, compared to unaccompanied children with a male PA, have little access to irregular and daily work. Their expenditure levels before assistance are the lowest of any category.

Our findings are consistent with other research that shows the link between female headship and household poverty is ambiguous due to the heterogeneity of female-headed households (Chant 2003, 2008; Klasen et al, 2015). Overall, there is no significant difference between poverty rates of male and female PA households before humanitarian assistance is received, so female PAs are not disproportionately represented among the poor.

Poverty rates are highest for couples with children (50 percent of the households in our database); over two-thirds of these households have incomes below the poverty line before assistance is received. Before assistance, the poverty rate for nonnuclear households (single person, single caregivers, couples without children, unaccompanied children, sibling households, and non-nuclear and other families) is 29 percent, much lower than that of couples with children. However, for this group of households, there is a gender-poverty gap; poverty rates are considerably higher for female PA households than for male PA households (51 percent compared to 25 percent). After assistance, overall poverty rates fall to 13 and 6 percent for female and male PA households respectively.

Assistance is not designed to close the gender poverty gap but nevertheless it is worth noting that although assistance lifted considerable numbers of Syrian refugee households out of poverty in 2013/14, the gender poverty gap against women widened. Gender poverty gaps increased most for households without children (couples without children and single person households) which together account for one fifth of the database and a gender poverty gap also emerged for couples with children (half of the database). Decomposition analysis shows that the gap is statistically explained by the initial endowments or features that characterize female PA as opposed to male PA households such as the presence of children under 5, presence of elderly people, differences in education and household size. For female PA households having more children under five, having elderly people living in the household and fewer years of education increases the gender-poverty gap but as their household size increases the gender poverty gap closes. Large households are thus associated with poverty for both male and female PA households.

We find that the association of female PAs with increased poverty risk reflects gender-specific risks – being a female PA remains associated with increased poverty risk after differences between the individual characteristics and household size and composition of male and female PAs have

been taken into account. Barriers to female labor market participation is one specific form of gender disadvantage that appears strongly linked to poverty risk. We proxy labor market access by the number of able-bodied males over 16 years old in the household. Controlling for differences in individual and household characteristics we find that this variable is significantly associated with reduced poverty risk for both male and female PA households before assistance is received. After assistance is received, it remains associated with lower poverty risk for female PA households alone.

Our study shows that it is possible to apply a gender lens to available data and produce results that quantify differences between male and female headed households' incidence of poverty and identify some of the demographic characteristics that are linked to greater poverty risk. Our findings indicate that it is of utmost importance to distinguish between different types of female and male PA households to understand poverty in the setting of the Syrian refugees in Jordan. Our approach can be used to design more effective social protection and other kinds of social assistance in situations of forced displacement.²⁷ In the context of policy discussions centered on the humanitarian development nexus²⁸ catalyzed by the increasing number of protracted crises, our analysis seeks to contribute to long term programming investment decision-making that will address immediate vulnerability through a sustainable solution lens.

More generally, our findings suggest that unless gender disadvantage is considered in the design of development policies to replace humanitarian assistance the poverty reduction gains it achieves will not be sustained. For some female PAs lifting barriers to labor market participation so that they can access economic opportunities which could replace the value of assistance or the advantages that an adult male brings to a household would be a sustainable solution. But for other female PAs for whom labor market participation is not an option, social protection in the form of cash transfers and other types of social protection must mitigate risk arising from gender-based disadvantages. In addition, alternative programming that supports the most vulnerable households, with complementary resources and services or additional assistance should be considered to respond to multiple sources of vulnerability. The strong protective role that education plays underlines the importance of ensuring remedial action is taken so that all children and young adults who have missed education due to displacement can make up the schooling they have missed.

Finally, although the UNHCR data enabled us to examine some of the impacts that gender differences have on household poverty, there are some important gaps in our analysis. The JD-HV data show the proportion of both male and female PAs who are employed and do daily or irregular work. However, employment details of other members of the household and more detailed gender-disaggregated data on labor market participation (that includes the numbers of days/hours worked, daily or hourly earnings, sector of employment, and type of work) are needed to understand the difference between labor market opportunities for men and women. Other research points to the increased prevalence of GBV, especially faced by women and girls. Besides being a human rights

²⁷ UNHCR policies guiding targeting of assistance to Syrian refugees have changed since 2013/14, and so policy recommendations for Syrian refugees in Jordan cannot be based on the findings presented here.

²⁸ UN OCHA Humanitarian Development Nexus accessed August 19, 2019
<https://www.unocha.org/es/themes/humanitarian-development-nexus>

violation, GBV is a manifestation of women's lack of agency. It affects women and girl's ability to access economic opportunities and services due to mobility constraints caused by actual and perceived GBV risks. GBV is thus a major cause of gender-based vulnerability and therefore good data on GBV risk, collected following UN Guidelines (UNDESA and UNWomen, 2013) is needed to explore the links between gender and household poverty.

Acknowledgements

This paper is a collaboration between the World Bank and the United Nations High Commissioner for Refugees. We would like to thank our UNHCR partners: Shelley Gornall; Joanina Karugaba; Tanya Axisa; Petra Nahmias, Kimberly Roberson, Kirstin Lange; Nur Amalina Abdul Majit; Hussein Watfa; Theresa Beltramo and Stephane Savarimuthu for their contributions to this work and acknowledge with thanks the support of Louise Aubin Deputy Director Division of International Protection. We would also like to thank Elizabeth Barnhart and Harry Brown (UNHCR Jordan) and Sima Kanaan (UNHCR MENA regional Office) for their comments and feedback. Mariana Viollaz provided excellent research assistance at earlier stages of the project. The research was supported by the Global Program on Forced Displacement Trust Fund a World Bank Group–managed trust fund supported by Denmark, Germany, Norway, and Switzerland.

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Appendix 1. Logit and OLS Models

[Table A1.1. here]

Appendix 2. Accounting for the differences in poverty between male and female principal applicants

We use a Blinder-Oaxaca decomposition to examine which explanatory variables account for most of the observed differences in the poverty rates of female and male principal applicant households in the full dataset. This approach divides the mean of the gender-poverty gap into three components: one component is attributable to differences in magnitudes of the determinants of the poverty rates (the explained or endowment component), a second component is attributable to differences in the effects of these determinants (the unexplained or coefficient component), and a third component is attributable to the interaction between endowments and coefficients.

Before assistance (Panel A of Table A2.1, the mean difference in poverty rates between households with a female compared to a male principal applicant was 0.1 percentage points so we focus our discussion on the poverty after assistance (Panel B of Table A2.1). Panel B shows a gender-poverty gap of 2.4 percentage points, of which 2 percentage points (83 percent) is due to endowments and most of the remainder is due to the unexplained component. The variables that account for most of the poverty-gender gap are household size and the variable related to marital status and household type – married with a spouse in the household. The negative sign for household size shows that the larger the differences in household size between male and female principal applicants, the smaller the gender-poverty gap is, suggesting that large households are a poverty risk for male principal applicant households. In contrast, the positive sign for the presence of children under 5 and elderly persons shows that for female principal applicant households living with children under five or elderly people the gender-poverty gap increases. It is also worth noting that differences in education explain a larger proportion of the gender-poverty gap after assistance than before. The positive sign means that differences in education between male and female principal applicants are translated into larger differences in the poverty-gender gap.

[Table A2.1 here]

Appendix 3. Propensity score matching

[Figure A3.1. here]

[Table A3.1 here]

[Table A3.2 here]

Appendix 4. Definition of Variables

[Table A4.1 here]

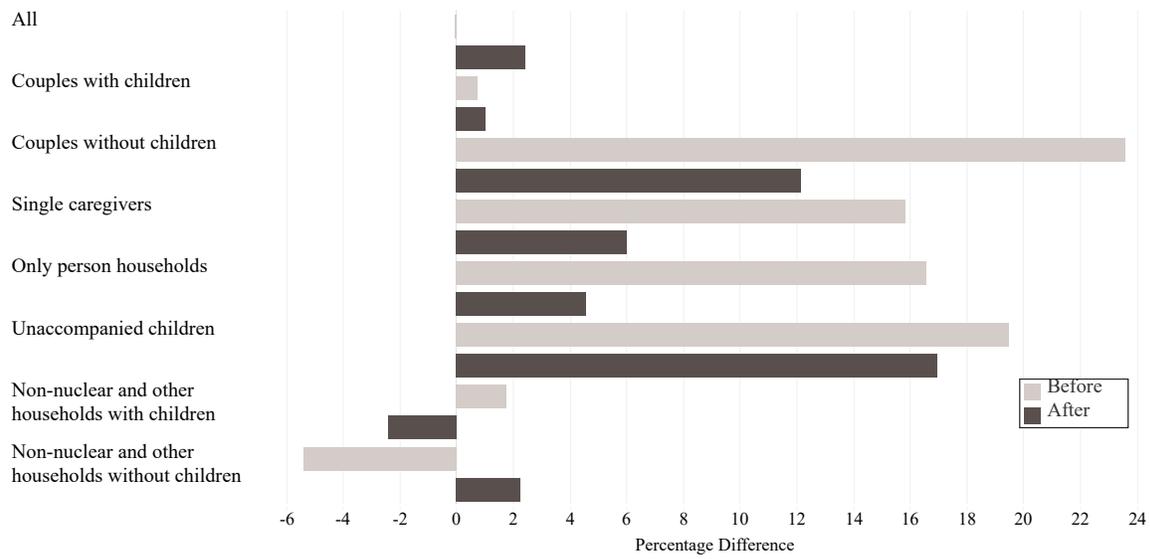


Figure 1. Gender-poverty gaps, percentage difference before and after assistance.

Source: Authors' elaboration. Note: Poverty gap = $(P_f - P_m) / P_m \times 100$, where P_f = poverty rate principal applicant households, P_m = poverty rate of male principal applicant households.

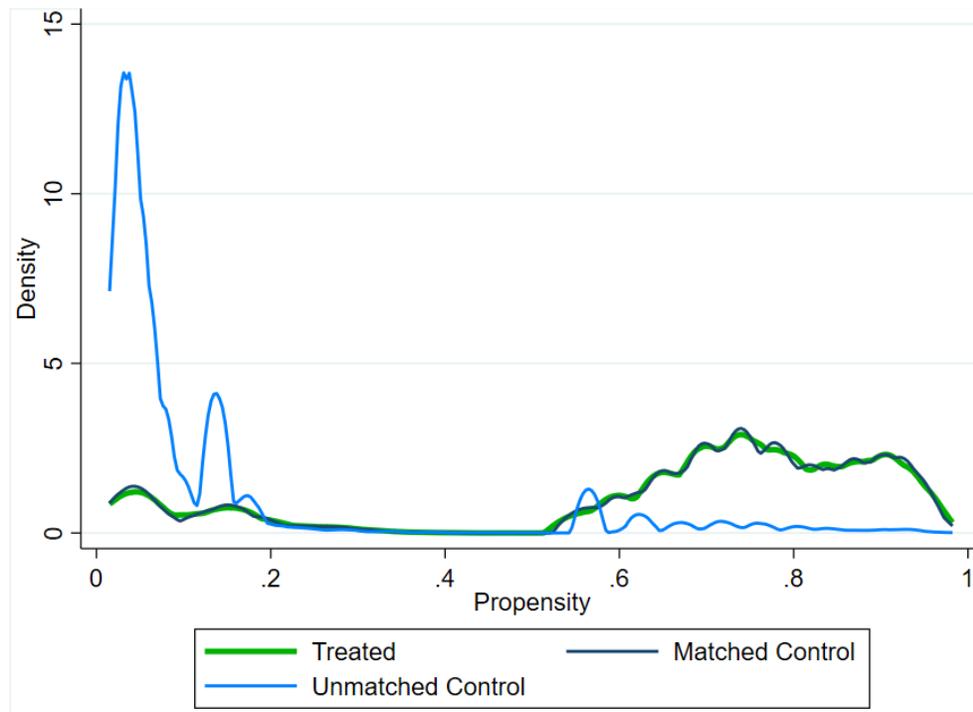


Figure A.3.1. Densities before and after matching

Note: Propensity matching was done using a kernel and a Mahalanobis distance measure. Out of 45,919 observations, 44,053 are on the common support. Propensity score on the horizontal axis.

Table 1. Characteristics of male and female principal applicant households, percent.

Variable	Percentage			Frequency		
	Male PA	Female PA	All PAs	Male PA	Female PA	All PAs
All PAs	72.6	27.4	100.0	33343	12576	45919
Elderly PA	4.4	7.1	5.1	1458	890	2348
Marital Status of PA						
Married with spouse in the hh	75.3	9.9	57.4	25096	1244	26340
Married without spouse in the hh	8.8	54.3	21.2	2922	6823	9745
Single or engaged	14.6	7.7	12.7	4858	972	5830
Divorced or separated	0.6	5.4	1.9	190	679	869
Widowed	0.8	22.7	6.8	277	2858	3135
Education of PA						
Less than 6 years	17.1	29.2	20.4	5533	3579	9112
6-11 years	63.8	55.5	61.5	20619	6815	27434
More than 12 years	19.1	15.3	18.0	6158	1877	8035
Family Type						
Couple with children	65.7	8.8	50.1	21897	1107	23004
Couple without children	6.0	0.8	4.6	1994	98	2092
Single caregivers	4.6	47.8	16.5	1547	6014	7561
Single person	16.6	20.3	17.6	5524	2556	8080
Unaccompanied children	0.7	1.1	0.8	227	138	365
Non-nuclear and other hhs with children	2.5	14.3	5.8	848	1794	2642
Non-nuclear and other hhs without children	3.9	6.9	4.7	1306	869	2175

Source: Own calculations based on ProGres and JD-HV database. Note: PA = principal applicant. PA is determined by UNHCR at the time of refugee registration. HH = Household. This table contains data on PAs 45,919 (18 percent) of all tracked Syrian refugees.

Table 2. Household composition of male and female principal applicant households

	Couple with children		Couple without children		Single caregiver		Single person		Unaccompanied children		Non-nuclear and other households		Total		Total
	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	
<i>Panel A: Household composition (average)</i>															
Number of household members	5.3	5.5	2.0	2.0	3.3	4.1	1.0	1.0	1.6	2.0	3.9	4.3	4.2	3.6	4.0
Number of adult men	1.1	1.0	1.0	0.8	0.9	0.0	1.0	0.0	0.0	0.0	1.6	0.8	1.1	0.3	0.9
Number of adult women	1.1	1.3	0.9	1.1	0.5	1.0	0.0	1.0	0.0	0.0	1.3	1.7	0.9	1.2	1.0
Number of children <18	3.1	3.1	0.0	0.0	1.9	3.0	0.0	0.0	1.6	2.0	1.0	1.8	2.2	2.1	2.2
Number of children <5	1.3	1.1	0.0	0.0	0.7	1.1	0.0	0.0	0.2	0.4	0.2	0.2	0.9	0.7	0.8
<i>Panel B: Child marriage</i>															
Number of married girls <18	385	14	214	5	12	20	0	0	1	49	10	4	622	92	714
Percentage of married girls <18	0.3	0.2	5.4	2.6	0.2	0.1	0.0	0.0	0.3	17.8	0.2	0.0	0.4	0.2	0.4

Source: Own calculations based on ProGres and JD-HV database. Notes: PA = principal applicant. This table contains data on 45,919 (18 percent) of all Syrian refugees registered in ProGres

Table 3. Income sources, income, and expenditure per capita of male and female principal applicant households

	Couple with children		Couple without children		Single caregiver		Single person		Unaccompanied children		Non-nuclear and other households		Total		Total
	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	Male PA	Female PA	
<i>Income sources (%)</i>															
UNHCR monthly assistance	38.1	37.3	9.5	21.6	29.4	35.9	4.6	13.3	24.5	41.4	29.3	32.7	29.8	30.7	30.0
Humanitarian aid/charity/WFP	93.0	94.0	93.3	97.9	94.4	94.7	90.5	95.1	90.7	96.3	93.1	93.8	92.6	94.6	93.2
Remittances	2.1	4.6	4.0	5.2	4.9	13.4	6.0	6.8	3.1	5.9	4.8	9.5	3.2	10.3	5.1
Employment	2.5	2.1	2.5	2.1	1.7	0.5	3.6	0.7	1.3	0.0	2.3	2.2	2.6	1.1	2.2
Daily or irregular work	42.9	30.6	37.8	13.5	32.3	13.1	56.8	9.5	54.9	5.9	42.8	31.5	44.5	17.7	37.2
Pension	0.1	0.1	0.4	0.0	0.3	0.1	0.1	0.1	0.0	0.0	0.2	0.2	0.1	0.1	0.1
<i>Income and expenditure (JD per capita)</i>															
Income	46.6	40.9	70.6	41.8	51.4	40.0	131.3	53.1	100.6	44.9	56.3	48.3	63.3	44.6	58.2
Expenditure after assistance	76.2	74.9	135.1	113.8	104.1	86.5	176.2	178.7	111.6	103.7	91.7	88.7	105.1	98.9	101
Expenditure before assistance	44.9	43.6	106.5	79.7	71.7	53.6	148.2	142.7	77.7	64.1	60.4	56.7	71.8	68.2	69.5
% increase in expenditure after assistance	69.7	71.8	26.8	42.7	45.2	61.6	18.9	25.2	43.6	61.8	51.9	56.6	45.0	46.4	45.2

Source: Own calculations based on ProGres and JD-HV database. Notes: PA = principal applicant. This table contains data on 45,919 (18 percent) of all Syrian refugees registered in ProGres. Income sources is a set of dummy variables that capture the source of income for the household.

Table 4. Poverty rates of male and female principal applicant households before and after assistance from UNHCR and the WFP, percentage

	Before Assistance			After Assistance			Gender Gap		Observations
	Male PA	Female PA	All	Male PA	Female PA	All	Before assistance	After Assistance	
	53.1	53.0	53.0	10.5	13.0	11.2	-0.1	2.4***	45919
Marital status									
Married with spouse in the hh	63.2	64.0	63.2	12.3	13.2	12.3	0.8	0.9	26340
Married without spouse in the hh	29.8	56.7	48.6	6.2	12.9	10.9	26.8***	6.7***	9745
Single or engaged	16.6	42.0	20.8	4.3	15.8	6.2	25.4***	11.5***	5830
Divorced or separated	25.3	39.5	36.4	6.3	10.9	9.9	14.2***	4.6*	869
Widowed	41.2	46.4	45.9	9.4	12.5	12.2	5.2*	3.1	3135
Family Type									
Couples with children	68.5	69.2	68.5	13.1	14.2	13.2	0.7	1.0	23004
Couples without children	17.2	40.8	18.3	4.2	16.3	4.8	23.6***	12.1***	2092
Single caregivers	44.5	60.3	57.1	8.8	14.8	13.5	15.8***	6.0***	7561
Only person households	9.4	25.9	14.6	2.5	7.0	3.9	16.6***	4.6***	8080
Unaccompanied children	41.4	60.9	48.8	20.7	37.7	27.1	19.5***	17.0***	365
Non-nuclear and other households with children	64.6	66.4	65.8	16.9	14.4	15.2	1.8	-2.4	2642
Non-nuclear and other households without children	38.9	33.5	36.7	7.0	9.2	7.9	-5.4**	2.2*	2175
Non-nuclear families	24.9	51.5	39.4	5.9	12.8	9.6	26.6***	7.0***	20821

Source: Own calculations based on ProGres and JD-HV database. Gender gap is calculated as the percentage difference between female and male poverty rates. Note: PA= principal applicant; HH = household. Assistance includes UNHCR and World Food Programme (WFP) cash assistance. Differences between male and female PA poverty rates by marital status and family type are statistically significant at *10 percent level, **5 percent level, or ***1 percent level.

Table 5. Correlates of poverty using OLS: Female and male principal applicant households.

VARIABLES	Poverty before assistance		Poverty after assistance	
	Female PA (1)	Male PA (2)	Female PA (3)	Male PA (4)
<i>Characteristics of the PA</i>				
Age	-1.120*** (0.186)	0.753*** (0.142)	-0.877*** (0.138)	-0.518*** (0.097)
Age squared	0.012*** (0.002)	-0.007*** (0.002)	0.008*** (0.002)	0.006*** (0.001)
Marital status (base: Married with spouse in the household)				
Married without spouse in the hh	5.768 (3.566)	5.927*** (1.544)	3.742 (2.480)	1.204 (1.005)
Single or engaged	13.357*** (3.824)	11.199*** (1.571)	9.595*** (2.642)	1.829* (0.975)
Divorced or separated	8.457** (3.898)	3.535 (2.976)	7.838*** (2.691)	2.767 (1.907)
Widowed	9.303*** (3.517)	1.709 (2.854)	6.526*** (2.481)	0.330 (1.949)
Education (base: Less than 6 years)				
6-11 years	-2.039** (1.030)	-3.066*** (0.584)	-5.436*** (0.810)	-5.307*** (0.484)
More than 12 years	-5.214*** (1.379)	-8.455*** (0.728)	-6.582*** (0.993)	-7.047*** (0.533)
<i>Characteristics of the household</i>				
Family size	10.829*** (0.301)	9.992*** (0.172)	3.811*** (0.271)	5.124*** (0.169)
Able bodied male adults, %	-11.594*** (3.415)	-21.985*** (1.726)	-2.842 (2.294)	-2.953** (1.214)
Number of children below 5	-1.218* (0.627)	-0.764** (0.307)	-0.261 (0.516)	-0.407 (0.269)
Number of elderly persons in the household	2.770 (2.228)	-2.228 (1.443)	3.076** (1.530)	-0.330 (1.002)
Main source of income source (base: Other sources of income)				
Wage income	-9.113** (3.615)	-7.800*** (1.357)	-3.446 (2.462)	-1.961** (0.810)
Remittance income	-12.365*** (1.317)	-13.280*** (1.232)	-6.598*** (0.793)	-4.354*** (0.592)
Legal (base: Informal or smuggled)	-5.999*** (0.868)	-10.494*** (0.472)	-2.954*** (0.593)	-3.855*** (0.329)
Family type (base: couples with children)				
Couples without children	3.218 (5.164)	-12.291*** (1.106)	11.232*** (3.763)	6.784*** (0.658)
Single caregivers	-2.251 (3.676)	-5.814*** (1.702)	0.729 (2.644)	4.220*** (1.108)
Single person households	-8.259** (3.977)	-3.620* (1.874)	1.715 (2.801)	11.413*** (1.205)
Unaccompanied children	5.677 (5.650)	16.051*** (3.393)	19.058*** (5.040)	21.204*** (2.805)
Non-nuclear and other households with children	-4.772 (3.748)	-0.149 (1.902)	-1.912 (2.739)	4.614*** (1.492)
Non-nuclear and other households without children	-13.020*** (3.826)	-5.620*** (1.630)	0.703 (2.606)	2.927*** (0.949)
Constant	42.594*** (4.443)	11.341*** (2.931)	20.432*** (3.356)	4.048** (1.940)
Observations	12,390	32,891	12,390	32,891
R-squared	0.210	0.361	0.058	0.094

Note: PA = principal applicant; HH = household. Assistance includes UNHCR and World Food Programme (WFP) cash assistance. Clustered standard errors at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table 6. Correlates of poverty using PS Matching: Female and male principal applicant households

VARIABLES	Poverty before assistance	Poverty after assistance
Female PA	6.825* (4.053)	8.053*** (2.527)
Female PA x		
<i>Able bodied male adults, %</i>	-6.701 (5.648)	-7.101** (3.309)
<i>Family Size</i>	-1.985*** (0.663)	-1.408** (0.610)
<i>Income sources (base: Other)</i>		
<i>Wage income</i>	-4.447 (6.094)	-3.494 (4.895)
<i>Remittance income</i>	3.453 (4.346)	-4.823 (3.652)
Age	-0.990*** (0.261)	-0.780*** (0.169)
Age squared	0.012*** (0.003)	0.008*** (0.002)
Marital status (base: Married with spouse in the household)		
Married without spouse in the hh	7.561** (3.269)	3.907 (3.611)
Single or engaged	11.365*** (3.278)	6.340* (3.568)
Divorced or separated	6.322* (3.709)	6.238* (3.582)
Widowed	6.686** (3.386)	3.873 (3.650)
Education (base: Less than 6 years)		
6-11 years	-2.761** (1.313)	-4.217*** (0.957)
More than 12 years	-5.422*** (1.649)	-5.839*** (1.004)
Family size	13.719*** (0.624)	5.109*** (0.715)
Able bodied male adults, %	-12.652*** (4.239)	0.094 (2.023)
Number of children below 5	-2.333*** (0.752)	-0.017 (0.657)
Number of elderly persons in the household	-3.682 (3.067)	2.065 (1.571)
Main source of income (base: Other sources of income)		
Wage income	-3.458 (4.752)	0.393 (4.181)
Remittance income	-16.160*** (4.108)	-2.047 (3.568)
Legal (base: Informal or smuggled)	-9.040*** (1.086)	-3.170*** (0.761)
Family type (base: couple with children)		
Couples without children	-1.082 (3.822)	6.169** (2.901)
Single caregivers	-2.247 (3.564)	-0.121 (4.161)
Single person households	-3.596 (4.122)	3.028 (4.728)
Unaccompanied children	9.519* (4.122)	20.621*** (4.728)

	(5.245)	(5.674)
Non-nuclear and other households with children	-3.292	0.288
	(3.656)	(4.274)
Non-nuclear and other households without children	-5.831	2.221
	(3.820)	(4.218)
Constant	29.455***	8.890*
	(6.201)	(5.274)
Observations	44,053	44,053
R-squared	0.273	0.068

Note: PA = principal applicant; HH = household. Assistance includes UNHCR and World Food Programme (WFP) cash assistance. Clustered standard errors at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

APPENDICES

Table A.1. Logit and OLS models, marginal effects.

VARIABLES	Logit model				OLS model			
	Poverty before UNHCR and WFP		Poverty		Poverty before UNHCR and WFP		Poverty	
	Female PA (1)	Male PA (2)	Female PA (3)	Male PA (4)	Female PA (1)	Male PA (2)	Female PA (3)	Male PA (4)
<i>Characteristics of the PA</i>								
Age	-1.356*** (0.217)	0.397* (0.209)	-0.827*** (0.112)	-0.254*** (0.080)	-1.120*** (0.186)	0.753*** (0.142)	-0.877*** (0.138)	-0.518*** (0.097)
Age squared	0.014*** (0.002)	-0.002 (0.002)	0.007*** (0.001)	0.003*** (0.001)	0.012*** (0.002)	-0.007*** (0.002)	0.008*** (0.002)	0.006*** (0.001)
Marital status (base: Married with spouse in the household)								
Married without spouse in the hh	6.897 (4.599)	8.735*** (2.259)	3.067 (2.237)	0.642 (0.957)	5.768 (3.566)	5.927*** (1.544)	3.742 (2.480)	1.204 (1.005)
Single or engaged	17.692*** (4.889)	14.766*** (2.325)	8.008*** (2.349)	1.854** (0.912)	13.357*** (3.824)	11.199*** (1.571)	9.595*** (2.642)	1.829* (0.975)
Divorced or separated	11.686** (4.995)	5.715 (5.100)	6.651*** (2.495)	2.610 (2.155)	8.457** (3.898)	3.535 (2.976)	7.838*** (2.691)	2.767 (1.907)
Widowed	11.905*** (4.535)	4.600 (3.954)	5.564** (2.199)	0.283 (1.711)	9.303*** (3.517)	1.709 (2.854)	6.526*** (2.481)	0.330 (1.949)
Education (base: Less than 6 years)								
6-11 years	-3.266** (1.341)	-5.307*** (0.926)	-4.741*** (0.681)	-3.517*** (0.313)	-2.039** (1.030)	-3.066*** (0.584)	-5.436*** (0.810)	-5.307*** (0.484)
More than 12 years	-7.157*** (1.725)	-13.664*** (1.165)	-6.046*** (0.984)	-5.774*** (0.458)	-5.214*** (1.379)	-8.455*** (0.728)	-6.582*** (0.993)	-7.047*** (0.533)
<i>Characteristics of the household</i>								
Family size	14.916*** (0.497)	16.953*** (0.366)	2.903*** (0.192)	2.722*** (0.098)	10.829*** (0.301)	9.992*** (0.172)	3.811*** (0.271)	5.124*** (0.169)
Able bodied male adults, %	-13.691*** (4.091)	-26.223*** (2.446)	-3.151 (2.438)	-5.479*** (1.035)	-11.594*** (3.415)	-21.985*** (1.726)	-2.842 (2.294)	-2.953** (1.214)
Number of children below 5	-1.387 (0.846)	-1.908*** (0.505)	-0.314 (0.392)	-0.181 (0.165)	-1.218* (0.627)	-0.764** (0.307)	-0.261 (0.516)	-0.407 (0.269)
Number of elderly in the household	3.358 (2.580)	-3.109 (1.963)	3.540*** (1.292)	-0.171 (0.806)	2.770 (2.228)	-2.228 (1.443)	3.076** (1.530)	-0.330 (1.002)
Income sources (base: Other sources of income)								
Wage income	-11.664** (4.568)	-12.873*** (2.212)	-3.738 (3.171)	-2.266** (1.004)	-9.113** (3.615)	-7.800*** (1.357)	-3.446 (2.462)	-1.961** (0.810)
Remittance income	-16.003*** (1.694)	-23.574*** (2.319)	-7.382*** (1.132)	-6.528*** (1.252)	-12.365*** (1.317)	-13.280*** (1.232)	-6.598*** (0.793)	-4.354*** (0.592)

Legal (base: Informal or smuggled)	-7.126*** (1.054)	-15.505*** (0.701)	-3.301*** (0.597)	-3.380*** (0.282)	-5.999*** (0.868)	-10.494*** (0.472)	-2.954*** (0.593)	-3.855*** (0.329)
Family type (base: couples with children)								
Couples without children	9.333 (5.762)	-6.363*** (1.863)	7.460** (2.934)	1.085 (0.920)	3.218 (5.164)	-12.291*** (1.106)	11.232*** (3.763)	6.784*** (0.658)
Single caregivers	-1.189 (4.824)	-1.945 (2.285)	0.204 (2.256)	1.430 (0.999)	-2.251 (3.676)	-5.814*** (1.702)	0.729 (2.644)	4.220*** (1.108)
Single person households	-2.330 (5.220)	-0.315 (2.797)	-1.500 (2.467)	3.167*** (1.224)	-8.259** (3.977)	-3.620* (1.874)	1.715 (2.801)	11.413*** (1.205)
Unaccompanied children	11.382 (7.040)	28.481*** (4.495)	7.344** (3.194)	12.224*** (1.629)	5.677 (5.650)	16.051*** (3.393)	19.058*** (5.040)	21.204*** (2.805)
Non-nuclear and other households with children	-5.340 (4.951)	1.247 (2.824)	-1.630 (2.311)	2.636*** (0.937)	-4.772 (3.748)	-0.149 (1.902)	-1.912 (2.739)	4.614*** (1.492)
Non-nuclear and other households without children	-11.594** (4.902)	-2.859 (2.012)	-0.630 (2.368)	0.656 (0.906)	-13.020*** (3.826)	-5.620*** (1.630)	0.703 (2.606)	2.927*** (0.949)
Constant	-	-	-	-	42.594*** (4.443)	11.341*** (2.931)	20.432*** (3.356)	4.048** (1.940)
Observations	12,390	32,891	12,390	32,891	12,390	32,891	12,390	32,891
R-squared/Pseudo R2	0.1721	0.3133	0.0737	0.1303	0.210	0.361	0.058	0.094

Note: PA = principal applicant; HH = household. Clustered standard errors at the household level in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table A2.1. Oaxaca-Blinder decomposition of the gender gap, percentage points.

Panel A: Before assistance			
<i>Poverty rate</i>			
	Female	Male	Gap
	53.0	53.1	-0.1
<i>Poverty gap decomposition</i>			
	Endowments	Coefficients	Interaction
Total	4.7	0.1	-4.8
Age	0.16**	-11.21***	-0.74***
Education	0.55***	0.02	-0.02
Married with spouse in the HH	4.66***	2.23*	-1.94*
Family Size	-6.66***	-2.69**	0.38**
Children <5 in the HH	0.22***	1.57**	-0.34**
Able bodied male adults (%)	7.02***	3.87***	-3.01***
Elderly in the HH	-0.38***	0.94***	0.84***
Employment income (1/0)	0.15***	-0.04	0.03
Remittance Income (1/0)	-0.99***	0.01	0.01
Located in refugee camp	-0.04***	0.05	-0.02
Constant	-	5.32*	-

Panel B: After assistance			
<i>Poverty rate</i>			
	Female	Male	Gap
	12.9	10.5	2.4
<i>Poverty gap decomposition</i>			
	Endowments	Coefficients	Interaction
Total	2.0***	0.16	0.20
Age	-0.24***	-6.1***	-0.4***
Education	0.72***	-0.7	0.1
Married with spouse in the HH	3.87***	1.39	-1.21
Family Size	-2.79***	-7.95***	1.12***
Children <5 in the HH	0.33***	2.02***	-0.44***
Able bodied male adults (%)	0.09	-1.49*	1.16*
Elderly in the HH	0.29***	0.11	0.1
Employment income (1/0)	0.04***	-0.04	0.02
Remittance Income (1/0)	-0.31***	-0.1***	-0.24***
Located in refugee camp	0.00	0.03	-0.01
Constant	-	12.99***	-

Table A3.1. PSM - Probit regression. Dependent variable: Female PA

Variables	Coefficient	Standard Errors	z	P>z
Family Size	0.106	0.011	9.26	0
Education (base: Less than 6 years)				
6-11 years	-0.162	0.021	-7.87	0
More than 12 years	-0.152	0.026	-5.83	0
Marital status (base: Married with spouse in the household)				
Married without spouse in the hh	2.434	0.023	104.79	0
Single or engaged	1.179	0.030	39.19	0
Divorced or separated	2.834	0.052	54.13	0
Widowed	3.263	0.038	86.14	0
Elderly (base: No elderly)	0.328	0.038	8.67	0
Children (base: No children)	0.033	0.012	2.72	0.007
Constant	-2.217936	0.03701	-59.93	0
Number of obs	=	45,919		
Prob > chi2	=	0.0000		
Pseudo R2	=	0.4629		

Table A3.2. Propensity score matching balancing test.

Variable	Unmatched	Mean		%bias	% bias reduction	p> t
	Matched	Treated	Control			
Family Size	3.6	4.2	-27.3		-25.7	0.000
	3.5	3.5	0.0	100	0.0	1.000
Education (base: Less than 6 years)						
6-11 years	0.5	0.6	-15.5		-14.9	0.000
	0.6	0.6	0.0	100	0.0	1.000
More than 12 years	0.1	0.2	-9.5		-8.9	0.000
	0.2	0.2	0.0	100	0.0	1.000
Marital status (base: Married with spouse in the household)						
Married without spouse in the hh	0.5	0.1	112.3		122.5	0.000
	0.6	0.6	0.0	100	0.0	1.000
Single or engaged	0.1	0.1	-21.9		-19.7	0.000
	0.1	0.1	0.0	100	0.0	1.000
Divorced or separated	0.1	0.0	28.7		34.3	0.000
	0.0	0.0	0.0	100	0.0	1.000
Widowed	0.2	0.0	72.2		90.0	0.000
	0.2	0.2	0.0	100	0.0	1.000
Elderly (base: No elderly)	0.1	0.0	16.2		16.6	0.000
	0.1	0.1	0.0	100	0.0	1.000
Children (base: No children)	2.1	2.2	-3.8		-3.7	0.000
	2.1	2.1	0.0	100	0.0	1.000

Note: Propensity score matching uses kernel and Mahalanobis distance measure.

Table A4.1. Definitions of Variables

Variable	Definition
Age of PA	Age of the principal applicant (PA)
Number of children below 5	Number of children below the age of 5 (inclusive) in the household
Education	Categorical variable. We classified education of the PA in three groups: below 6 years, 6-11 years, and more than 12 years of education
Number of elderly persons	Number of persons above the age of 65 (inclusive) in the household
Entry status	Categorical variable. ProGres reports 5 entry statuses: informal, formal, smuggled, no data and not applicable. 1 if formal, 0 if informal or smuggled. No data and not applicable replaced with missing values.
Expenditure per capita	Raw addition of all expenditure categories, which include rent, bills, food, healthcare, education, and others divided by household size
Family size	Number of numbers in the household
Family type	Categorical variable. For a detailed definition see section 4
Household size	Number of people included in the case records of each PA in Individual ProGress dataset
Wage Income	1 if the household receives income from employment and/or daily or irregular work
Income from remittances	1 if the household receives income from remittances
Income per capita	Raw sum of household income from all sources; work, pension, assets in Syria, transfers, donations, other organizations' humanitarian aid, and other divided by household size
Able bodied male adults (%)	Number of males ages 18-64 (inclusive) who are not disabled in the household divided by the household size
Marital Status	Categorical variable. The classification includes married PAs with spouse in the household, married PAs without spouse in the household, widowed, single or engaged, and divorced or separated.
Location	Categorical variable for 12 Governorates/cities. Amman, Ajloun City, Aqaba, Balqa, Irbid, Jerash, Karak, Maan, Madaba, Mafraq, Tafilah, Zarqa.
In Camp	1 if the household is located in UNHCR refugee camp
Poverty before UNHCR and WFP assistance	100 if household expenditure before UNHCR plus WFP assistance is below the poverty line (JD50)
Poverty before UNHCR assistance	100 if household expenditure after WFP assistance but before UNHCR assistance is below the poverty line (JD50)