

THE WELFARE OF SYRIAN REFUGEES

EVIDENCE FROM JORDAN AND LEBANON

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Foreword

The ongoing crisis in Syria has taken a toll on millions of lives, with its effects reverberating around the globe. Thousands have died, and nearly half of the country's population has been displaced, either internally or to neighboring countries and beyond. As of December 2015, nearly 4.4 million Syrians had registered as refugees. Every day, more families are forced to leave their homes in search of safety and stability elsewhere.

The world has an urgent responsibility to address this situation and to make sure that the short-term needs of refugees are paired with medium- and long-term strategies to support both refugees and host communities so that both can manage the different shocks they have experienced.

As the Syrian crisis deepens, humanitarian and development organizations are coming together to bridge the historical divide between their approaches. The World Bank Group and the United Nations High Commissioner for Refugees have joined forces to share and analyze available data on Syrian refugees living in Jordan and Lebanon, in order not only to better understand the welfare of refugees, but also to help create a more sustainable system to address their needs throughout their time in exile.

This book shows that Syrian refugees living in Jordan and Lebanon have experienced shock after shock, pushing them into destitution. A majority are living in poverty now, and are likely to stay poor in the future, with added psychological and financial stresses that compound what they are already facing.

The current crisis is as much about long-term development, as it is about short-term needs. While existing programs that provide food and cash assistance have been effective in reducing poverty among refugees, they are not designed for medium- and long-term support. The coordination between humanitarian and development partners is ever more important. In the medium and long term, governments and the international community will need a different institutional and financial framework to address the needs of refugees and host communities alike. Policies for refugees must move toward self-reliance, focusing not only on transfers and better access to public services, but also on facilitating access to the labor market and fostering economic inclusion.

This longer-term view can become a critical part of the growth and development strategy for areas hosting refugees. By scaling up existing services, matching people with jobs, building a business environment that promotes growth,

investing in people's health and education, boosting regional trade and attracting investments, refugees and host community members can share in progress and move forward together.

The World Bank Group and the UNHCR will continue to work together to provide in-depth analysis and practical solutions, from both the humanitarian and development perspectives. It is our sincere hope that this can help allow refugees and host communities together to turn a humanitarian crisis into a development opportunity—ensuring a more stable, prosperous future for all.

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Executive Summary

"Refugees are people like anyone else, like you and me. They led ordinary lives before becoming displaced, and their biggest dream is to be able to live normally again."

Ban Ki-moon, United Nations Secretary-General

Since the beginning of the Syrian crisis, over 6.5 million of the country's people have been internally displaced and almost 4.4 million are registered refugees. This amounts to about half of the Syrian Arab Republic's pre-crisis population. Due to the large humanitarian response, there is now a wealth of available information on refugees' income and expenses, food and nutrition, health, education, employment, vulnerability, housing, and other measures of well-being. These data have not yet been fully explored to optimal effect for analytical, policy, and planning purposes.

The United Nations High Commissioner for Refugees (UNHCR) and the World Bank Group (WBG) are working together to analyze this evidence, and to ensure that policy makers and advocates have the knowledge they need to better serve refugee communities. The WBG's know-how on welfare and targeting, combined with the UNHCR's expertise on the needs of refugees, can lead to more effective analyses and policies for registered Syrian refugees living in Jordan and Lebanon. Their expertise can also help promote a more efficient use of financial resources. This book is the result of a comprehensive collaboration between the two institutions. It aims to increase our understanding and ultimately improve the well-being of Syrian refugees.

Key Findings

Refugees differ from regular populations. Compared with pre-crisis Syria, the Syrian refugee population living in Jordan and Lebanon is younger (81 percent are under age 35, versus 73 percent of pre-crisis Syrians); comprises a higher share of children aged 0–4 (close to 20 percent versus 11 percent); and tends to be single (over 60 percent versus 40 percent). Refugees have larger households;

they have more children, many of whom are more likely to be married; and they tend to be less educated and more likely to be farmers. Prior to becoming refugees, many had suffered repeated shocks within Syria, leading them eventually to abandon their assets, property, and capital and seek safety in the neighboring countries. Therefore, these refugees have unique and specific needs distinct from regular populations.

Syrian refugees in Jordan and Lebanon live in precarious circumstances. Although many Syrians are registered as refugees with the UNHCR and the authorities, this does not confer legal rights or entitlements for assistance. The majority of refugees in both countries live on the margins, in urban and peri-urban areas, many in informal settlements. Their access to government services is severely constrained by supply shortages generated by the enormous increase in demand. Only a minority are housed in refugee camps, where most of their essential material needs are met and financed by the international community.

In 2014, 7 in 10 registered Syrian refugees living in Jordan and Lebanon could be considered poor.¹ This number increases to 9 in 10 refugees if the poverty lines used by the respective host countries are considered. The poverty of Syrian refugees is higher in Jordan than in Lebanon. In Jordan, there is also evidence that poverty among refugees has increased by several percentage points between 2013 and 2015.

Family size and housing are the best predictors of poverty. In Jordan, for example, the poverty rate almost doubles if the size of the family goes from one to two members and increases by 17 percent from one to two children. Single people and people over 50 have the lowest poverty rates while people aged between 35 and 49 experience the highest poverty. Families renting or owning property and living in an apartment or house made of concrete with piped water or a proper latrine are less poor.

Refugees are highly vulnerable. About 55 percent of refugees in Jordan are vulnerable to monetary poverty and about 50 percent are vulnerable to food shocks. Over 35 percent of refugees are poor today and vulnerable to poverty in the near future. About 88 percent are either poor today or are expected to be poor in the near future. Conversely, only 12 percent of refugees are neither poor today nor vulnerable to poverty in the near future; this is the only group of refugees that, at present, can be considered not at risk.

Current refugee assistance programs are very effective in reducing poverty. If administered to all refugees, the UNHCR cash assistance program and the World Food Programme (WFP) food voucher program can each cut poverty by half. They can also reduce poverty to less than 10 percent if administered jointly and universally.

However, these programs are not sustainable and cannot foster a transition from dependence to self-reliance. They rely entirely on voluntary contributions and, when funding declines, fewer of the most vulnerable refugees are able to benefit. Moreover, social protection on its own does not foster a transition to work and self-reliance if access to labor markets and economic opportunities is not available.

These findings suggest that the current approach to managing refugee crises in the medium and long term is not sustainable. The focus must shift beyond social protection for refugees to include economic growth in the areas hosting them, so that refugees and local communities can share in economic progress. This paradigm shift requires continued close collaboration between humanitarian and development partners, in order to transform a humanitarian crisis into a development opportunity for all.

Note

1. This estimate is obtained using the monetary threshold adopted by the UNHCR for targeting purposes in Jordan and is based on a welfare aggregate that is net of the UNHCR's cash assistance program and the WFP's food voucher program.

Abbreviations

AUC	area under the ROC curve
CDF	cumulative distribution functions
CI	crowding index
FCS	Food Consumption Score
FGLS	feasible generalized least square
GDP	gross domestic product
HH	household
HIES	Household Income and Expenditure Survey
HV	Home Visits
IDP	internally displaced persons
ILO	International Labour Organization
IMF	International Monetary Fund
JD	Jordanian dinar
JD-HV2	Home Visits Database, round II (Jordan)
JD-HV3	Home Visits Database, round III (Jordan)
LBS	Lebanese pound
LCU	local currency unit
MENA	Middle East and North Africa
OLS	ordinary least square
PA	principal applicant
PMT	proxy means tests
PPP	purchasing power parity
ProGres	Global Registry System of Refugees maintained by the UNHCR
PG	ProGres
ROC	receiver operating characteristic
UNHCR	United Nations High Commissioner for Refugees
UNDP	United Nations Development Programme
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
VAF	Vulnerability Assessment Framework
VASyR	Vulnerability Assessment on Syrian Refugees
VEP	vulnerability as expected poverty
VER	vulnerability as exposure to risk
VEU	vulnerability as low expected utility
WBG	World Bank Group
WFP	World Food Programme

Overview

Background and Motivation

As June 20th marked World Refugee Day, the global count of registered refugees and internally displaced persons (IDPs) has reached the highest level since World War II, with a combined figure of over 50 million people (13 million refugees and 38 million IDPs).¹ In addition to their humanitarian dimensions, refugee and IDP crises reflect development failures that are not easily remedied. The average time that a person spends as a refugee is 17 years. Unless given the opportunity to lead a “normal” life, generations of refugees in prolonged exile experience frustration and impoverishment. This marginalization generates loss of skills, lowers self-confidence, and hampers the capacity of a population to rebound from shocks.

Part of the problem is that refugees are financially constrained and, unlike regular citizens, are often denied access to basic opportunities such as public services or employment. They are more vulnerable to human exploitation, such as trafficking, survival sex, and crime. Preventing the impoverishment of refugee and IDP communities enhances their prospects for a stable future and facilitates their return home when conditions permit.

Critical to addressing these challenges and their effects is a more detailed knowledge of refugee welfare, poverty, and vulnerability. Building on such knowledge requires specialized expertise on both welfare measurement and refugees and, in this respect, the United Nations High Commissioner for Refugees (UNHCR) and the World Bank are ideal partners. The World Bank can offer know-how on welfare and targeting that can possibly result in more effective analyses and policies aimed at improving the well-being of refugees and more efficient use of financial resources. The UNHCR, for its part, can provide the World Bank with expertise on a particularly unique population and its specific protection and assistance needs, given its official status. Refugees, IDPs, and migrant populations are rarely captured by World Bank poverty statistics, because these statistics are based on national household surveys usually covering the resident population only. Household surveys, in turn, are not designed to capture the

particular features of refugee or displaced populations. These two facts combined result in losing sight of the welfare of over 50 million people worldwide.

This is no minor issue for the World Bank. The overarching goal of the World Bank is to reduce extreme poverty, defined as those living on less than US\$1.25 in 2005 purchasing power parity (PPP), globally to 3 percent by 2030.² If today we cannot estimate poverty among displaced people worldwide, we may overestimate our poverty achievements. The number of displaced people has been on the rise in the past decade and may increase in the years to come, especially if we do not recognize the poverty dimension and address its causes during the early stages of displacement. Refugees and displaced people are not just part of the poverty problem; they should be considered as part of the poverty solution. Cooperating with the UNHCR enables the World Bank to expand the knowledge base on refugees with the objective of enhancing development and future progress, and thereby reaching the twin goals of reducing extreme poverty and boosting shared prosperity.

A joint study on the welfare of refugees can also help the two organizations to bridge the historical divide between humanitarian and development work by providing practical solutions for assisting refugees in the short, medium, and long term and preventing the irreversible loss of social and human capital typically associated with prolonged refugee crises. This is a natural response to the fact that refugee crises have become longer but also a requirement of the international donors' community in order to streamline aid and make it more effective. A welfare analysis of refugees and the challenges they face can help the UNHCR to better understand why certain refugees cope better than others, how to improve targeting, and how to selectively invest in areas with a better potential for the long-term well-being of refugees. A welfare analysis can also help hosting governments better understand how to turn a humanitarian crisis into a development opportunity by preventing a deterioration of living conditions of refugees and hosting populations and by finding improved solutions for allowing refugees to contribute to the host nation's welfare.

Since the beginning of the crisis in the Syrian Arab Republic, there have been over 6.5 million IDPs, 4.4 million registered refugees, and 1.5 million non-refugee migrants (www.unhcr.org). This amounts to about half of the pre-crisis Syrian population. The response of humanitarian organizations to the crisis has been so large that it is now possible to rely on an unprecedented archive of data on Syrian refugees, including data on income and expenditure and many other dimensions from food and nutrition to health, education, employment, vulnerability, housing, and others. This data archive is surprisingly little explored as humanitarian organizations face daily challenges that make the full exploitation of existing data very difficult.

The World Bank and the UNHCR began working together in March 2014 to analyze existing data collected on refugees in Jordan with the objective of studying the welfare of refugees and improving on the UNHCR's targeting capacity. This work resulted in a study that proved useful for identifying some of the

shortcomings of existing targeting methods and proposing alternative solutions for improvements. In parallel to this work, the UNHCR in Lebanon experimented with new surveys and data analyses that provided further insights into refugees' welfare, vulnerability, and aid targeting. These two blocks of work (Jordan and Lebanon) constitute a significant amount of data and information that can be further explored to better understand the welfare of refugees.

This report builds on the work carried out in Jordan and Lebanon in 2013 and 2014 and expands it to produce a comprehensive welfare, poverty, and vulnerability assessment of refugees in the context of the Syrian crisis. This is the first collaboration of its kind for both the World Bank and the UNHCR and it was made possible by an unprecedented data-sharing agreement between the two institutions as well as by the close collaboration between the two institutions at headquarters and field level. This assessment can inform policy design to improve the well-being of refugees and mitigate the crisis' impact on hosting communities. It can also inform the development of new strategies to assist refugees, bridging the historical divide between humanitarian and developmental assistance.

Structure of the Report and Questions Asked

Chapter 1 of the report presents a socioeconomic profile of Syrian refugees in Jordan and Lebanon. It provides first a brief background to the crisis and then compares the socioeconomic profile of refugees with that of the Syrian population before the crisis and with the hosting populations of Jordan and Lebanon. This chapter addresses the questions: (1) Who are the refugees? (2) How different are refugees from "regular" populations? While these questions may seem obvious to specialists, refugees are a selected subsample of regular populations and it is important to understand what makes refugees different. These differences can then help us to understand how to adapt development policies toward this special type of population.

Chapter 2 provides a poverty and welfare assessment of Syrian refugees in Jordan (see box O.1 for a few methodological notes on measuring poverty in a refugee context). We first provide a poverty profile of refugees to understand what groups of refugees are poor, what their socioeconomic characteristics are, and where the pockets of deep poverty are located. We then model welfare and poverty to better understand the main predictors of these two factors in the context of the atypical status of refugees. This chapter addresses the questions: (3) How poor are refugees? (4) What are the main predictors of refugees' welfare and poverty? Again, while these are standard questions addressed in a development context and for which a solid body of answers exists for many countries, asking these questions for a refugee population is relatively new and not as obvious. Refugees are rarely captured by national household surveys and a population of refugees is very particular in its income and expenditure opportunities, something we wish to explore in detail in this book.

Box O.1 Measuring Poverty in a Refugee Context

The measurement of poverty relies on three essential instruments: household data, a welfare aggregate, and a poverty line. This box summarizes the choices made in the book on these three instruments.

Household data. The book focuses on registered refugees living in Jordan and Lebanon outside camps, estimated at about 85 percent of all refugees living in these two countries in 2014. It relies on data extracted from the global registry system of refugees maintained by the UNHCR (ProGres) and on four other data sets collected by the UNHCR and the World Food Programme (WFP) in Jordan and Lebanon. The Jordan data include the second and third rounds of the home visits data (JD-HV2 and JD-HV3), which are home visits undertaken by the UNHCR for the purpose of targeting. The Lebanon data include the second round of the vulnerability assessment (LB-VASyR) and the verification survey (LB-Verif), this last also an instrument designed for targeting purposes. All survey data have been collected between October 2013 and December 2014. The core part of the report (chapters 2–4) focuses on Jordan and on the second round of the home visits data. Chapter 5 uses all four data sets. A full explanation of the data used is provided at the outset of each chapter.

Welfare aggregate. The book uses expenditure aggregates throughout as indicators of welfare. This is a choice that is typically made for poor countries where data on income are scarce or unreliable. This report tested both income and expenditure measures and found income to be underreported as compared to expenditure, which explains the preference given to expenditure. The expenditure aggregate constructed is based on a restricted number of items (between 10 and 14 items depending on the data set considered). This range of items is significantly smaller^a than what would normally be collected in household consumptions surveys and the resulting expenditure aggregate is expected to be less reliable than aggregates constructed using larger sets of items. In a refugee context, this may be less of a problem given that food vouchers, low income, and limited mobility force refugees to rely on a restricted number of consumption items; but it is nevertheless an important issue to consider when reading the results of this report. Chapter 2 provides a series of tests of alternative welfare measures and explains the methodology and rationale for our choice of expenditure aggregate.

Poverty line. As a poverty line, the book uses the threshold selected by the UNHCR for its cash assistance program given its relevance for refugees and for the UNHCR. This is JD 50/person/month in Jordan, which is equivalent to JD 1.64 /capita/day or US\$5.25 in 2005 purchasing power parity (PPP). It is important to note that, unlike the international poverty lines or country-specific poverty lines, the UNHCR threshold is not constructed using a basic needs approach based on a food basket and basic nonfood needs, and it cannot be considered as a poverty line anchored to minimum food requirements and minimum calories. Thus, it is not possible to compare the estimates of refugee poverty reported in this report to the national poverty estimates of Jordan or Lebanon. It is simply a threshold that, in US\$ PPP values, is located in between the international poverty line and the poverty lines used by Jordan and Lebanon. Chapter 2 provides sensitivity tests to show how poverty changes when we change the poverty line. Chapter 5 provides a comparative analysis of poverty in Jordan and Lebanon using the same poverty line to test how this line performs in different country contexts.

Note: a. The number of items can vary depending on the survey ranging from a few items to hundreds of items and there is evidence that accuracy increases by increasing the number of items and reducing the recall period (Beegle et al. 2012).

Chapter 3 digs into the question of vulnerability using data from Jordan. This chapter uses first the economic interpretation of monetary vulnerability to measure this phenomenon among refugees and then applies similar instruments to nonmonetary vulnerability concepts in use among humanitarian organizations to understand whether monetary and nonmonetary vulnerability really measure two different conditions. We also compare these vulnerability outcomes with the poverty outcomes observed in chapter 2 to understand how the concepts of poverty and vulnerability overlap. The questions addressed in this chapter are: (5) How vulnerable are refugees from a monetary and nonmonetary perspective? (6) Do poverty and vulnerability statuses overlap? These questions are relatively new not only in relation to refugees but also more generally for the economics literature.

Chapter 4 of the report turns to policies by taking stock of the results emerged from chapters 1, 2, and 3. This chapter evaluates first the targeting capacity of existing policies toward refugees and also devises a simple instrument to reach an optimal targeting strategy by maximizing coverage while minimizing leakage with available resources. In a second stage, we simulate alternative policy outcomes in various areas including education, labor, and social protection to see whether improving the status of refugees in these different areas can also improve their welfare. This chapter addresses the questions: (7) How effective are refugee assistance programs? (8) What is the potential for alternative policies? These are no simple questions of course, neither from a policy nor from a technical perspective. Feasible policies toward refugees have to strike a delicate balance between the needs of refugees, the needs of hosting communities, and the political concerns of hosting countries. These are often conflicting objectives but policies that fail to align them are unlikely to succeed. The technicalities of simulating alternative policy reforms are also complex. Several methods are available but we are outside the realm of controlled random experiments and face severe challenges in finding good counterfactuals. Nevertheless, we will test two alternative policy simulation methods and compare results in an effort to learn a few lessons on the potential of alternative policies toward refugees.

Chapter 5 of the report focuses on comparing results across countries and data sets and testing the applicability and reproducibility of results in different countries hosting refugees and with different types of data. This is done by comparing results of chapter 2 with results in appendixes A, B, and C. The welfare and poverty assessment of chapter 2, based on Jordan data, is reproduced in a semi-identical fashion using a second set of data for Jordan (appendix A) and two other data sets for Lebanon (appendixes B and C). The purpose of chapter 5 is to understand whether the main results of chapter 2 are strictly country specific and whether they depend on particular types of data. The questions addressed here are: (9) How does welfare compare across countries and data sets? (10) How transferable are the findings across countries and data sets? The comparative analysis of chapter 5 is carried out in two parallel processes. We first make an effort to compile the four data sources into one data set by harmonizing the variables that could be harmonized, transforming the welfare aggregates into

comparable U.S. dollars at purchasing power parity (PPP), and constructing a single poverty line. The second exercise compares chapter 2 and appendixes A, B, and C and tries to extract lessons from this raw comparison. Of course, we are only considering two countries and four data sets and the population of refugees considered is the same Syrian population in both countries. However, the data are heterogeneous and the hosting countries of Jordan and Lebanon have significant differences. This should be seen as a first, nonexhaustive step in drawing more general lessons about refugees, their welfare, and welfare predictors.

Summary of Results

(1) Who are the refugees?

Refugees are a subset of a regular population who, due to a combination of shocks, follow a path leading into poverty and destitution in a foreign country.

The distress of those Syrians who eventually became refugees did not start at the onset of the crisis in 2011. For many people, it started a decade earlier and is explained by a combination of global financial shocks, domestic agricultural shocks, and conflict. The second half of the 2000s has been characterized by a sharp increase in oil prices, which benefited exports but resulted in large price increases in both commodities and food prices. These negative shocks were compounded by the effects of a prolonged drought that affected the country during the years leading to the 2011 crisis. Millions of people living in Syria at the time of the outbreak of the crisis had already been on the move within the country and were in economic distress, including over a million Syrians who moved out of the rural areas affected by the drought and settled in the peripheries of the main urban centers already characterized by low living standards. These are the same peripheries that saw harsh fighting during the conflict, resulting in millions of IDPs. By the end of 2014, about half of the Syrian population was displaced, including an estimated 6.5 million IDPs, 4.4 million registered refugees, and 1.5 million non-refugee migrants (www.unhcr.org).

After fleeing the country, those Syrians who became refugees settled prevalently in poor areas of hosting countries and concentrated in a few governorates situated along the borders. About 65 percent of all Syrian refugees in our data went to Lebanon and about 35 percent to Jordan. The overwhelming majority of Syrian refugees registered in Jordan came from the southern province of Dar'a (47.1 percent) in Syria and settled in the border governorates of Al-Mafraq (26 percent) and Irbid (24 percent) in Jordan, or in the periphery of the main urban center Amman. Similarly, the majority of refugees registered in Lebanon came from the northern governorates of Homs (21.4 percent) and Aleppo (20.5 percent) or from rural Damascus (14.1 percent) and about 85 percent of these refugees settled in three governorates of Lebanon: Bekaa (36 percent), North Lebanon (25 percent), and Mount Lebanon (25 percent). Most of the refugees come from relatively poorer areas in the country of origin and settled in relatively poorer areas in the countries of destination. Syrians who eventually registered as

refugees are evidently the result of negative shocks that resulted in an overall increased impoverishment of this population.

(2) How different are refugees from “regular” populations?

Syrian refugees are systematically different in their socioeconomic characteristics from the Syrian pre-crisis population and from the populations of the countries that they moved to (Jordan and Lebanon).

The population living in Syria before the crisis had some important differences with the neighboring populations of Jordan and Lebanon. For example, the Syrian population had a similar age structure to the one in Jordan but it was much younger than the one in Lebanon. The education level in Syria was similar to that in Lebanon but much lower than that of Jordan, and the female labor force participation rate was similar in Syria and Jordan but higher in Lebanon. Syria had a much higher share of the population employed in agriculture as compared to either Jordan or Lebanon. The differences between the Syrian refugee population and the populations of Jordan and Lebanon are expected to be much greater. This can be inferred by comparing the Syrian refugee population with that of pre-crisis Syria. The Syrian refugee population is much younger, the level of education is marginally lower, there is a much higher proportion of children and female head of household, and Syrian female refugees are also more likely to be married under the age of 18.

This very young age and particular family structure point to the fact that large parts of the population have specific needs, especially for schooling and health care, those public services that hosting countries were suddenly called to provide for Syrian refugees at the outset of the crisis. A refugee population has large humanitarian needs in terms of protection, shelter, and nutrition; but refugees also face critical development challenges including: (i) limited access to basic services due to the limited capacity of institutions in host communities to provide the quantity and type of basic services needed by a refugee population; (ii) limited capacity of refugees to provide for themselves due to constrained access to markets and economic opportunities; and (iii) erosion of human capital due to low school enrollment rates, prolonged gaps in education, and inactive use of skills and professions. These are development challenges that require special measures to assure that the long-term development trajectory of Syrians and hosting countries is not permanently harmed by the refugee crisis.

(3) How poor are refugees?

Based on a monetary threshold used by the UNHCR to target its cash assistance program, the great majority of refugees in Jordan are poor, a finding that is robust to several sensitivity tests.

The UNHCR in Jordan uses a monetary threshold of JD 50/capita/month to target its cash assistance program. This poverty line is equivalent to JD 1.64/capita/day or US\$5.25 in 2005 PPP. The line is high if compared to the international poverty line used by the World Bank to measure extreme poverty (US\$1.25 2005 PPP) and is low if compared to the poverty lines used by Jordan

(JD 2.6 or US\$8.2 PPP) or Lebanon (LBP 8,935 or US\$10.3 PPP) to measure poverty in their respective countries. In July 2015, JD 1.64 in Jordan would buy 2 kilograms of rice or 1.5 kilograms of apples, 3 single-way tickets on local transport, 3 kilometers in a taxi, about one day of electricity for an apartment of 80 square meters, one-third of a meal in a cheap restaurant, or a pack of cigarettes. Considering a family of four, JD 200 per month (JD 50 times 4) is expected to cover essential basic needs in terms of food, transport, and perhaps some clothing, but this amount would be insufficient to cover shelter, utilities, assets, or leisure activities.

Using the UNHCR poverty line of JD 50/capita/month (US\$5.25/PPP/per capita per day), the report finds 69 percent of refugees in Jordan and 64 percent in Lebanon to be poor. These shares are 87 percent and 93 percent, respectively, if we use the poverty lines adopted by hosting countries. In Jordan, it was also possible to observe that refugee poverty increased from 69 percent to 73 percent between 2014 and 2015. A typical very poor case³ (first quintile or the bottom 20 percent of the population) would be composed of almost seven people, it would be headed most likely by a male who is married, with children, with a low level of education, and around the age of 40. About 60 percent of the case members would be children, with most but not all children attending school. The case would most likely come from Dar'a, Homs, or Hama governorates in Syria, would have crossed the border unofficially and most likely settled in Irbid, Amman, or Mafraq in Jordan. By contrast, a typical non-poor case (fifth quintile or the top 20 percent of the population) would be headed by someone who is much less likely to be married, who is better educated, somewhat younger, and living in a case made of only two people with the unlikely presence of children.

The poverty profile shows that the group which entered Jordan before the Syrian crisis and the latest group of entrants have the lowest poverty rates, whereas the peak of poverty is associated with those who entered during 2012 and 2013, which coincides with the peak of the Syrian crisis. The majority of refugees entered the country unofficially (57.5 percent) and this group suffers from higher poverty irrespective of the point of entry, with a difference of almost 18 percentage points compared to those who entered officially. Refugees follow particular trajectories depending on where they flee from and where they settle in Jordan and these trajectories reveal different paths to poverty. For example, refugees coming from the Syrian governorates of Aleppo and Damascus and going to the Jordanian governorate of Tafilah are among the poorest, with the quasi-totality of this group being poor.

Characteristics of the principal applicant (PA)⁴ provide some insights about the poverty status of a case. Poverty is the highest for the age group 35–49, presumably because this is the group with the largest number of children of young age. For the same reason, poverty is also higher for married and engaged people as opposed to other marital status groups. Single people have the lowest poverty rate and this is also true for people aged 50 and more. In general, poverty increases as we pass from white-collar types of occupations (pre-crisis) to blue-collar types of occupations. Surprisingly, the highest poverty rate is found among

skilled agricultural workers. The group with the PA having 6–8 years of education (almost half of the population) is also the group with the highest poverty rate. If we cross-tabulate different characteristics of the PA, we can find cells with extreme poverty rates such as skilled agricultural workers with 9–11 years of education of which eight in ten people are poor. Hence, agricultural workers who may have been particularly affected by the drought in Syria before the crisis remain the poorest population group in the post-crisis refugee status.

Characteristics of the case provide additional insights. Larger cases and cases with higher shares of children are poorer. This is a known phenomenon but it seems to be widespread in the Syrian refugee population. The poverty rate jumps significantly for each additional case member and for each additional child. For example, from one to two members, the poverty rate almost doubles and increases by 17 percentage points from one to two children. It is also noteworthy that for a few cases, the case size is equal to the number of children. These are cases where all case members are children. In fact, the situation of children is also revealing. School-age children are expected to be in school but refugee children face many challenges in enrolling in educational institutions due to scarce supply, financial constraints, crowding, psychological distress, and other issues that would normally not be an issue for children in regular populations. Only about half of Syrian refugee children in Jordan attend school despite the fact that Jordan provides free education to refugees. About 34 percent of the refugee population in Jordan lives in cases where at least one child is not attending school. Children out of school are more at risk of child labor. About 3.6 percent of the population lives in cases where at least one child is working. This is likely to be a lower bound estimate as child work is one of the questionnaire items that is most likely to be under-reported because of shame or legal issues.

(4) What are the main predictors of refugees' welfare and poverty?

Case size and housing variables are the best predictors of welfare and poverty followed by selected characteristics of the principal applicant.

Through econometric modeling, we are able to identify the key predictors of welfare and poverty for Syrian refugees in Jordan. Following a systematic process of variable selections, we reached a final welfare model including a total of 23 variables and a final poverty model including 22 variables. The first and most important variable in both models is case size which alone explains 18 percent of the variability in welfare and 22 percent of the variability in poverty. Paying rent or owning the property in which the case lives is the second most important factor explaining between 3 and 4 percent of both the welfare and the poverty model. The region of destination of refugees has an explanatory capacity of between 1 and 1.5 percent. All other factors with the exception of the house area per person in the poverty model have an explanatory power below 1 percent. In particular, important characteristics of the principal applicant that are associated with improved welfare are: a professional occupation prior to the crisis, older age, higher education, and married status. Other important housing-related factors are: having electricity, piped water, a latrine,

kitchen, and proper building materials. The place of origin and destination of refugees, the point of entrance, and whether refugees entered formally or informally are other factors that contribute to explain welfare. Overall, the welfare model explains 53 percent of the variability in expenditure and the poverty model explains 38 percent of the variability in poverty. These percentages are generally considered good-fit for models of this kind.

We also tested the capacity of the poverty models to predict poverty correctly. Considering a JD 50 poverty line and a 50 percent probability threshold, the model is able to correctly predict if a case is poor 90.1 percent of the time, which implies that 9.9 percent of the time the model predicts poor cases as non-poor (under-coverage or exclusion error). The model also predicts correctly if a case is non-poor 60.9 percent of the time, which means that 39.1 percent of the time the model predicts non-poor cases as poor (leakage rate or inclusion error). Evidently, the first type of error (under-coverage) is more problematic from a policy and welfare perspective while the second type of error (leakage) is more problematic from a budget perspective. We also find that there is a clear trade-off between increasing coverage of the poor and decreasing leakage to the non-poor. However, one can fine tune the cutoff point chosen for the probability threshold to optimize the best trade-off between these two outcomes, something that is explored in more detail in chapter 4 of the book.

(5) How vulnerable are refugees from a monetary and nonmonetary perspective?

Monetary and nonmonetary vulnerability are high but they are not necessarily related to one another.

The report finds about 55 percent of refugees in Jordan to be vulnerable to monetary poverty using a poverty line of JD 50/capita/month.⁵ These findings are robust to various specifications of the monetary vulnerability model and indicate that vulnerability does not decline linearly with the poverty line. Predictors of vulnerability are similar to the predictors of welfare and poverty but not identical.

Nonmonetary vulnerability is also high but not necessarily related to monetary vulnerability. We selected two popular indicators: The WFP Food Consumption Score (FCS) and the UNHCR Crowding Index (CI). We find about 50 percent of refugees to be vulnerable to the food dimension and about 42 percent to be vulnerable to the crowding dimension. However, the econometric modeling work shows that it is difficult to find predictors for the FCS while it is much easier to find predictors for the CI, which are similar to the predictors of welfare and poverty. In fact, the distribution of food and monetary vulnerabilities are almost unrelated. Policies that address monetary vulnerability such as cash transfers may not help in addressing food vulnerability, an important lesson from a policy perspective. Conversely, the cross-tabulations between crowding and monetary vulnerability show a high association between these two phenomena. For 77 percent of observations, the two criteria provided the same outcome in terms of vulnerability. Therefore, addressing crowding with a cash transfer may

be a promising approach, whereas this is not the case for food vulnerability as defined by the WFP.

(6) Do poverty and vulnerability statuses overlap?

Poverty and vulnerability statuses overlap but less than expected and results are sensitive to the choice of poverty line.

Poverty and vulnerability are two related but clearly different concepts. Using a poverty line of JD 50/capita/month, only about 51 percent of poor refugees today in Jordan are also vulnerable to poverty in the near future, a share that reaches 63 percent if the poverty line is lowered to JD 25/capita/month. This is equivalent to 35 percent of the total population of refugees and is what we could consider the hard-core poor. Conversely, about 11.3 percent of the total population of refugees are non-poor today and expected to stay non-poor in the near future. This is the better-off group that is unlikely to need any assistance. The rest of the population (53 percent) is expected to change status in the near future. The predictors of vulnerability are similar to those of poverty but they may behave differently and they have different sensitivities to the poverty line.

The volatility in poverty status and the sensitivity of poverty and vulnerability to the poverty line make the UNHCR work quite complex from a welfare monitoring and social assistance perspective. Refugees are screened for assistance only occasionally and the UNHCR does not have the resources to re-interview all cases every year. As the movement in and out of poverty is high, coverage of the poor and leakage to the non-poor is expected to increase over time. To address this problem, one possibility is to combine poverty and vulnerability indicators, target refugees who are both poor and vulnerable, exclude refugees who are both non-poor and non-vulnerable, and use additional screening mechanisms (such as good predictors of poverty) to select the rest of beneficiaries.

(7) How effective are refugee assistance programs?

The current refugee assistance programs are very effective in reducing poverty if administered universally but the introduction of targeting severely reduces this capacity.

Syrian refugees currently benefit from two major assistance programs: The UNHCR cash assistance program and the WFP food voucher program. At the time of data collection, the UNHCR cash assistance program in Jordan provided JD 50 per month to cases including one or two members, JD 100 to cases with 3–5 members, and JD 120 to cases with more than five members. The WFP program in Jordan included two bi-weekly vouchers for a total value of JD 24 per person per month.

With universal coverage, both programs have the potential to reduce poverty significantly. The UNHCR cash assistance program can reduce poverty from 69.2 percent to 39.3 percent and the WFP food voucher program can reduce poverty to 32.3 percent. The combination of these two programs, if administered universally, can bring poverty down to 6.9 percent, a major achievement. However, at

the time of data collection, only the WFP program had quasi-universal coverage while the UNHCR cash assistance program was targeted using a combination of income and nonmonetary inclusion and exclusion criteria. This targeting reduced the cost of the program substantially, but our estimations show that the program was able to reduce poverty from 69.2 percent to 61 percent only. Due to budget constraints, the WFP program is also in the process of being scaled down and we should expect this program to have a smaller impact on poverty due to the reduced coverage. These programs are therefore relevant from a welfare perspective but this relevance is significantly scaled down by targeting and reduced coverage due to budget constraints.

(8) What is the potential for alternative policies?

The potential of alternative policies is grim. Classic development policies acting on education, skills, and the labor force have very low returns in a refugee context because of the very status of refugees and the limited set of economic opportunities.

The report simulates the impact on poverty and welfare in Jordan of changing certain attributes of the refugee population, simulating in this way the indirect effects on welfare of policies affecting these attributes. We find weak or no effects for policies that would affect the level of education, skills, or work status of the principal applicant. The reasons are simply explained. Due to their status, refugees live in an environment in which returns to education and skills are almost nil. Returns to informal work are so low that we do not observe any welfare difference between those who work and those who do not work. Formal employment requires a work permit, which is difficult to obtain as witnessed by the small number of refugees in Jordan who obtained this permit (about 6,000 in 2014). Even the income of refugees with a work permit does not stand out as a poverty-reducing mechanism. For example, the work permit variable is almost invariably non-significant in the welfare and poverty models. The only policies that may be both viable and effective are housing policies. In particular, policies aimed at reducing rents may prove effective as an alternative to cash transfers.

Returns to labor supply policies such as increased education and skills are low because economic opportunities for refugees are low. For development policies to become effective and a viable substitute to transfers, the set of economic opportunities available to refugees has to expand. While it is essential to continue investing in education and skills, substituting the existing monetary transfers with these policies is not an option at present. The lack of economic opportunities reduces returns to education and skills and changes returns in ways that we would not expect in a regular labor market. For example, we find cases headed by high-skilled refugees to show higher poverty than cases headed by skilled ones. These results highlight the long-standing dilemma faced by humanitarian agencies in seeking to transition from emergency humanitarian programs to long-term development programs. They suggest that there are no simple pathways at

the policy level to address the challenge of improving refugees' welfare and reducing poverty in the absence of transfers.

(9) How does welfare compare across countries and data sets?

The distribution of expenditure, mean expenditure, and poverty rates are within the same range in Jordan and Lebanon and across data sets, despite differences in sampling and other measurement issues.

Considering the fact that the samples of refugees in different countries and data sets are very different, differences observed in mean expenditure and poverty rates are not large. Comparing expenditure distributions, we find that LB-Verif data show the highest values across the four data sets considered, whereas among the three remaining data sets (JD-HV2, JD-HV3, and LB-VASyR) there is no absolute dominance in welfare. For lower parts of the distributions (among poorer people), JD-HV2 data show the lowest welfare; for upper parts of the distributions (among richer people) JD-HV3 data show the lowest welfare. Moreover, the cumulative distribution functions (CDF) curves cross several times, indicating that the ranking between distributions changes at each crossing point. We also found that the ranking across data sets shown by the poverty gap⁶ is not necessarily the same as the one shown by the poverty rate. This means that results on poverty are sensitive to the choice in poverty line and to the depth of poverty, a result that confirms findings in chapter 2 of the book.

Looking at the poverty rates (headcount, poverty gap, and severity of poverty),⁷ we find that refugees in Jordan are poorer than refugees in Lebanon. The poverty rates estimated using JD-HV2 and JD-HV3 data are higher than the ones estimated for Lebanon. The JD-HV3 data show the highest poverty rate overall (73.2 percent). The poverty gaps are also higher in Jordan as compared to Lebanon but the poverty gap for JD-HV2 is higher than for JD-HV3. The same is true for the severity of poverty. This indicates that, overall, poverty increased between the two rounds of the Jordan HV data but it declined among the poorest individuals. Instead, if we look at Lebanon, the poverty rates for the LB-VASyR data are always higher than poverty rates for the LB-Verif data. This is likely due to the different samples considered between the two surveys. The LB-Verif includes those refugees who appealed as they were excluded from the WFP food vouchers and are therefore expected to be better off on average.

(10) How transferable are the findings between countries and data sets?

Findings are similar across countries and data sets and, for a core set of dimensions, they are transferable.

The poverty profile is similar across the four data sets considered and, hence, between Jordan and Lebanon. The welfare and poverty models find a set of core variables to consistently predict poverty and welfare across countries and data sets. Variables that almost invariably predict higher poverty and lower welfare are: (1) case or household size; (2) the number of children; (3) crowding; and (4) unofficial arrival in the country. Variables that almost invariably predict lower poverty and higher welfare are: (5) renting or owing the property; and (6) living

in an apartment or house made of concrete. Having piped water or a proper latrine are also often found to be good predictors of increased welfare and reduced poverty. These are important findings because the four data sets considered are very heterogeneous in terms of samples, questionnaires, data collection methods, and degree of representation of the underlying population of refugees. Such findings provide the UNHCR with a solid baseline to target the refugee population based on a rather restricted number of indicators and irrespective of how the samples, questionnaires, and data sets are constructed.

There are clearly more similarities than differences in the two welfare and poverty modeling exercises in Jordan and Lebanon. Similarities may be attributed to the fact that the emergency context is similar (urban, protracted crisis), the affected population is similar although not identical (demographically, socio-economically, culturally), and the host countries have similarities (middle income, urbanized). This leads us to conclude that there is scope for improving and harmonizing the UNHCR's data-collection efforts across countries and also within countries. If this is done, the UNHCR will be in a very good position to target refugees based on a restricted number of indicators and on a reduced set of data-collection exercises, something that could contain the cost of the existing refugees' assistance programs significantly.

Policy Implications

As we learned from the results of this report, refugees are not a random sample of a population but a group who followed a particular trajectory determined by shocks and which leads into refugee status. Many among the Syrian refugees in Lebanon and Jordan had been in economic distress and on the move within Syria before the conflict because of a prolonged drought that affected the country during the years that led to the crisis. Over a million rural residents moved into the peripheries of the large cities, the same peripheries that would become the theater of heavy fighting during the conflict. Conflict was then responsible for displacing millions of people within Syria. Among this last group, some would find accommodation and resettlement within the country while others would opt or would be forced to leave. And among those who left the country, some would find a decent occupation and accommodation in the first country of asylum or other foreign countries, whereas the majority would register as refugees and become dependent on external assistance. The welfare status of households played a role in each of these selection processes and those who registered as refugees are expected to be a poorer subsample of the pre-crisis Syrian population.

Indeed, the report finds refugees to be, according to the UNHCR and hosting countries thresholds, very poor and highly vulnerable. These findings apply to both Jordan and Lebanon and also to the different data sets considered. As we saw, seven in ten refugees are poor if we consider the UNHCR threshold. Nine in ten refugees are poor if we consider the poverty lines used in Jordan and Lebanon, respectively. The range of good predictors of welfare and poverty is

rather narrow, which is consistent with populations characterized by high poverty. Case size, housing conditions, and a few characteristics of the principal applicant explain about half of the variability in expenditure and these predictors are very consistent across countries and data sets. Vulnerability, defined as the probability of experiencing poverty in the near future, is also found to be high among refugees and only partially overlapping with poverty. There is a thick layer of people who are not poor today but likely to experience poverty in the future. Many refugees come in and out of poverty frequently, adding to the phenomenon of economic insecurity. Monetary and nonmonetary measures of vulnerability can reflect very different needs; not all types of vulnerabilities can be addressed through financial means.

Syrian refugees in Jordan and Lebanon live in precarious legal and material circumstances. Although many Syrians are registered as refugees with UNHCR and the authorities, this does not automatically confer legal rights or entitlements for assistance. Nor are refugees housed in refugee camps where most of their material needs are met and financed by the international community. The vast majority in both countries are living on the margins in urban and peri-urban areas, many in informal settlements. They do have access to government services, although these are severely strained by the additional demand constituted by the refugee population. Humanitarian assistance delivery is insufficient to provide the full range of essential needs (food, accommodation, water) and services (health, sanitation, education). Limited formal access to the labor market and economic opportunities also constrain the prospects for self-reliance.

This complex welfare situation essentially keeps Syrian refugees in a *poverty trap*, which poses questions about the current policies and assistance arrangements for refugees. Refugees spend a large amount of their time to meeting basic needs and accessing basic services. They have very limited access to markets and economic opportunities, mostly in the informal sector. Existing refugee policies are effective in reducing poverty but they remain assistance measures that offer only temporary subsistence but no transition to work or improved access to economic opportunities. Returns to skills, former occupations, and education are extremely low. Our policy simulations show that typical development policies that invest in skills, education, and employability are unlikely to succeed in improving welfare if they are not accompanied by more comprehensive measures aimed at creating proper economic opportunities. The simulations indicate the limitations of the current approach to managing Syrian refugees and the economic implications and consequences of their marginalization in Lebanon and Jordan.

Confronted with this poverty trap, the international community faces a clear dilemma. On the one hand, keeping refugees in poverty cannot be beneficial to refugees, hosting governments, hosting communities, or the future of Syria. Poverty is associated with negative outcomes in a variety of dimensions, including health, education, crime, and insecurity, that cannot be in the interest of any stakeholder. On the other hand, continuing and expanding cash assistance and other support programs have their own challenges and limitations. Humanitarian

funding invariably decreases after the emergency phase of a crisis. Cash transfers are more efficient in meeting essential needs, especially during the early phase of displacement. They provide greater dignity and flexibility to the recipients. But they have not yet featured as longer-term instruments for social protection and there is a risk that without careful monitoring, they might create dependency were they to be sustained over the longer term. Moreover, in themselves cash transfers do not foster a transition to better economic prospects and do not provide an answer to the real questions of creating development opportunities for refugees and hosting communities and of fostering economic growth in the region affected by the crisis.

What are the alternatives to the current status of refugees and what policies could be imagined as an alternative to cash transfers? Hosting governments and humanitarian and developmental organizations engaged in the assistance to Syrian refugees require a different institutional and financial framework designed to address the short- and medium-term needs of refugees and hosting communities. In addition to transfers and better access to public services, this framework should foresee measures designed to lower entry barriers to the labor market and foster economic inclusion of refugees. Medium-term refugees' assistance policies should be seen as part of a medium-term growth and development strategy for areas hosting refugees and including hosting communities. In this sense, the specific policies required are not very different from policies designed for development and growth such as scaling up existing services, matching existing labor demand and supply, building a business environment conducive to economic growth, providing financial instruments tailored to small and medium businesses, upgrading human capital, boosting regional trade, or creating special economic zones to attract investments. Such policies are often recommended for poor areas or areas affected by major calamities or economic downturns, and could be considered in the context of the refugee crisis that is not short term.

Notes

1. <http://www.unhcr.org/>.
2. As this book went to press, a new international poverty line was re-estimated at \$1.90 a day, using 2011 purchasing power parity (PPP) exchange rates. For more information, please consult the *Global Monitoring Report 2015/2016* at www.worldbank.org/gmr.
3. A "case" is the UNHCR unit of observation. It is constituted by the principal applicant for refugee status and the people registering with the principal applicant. A case typically corresponds to a family or extended family.
4. The PA is the head of the case in UNHCR jargon.
5. Vulnerability is defined as probability of being poor in the near future.
6. The poverty gap is a measure of poverty that captures the average sum of distances of the poor from the poverty line. It is a measure of the depth of poverty.
7. The severity of poverty is a measure of the depth of poverty that gives more weight to the poorest among the poor.

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Concepts and Definitions

Individual and Social Welfare

In this work, we follow the standard economic approach of considering individual welfare, well-being, and utility as one and the same concept. These terms refer to a psychological and emotional state of happiness that derives from our past, present, and potential abilities, capabilities, and circumstances. For simplicity, we will use the term welfare throughout the work.

Economics has followed two different traditions in the measurement of individual welfare; the first uses a “direct” approach and the second uses an “indirect” approach. The first tradition of measuring welfare directly has also followed two different approaches. The first approach relies on subjective questions on happiness or life-satisfaction measured on scales of various dimensions such one to four or one to ten. The second approach relies on more objective assessments of happiness or pain with instruments capable of measuring these feelings. The first of these direct approaches has been made popular in recent years by the economics of happiness literature, which is now becoming mainstream in economics. The second of these direct approaches was pioneered by Edgeworth (1881) and has been used more recently in prospect theory (Kahneman and Tversky 1979).

The second tradition in the measurement of individual welfare takes an indirect approach by measuring individual choices in the market place. This has been the dominant approach in economics over the past century and constitutes the bulk of what is taught in microeconomic theory today. The underlying idea is that happiness cannot be directly observed and measured but it can be measured indirectly, thanks to the revealed preferences that individuals express in their consumption choices. If I consume more sugar, it is because I expect this additional consumption to increase my happiness. Under certain assumptions, by measuring consumption, it is possible to derive the additional utility that a person enjoys from this consumption.

In this work, we will follow the orthodox economic approach of measuring welfare indirectly via the revealed preferences approach. We do this for the simple reason that the quasi-totality of the welfare economics literature, and the

models and methods that derive from this literature, have been developed under this framework. The passage from individual to social welfare is also straightforward. We will consider social welfare as the sum of individual welfare. This implies that we consider identical individual utility functions across individuals, with no interrelations between utility functions.

Monetary and Nonmonetary Welfare Measures

We should then distinguish between monetary and nonmonetary welfare measurement. Various organizations use the terms economic and noneconomic welfare, but it is preferable to use the terms monetary and nonmonetary as they clarify, in our view, the nature of the variables at hand.

We can measure welfare using monetary indicators such as income, expenditure, or consumption or we can measure it with nonmonetary indicators such as asset indexes, or measures of deprivations in various dimensions such as health or education. The advantage of monetary indicators is that items of different sorts can be combined together with a natural weight, which is the monetary value of each item. This is why, for example, gross domestic product (GDP) is expressed in monetary value and not in physical quantities. The disadvantage of monetary indicators is that there are dimensions of welfare that cannot be easily captured with a money metric—such as the sense of security, friendship, or love—which evidently contribute to happiness, well-being, and utility.

Nonmonetary indicators can be constructed for many dimensions, but they can only be counted and do not have natural weights for the different dimensions. For example, one can count the property assets that an individual may have such as a car or a house, but there are no natural weights that one could apply to these items when they are aggregated into an index. One has to determine in a normative way what the most appropriate weights should be and normative choices have always advantages and disadvantages.

In this work, we use both monetary and nonmonetary indicators. The central work on welfare modeling will focus on monetary indicators; but the work on vulnerability will also model nonmonetary indicators and study the relation between monetary and nonmonetary indicators. It is important to note that while welfare usually refers to individuals, monetary welfare is mostly measured at the household level. That is because a household is defined as a group of individuals who share the same income and consumption. Hence, individual welfare is derived by dividing household (case) welfare by the number of people in the household (case).

Deprivation and Poverty

Monetary and nonmonetary welfare measures when applied to a population or a sample of a population result in welfare distributions. Welfare distributions are simply the collective representation of the welfare of a society by means of the selected welfare measure. They do not tell us anything about poverty or

deprivation of a population or subgroups of this population. If we want to measure poverty, monetary or nonmonetary, we need to introduce the concept of deprivation and determine a threshold under which a person may be considered deprived. We define deprivation as the lack of resources (financial and non-financial) preventing households from meeting basic needs.

Deprivation refers to the lack of resources in a broad sense. This includes the lack of all resources or material benefits (financial and non-financial) that allow refugee households to meet their basic needs. Conditions that lead to deprivation include threats to personal security; limited access to basic services such as shelter, health, education, as well as water, sanitation, and hygiene (WASH); food insecurity or insufficient nutrition; crowding; application of negative coping strategies; and others. Some non-financial deprivations may or may not be improved by access to financial resources. For example, even if a refugee household has financial resources to afford safe WASH facilities, these services may not be accessible or available for purchase in the areas where the refugees live. Similarly, if the cause of insufficient nutrition is lack of knowledge, then providing financial resources will not address the problem.

If we are considering a continuous measure of welfare such as income, expenditure, the number of cars, or the number of rooms, then we need to define a threshold under which a person may be considered deprived. For example, we consider poor all persons that fall below the poverty line, which is a monetary threshold for a monetary welfare measure. But we can also define thresholds for other continuous measures such as the number of cars or the number of rooms in a house. We could consider as “car deprived” a person who has zero cars and “rooms deprived” a person who lives in a house with less than two rooms. Humanitarian organizations use several thresholds of this type, such as a maximum number of people per toilet or a minimum number of square meters of floor space per person.

Vice versa, with discrete, non-continuous measures such as being sick or not being sick or having a fridge or not having a fridge (this can apply to cars of course if we prefer to use a binary indicator instead of a count indicator), one can only attribute values of “0” for “not have” and “1” for “have.” In this case, deprivation simply coincides with “not have” and one can aggregate deprivation at the societal level by counting the number of deprived persons or households in society.

Poverty and deprivation can be used as synonyms. We can speak of poverty in various monetary and nonmonetary dimensions and we can speak of deprivations in monetary and nonmonetary dimensions. This is also the approach followed in this study, although the term poverty will be mostly reserved for monetary indicators of welfare. In particular, the poverty profile provided in the welfare assessment is based on monetary indicators.

Once the welfare dimensions we are interested in (such as income or expenditure) and the deprivation threshold (such as the poverty line) are defined, deprivations can be added up in a multidimensional deprivation or poverty index. The tricky part is how to aggregate the different dimensions (for example by individual first and then by dimension or, vice versa, by dimension first and then by individual) and how to weigh each dimension. Decancq and Lugo

(2013), for example, reviewed the different weighting strategies and find tens of different methods, each providing different results. Once the dimensions are aggregated, the multidimensional indicators become continuous of course and one needs to establish a threshold to define who is multidimensionally deprived and who is not.

One question is whether multidimensional indicators are more effective in capturing welfare than the sum of their parts. Humanitarian agencies often use composite indexes to capture various dimensions of deprivation, which, by design, may or may not relate directly to the welfare of refugees. The extent to which composite indexes on vulnerability are effective in measuring the deprivation of refugees remains up for debate. To further this question, it is essential to assess the relationship of indexes to one another and to further test the capacity of composite indexes to assess refugees' deprivation and well-being. In this study, we show that is preferable to use simple rather than composite indicators to make the most of existing information on refugees. Nevertheless, composite indicators may be necessary when a latent phenomenon is not easily captured by available indicators.

Vulnerability

Development and humanitarian organizations make widespread use of the concept of vulnerability. Vulnerability is a key dimension of well-being since it affects refugees' behavior (in terms of investment, production patterns, and coping strategies), their ability to respond to shocks, and the perceptions of their own situations. However, quite different meanings are attributed to this term by various organizations and what exactly we mean by vulnerability is subject to debate. Humanitarian organizations use the term vulnerability in a broad sense and for multiple purposes. The term vulnerability includes addressing non-financial deprivations such as legal protection, personal security, dignity, access to basic goods and services, and others.

The term vulnerability is not formally used by the United Nations High Commissioner for Refugees (UNHCR). Rather, the UNHCR speaks of persons of concern who are "at risk" of being deprived of their rights as defined by international human rights, humanitarian, and refugee law. For example, international law defines access not only to basic needs and services, but also to protection processes or security from violence. The UNHCR Division of International Protection prefers the term "at risk" to vulnerability, as the latter suggests helplessness or passivity. That said, in recent months the term vulnerability, and more specifically economic vulnerability, has been used more frequently within the context of the targeting efforts for Syrian refugees.

However, on the operational level and in the context of the Syrian crisis, the term vulnerability is used in various contexts. The UNHCR is using the term economic vulnerability to define the target group for cash assistance, and the eligibility criteria for this program are both monetary and nonmonetary. For example, income or expenditure are used to separate the poor from the non-poor

and additional protection and vulnerability criteria are used for targeting to complement the expenditure criteria. Moreover, different criteria are used in different surveys like the Vulnerability Assessment on Syrian Refugees (LB-VASyR) in Lebanon or the Home Visits in Jordan as detailed below.

The World Food Programme (WFP), the United Nations Children's Fund (UNICEF), and UNHCR in Lebanon initiated the Vulnerability Assessment on Syrian Refugees (LB-VASyR), a project that aims at identifying a set of variables that could be used as key eligibility criteria for targeting beneficiaries. This organization understands vulnerability as a multi-sector concept with indicators spanning across numerous sectors.¹ In Lebanon, household vulnerability is the presumed likelihood of the household to not cover basic needs of all members without engaging in irreversible coping strategies due to a lack of financial resources. Criteria include indicators of food security and economic vulnerability, as well as self-reported coverage of household basic needs (shelter, WASH, education, non-food items, and so forth). Eight sector-specific vulnerabilities are defined, including food security, economic vulnerability, education, health, non-food items, protection, shelter, and WASH. A household is classified into one of four vulnerability categories according to each of these eight sectors, and the sector scores are then summed to produce a global vulnerability score.

The Vulnerability Assessment Framework (VAF) Steering Committee² in Jordan defines vulnerability as the risk of exposure of Syrian refugee households to harm, primarily in relation to protection threats, the inability to meet basic needs, limited access to basic services, and food insecurity, and the inability of the population to cope with the consequences of this harm. Furthermore, vulnerability is considered to be multidimensional (it varies across physical space and among and within social groups), scale dependent (with regard to time, space, and units of analysis) and dynamic (the characteristics and driving forces of vulnerability change over time). Three layers of vulnerability also exist related to (1) geographic location and proximity to services; (2) community/household level factors such as access to services, community cohesion, safety, and security; and (3) individual/household vulnerability based on UNHCR specific needs categories (similarly to the WFP categories). The VAF system is used to create a household hardship formula, which results in a score based on the sum of household vulnerability levels (low, mild, moderate/high, and severe) within each of eight sectors; more weight is given to food security and economic vulnerability scores. Furthermore, the VAF Steering Committee makes a clear distinction between welfare and vulnerability by stating that expenditure is a proxy for welfare but not vulnerability. The VAF determines the vulnerability status of a case according to the following criteria:

1. Head of household gender/disability/under 18/over 60/divorced/widowed/separated
2. Dependency ratio
3. Involuntary household relocation

4. Expenditure/income gap/external assistance received
5. Coping strategy index/social safety net strength
6. Water availability
7. Excreta disposal system reliability/ratio of household members to functional latrines/latrine accessibility
8. Crowding index
9. Syrian identity document availability
10. Birth registration
11. Registration status
12. Food consumption score/dietary sources/food sources/breast feeding/infant nutrition
13. School attendance
14. Youth literacy and numeracy
15. Access to health services by target populations

In this book and in chapter 3 in particular, we will use an economics' interpretation of the vulnerability concept. This concept is relatively new in economics and the relevant literature is recent. The essential theory dates back to the work of Morduch (1994) on the economics of uncertainty and mostly explores the concept of risk. There is no unanimity in definitions and one can group research in this area under three groups: (1) vulnerability as inability to cope with risk; (2) vulnerability as the risk of poverty; and (3) vulnerability as expected poverty in the near future (Ceriani 2015). The World Bank does not have a unique definition of vulnerability and loosely refers to the concept as the probability of being in poverty today or falling into deeper poverty in the future, thus covering definitions (2) and (3). In chapter 3, we will use the term vulnerability as defined in point (3) above.

We can also distinguish between monetary and nonmonetary vulnerability. Again, some prefer the term economic and noneconomic vulnerability, but monetary and nonmonetary seem more precise concepts. When discussing vulnerability to poverty in the report we mostly refer to monetary vulnerability, which is what the World Bank and welfare economics usually refer to. We will refer to nonmonetary vulnerability when discussing nonmonetary dimensions of vulnerability, such as many of the vulnerability indicators used by humanitarian organizations. As for poverty and deprivation, vulnerability can be one-dimensional or multidimensional and the previous discussion on weights also applies in the case of vulnerability.

Notes

1. The term sector in this context refers to classification according to a subject or topic and is not equivalent to an economic sector (an area of the economy in which businesses share related products or services).
2. The Vulnerability Assessment Framework (VAF) Steering Committee in Jordan was set up in January 2014 to oversee the development of the VAF and facilitate better targeting of

Syrian refugees with humanitarian assistance, on the basis of vulnerability. VAF Steering Committee members are: ACTED, CARE International, DRC, ECHO, Handicap International, PRM, PU-AMI, UN Women, UNHCR, UNICEF, WFP, and WHO. See: http://data.unhcr.org/syrianrefugees/working_group.php?Page=Country&LocationId=107&Id=69.

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A Profile of Refugees

Introduction

Since the beginning of the crisis in the Syrian Arab Republic, almost 4.3 million refugees have been registered (as of November 17, 2015). This includes 2.1 million Syrians registered by UNHCR in the Arab Republic of Egypt, Iraq, Jordan, and Lebanon; 2.2 million Syrians registered by the government of Turkey; and 26,772 Syrian refugees registered in North Africa (UNHCR 2015a). Furthermore, over 6.5 million Syrians are internally displaced (UNHCR 2015b). The scale and impact of the spillovers from the Syrian conflict have had profound political, economic, and social consequences for the neighboring countries.

This chapter focuses on Syrian refugees in Jordan and Lebanon and uses UNHCR registration and household survey data to determine the refugees' socioeconomic profile. A comparative analysis of Syrian refugees in Jordan and Lebanon and the Syrian population before the crisis is undertaken to determine whether Syrian refugees are systematically different in their socioeconomic profiles from the Syrian pre-crisis population. More specifically, this chapter concentrates on understanding the characteristics of the refugee population in terms of their specific socioeconomic dimensions. Refugees are typically a self-selected portion of a population with larger shares of women and children and atypical family structures. This part of the report aims at understanding how different the Syrian refugee population is compared to the Syrian pre-crisis population and the hosting population for countries where data are available. Moreover, it will be important to understand the human capital embodied in refugees, how this human capital is eroded over time, and how the potential creation of new human capital is hampered by the conditions in which refugees live. Loss of human capital has long-term developmental implications and understanding the potential dimension of this loss can help to design policies that prevent or at least mitigate it.

The chapter is organized as follows. The next section discusses macroeconomic factors leading up to the Syrian crisis. Syria's economic performance during this "decade of shocks" showed encouraging and adverse results. The third section presents a comparative analysis of the socioeconomic profile of the populations in Syria, Jordan, and Lebanon before the Syrian crisis to help understand if refugees in these countries differ from the "regular" population and, if so, in

what dimensions. The fourth section provides a comparative analysis of socioeconomic dimensions of Syrian refugees in Jordan and Lebanon and the Syrian pre-crisis population with the aim to help understand what types of people had to flee and what their respective socioeconomic characteristics are. The final section concludes.

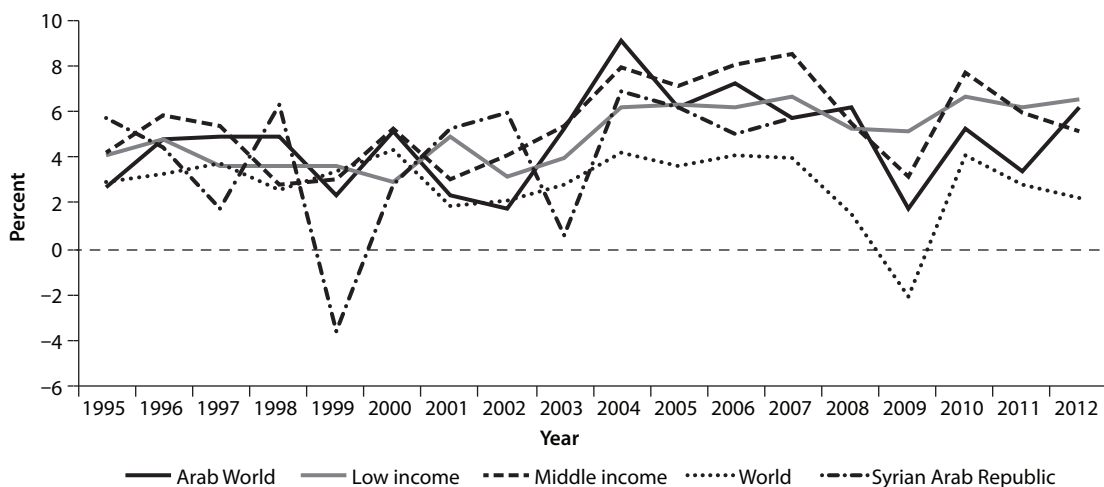
Macroeconomic Factors Leading Up to the Crisis

The factors leading up to the Syrian crisis were social, economic, and political in nature. This section provides a brief description of some of the key economic developments during the decade that preceded the crisis. The Syrian economy underwent a structural transformation and achieved substantial progress during the decade leading up to the crisis. Moving away from a contracting oil sector, non-oil sectors contributed positively to gross domestic product (GDP) and the role of the private sector increased considerably throughout the 2000s. The Syrian government introduced gradual market-oriented reforms to move to more diversified production driven by the private sector. It also experienced some significant challenges in the forms of lagging per capita GDP growth compared to peer countries and growth that was not shared equally across its population (World Bank 2010).

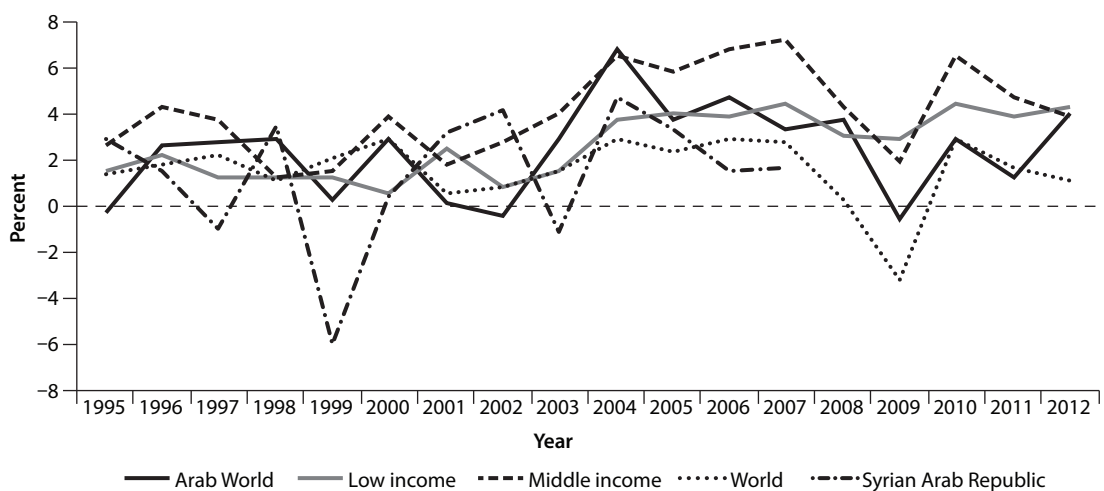
Syria's transformation from an oil-dependent economy dominated by the public sector to a diversified economy driven by the private sector was, according to the World Bank's Economic Memorandum of 2010, achieved through steady market-oriented reforms implemented by the Syrian government in the 2000s. Non-oil GDP in total output grew from 70 percent in 2000 to almost 90 percent in 2009 while the oil sector contracted. The role of the private sector also substantially increased through the liberalization of trade laws and increased private sector financing opportunities (World Bank 2010).

At the outset of the 2000s, world growth rates averaged around 5 percent with relatively small differences between developed and emerging economies. The 2001 global financial crisis is associated with a visible decline in world output, affecting all groups of countries and reducing average growth rates by about 2–3 percentage points. The decline in economic activity and sectoral growth hit the Arab world particularly hard in comparison to other low- and middle-income economies. For example, if we focus on the period 2000 to 2002, the group of countries that saw the largest decline are Arab countries (figure 1.1). After the economic downturn and starting from 2002, all groups of countries experience increasing growth rates up to the 2007 to 2008 global financial crisis. Figure 1.1 also shows that Syria's decline in output in 2000 was particularly stark, with a decrease in growth of 3.5 percent. However, Syria performed strongly particularly after 2004; between 2004 and 2007, Syria grew on average by 7.9 percent per year with broad-based growth of all non-oil sectors, led by construction and services (World Bank 2010).

Even though Syria's average annual growth in GDP was encouraging, Syria's performance in average per capita GDP growth was less promising. GDP grew by 5.5 percent from 2000 to 2007 but GDP per capita only grew by 2.5 percent

Figure 1.1 GDP Growth Rates in the Arab World, Low- and Middle-Income Countries, and the World, 1995–2012 (%)

Source: World Development Indicators Database.

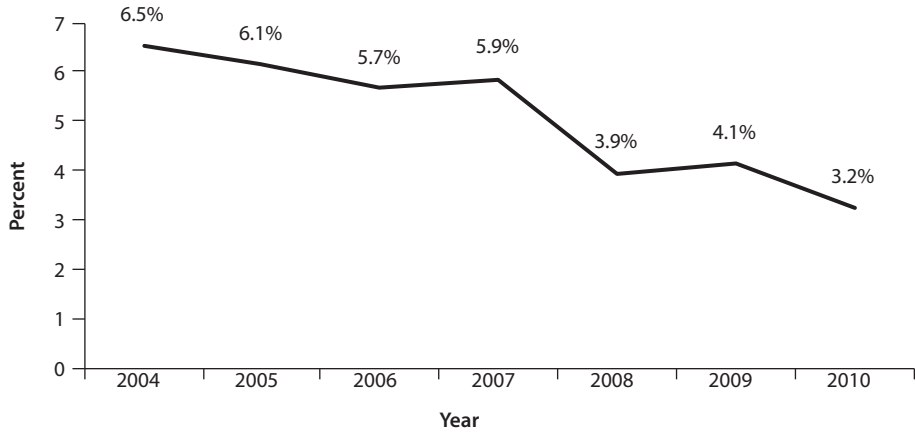
Figure 1.2 GDP Per Capita Growth Rates in the Arab World, Low- and Middle-Income Countries, and the World, 2000–10 (%)

Source: World Development Indicators Database.

(figure 1.2). Furthermore, during the same period, GDP per capita growth in Syria was lower than in the Arab world (3.4 percent), low-income countries (3.1 percent), and middle-income countries (5.5 percent).

Moreover, looking at growth rates throughout the global financial crisis of 2008, we find that the Syrian economy weathered the global financial crisis fairly well with a growing economy; but the rate of GDP growth decreased between 2004 and 2010, coming to its lowest point in 2010 at 3.2 percent (figure 1.3).

Figure 1.3 Syria GDP Growth, 2004–10 (%)



Source: IMF World Economic Outlook Database, October 2014.

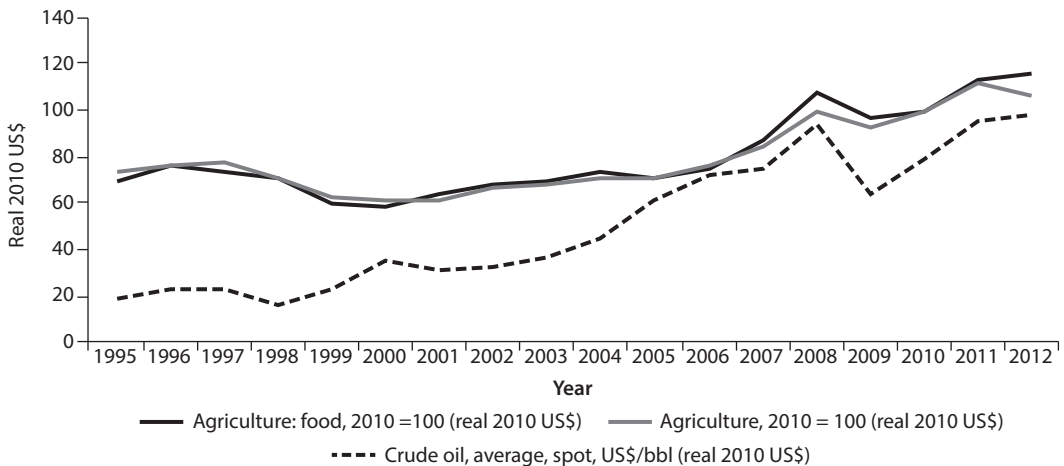
Note: Gross domestic product based on PPP per capita GDP.

This growth rate did not compare poorly relative to world average but it is the deceleration of the economy which becomes of concern during the period.

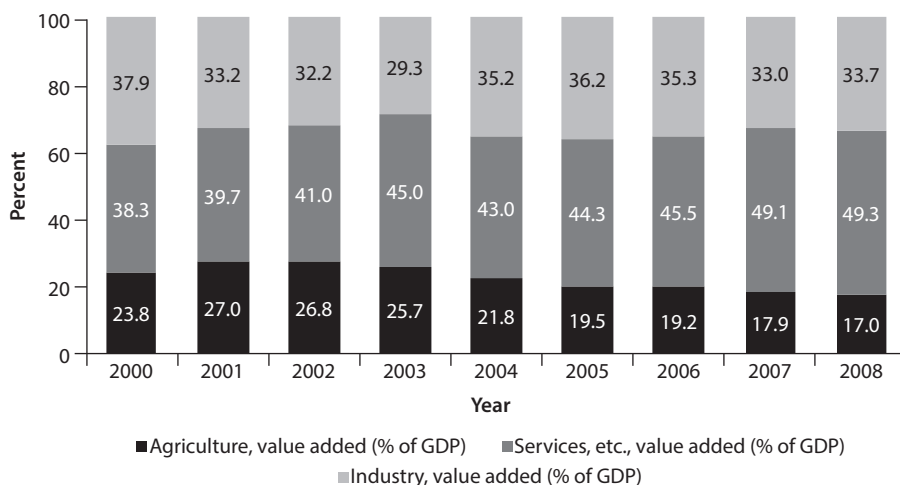
The decreasing growth rates observed between the two major worldwide economic shocks of the decade coincided with drastic increases in oil and food prices. As shown in figure 1.4, oil, food, and agricultural prices in general experienced sharp growth during the 2004–08 period and then again after the 2007–08 global financial crisis. These increases were good news for producers but not for consumers, a factor that likely played a role in the increasing social instability that eventually erupted in the Arab Spring in 2011.

Considering sectoral growth rates, we see that Syria experienced a decline in the agricultural sector from 23.8 percent in 2000 to 17 percent in 2008 while

Figure 1.4 World Prices of Food, Agricultural Products, and Crude Oil, 1995–2012 (real 2010 US\$)



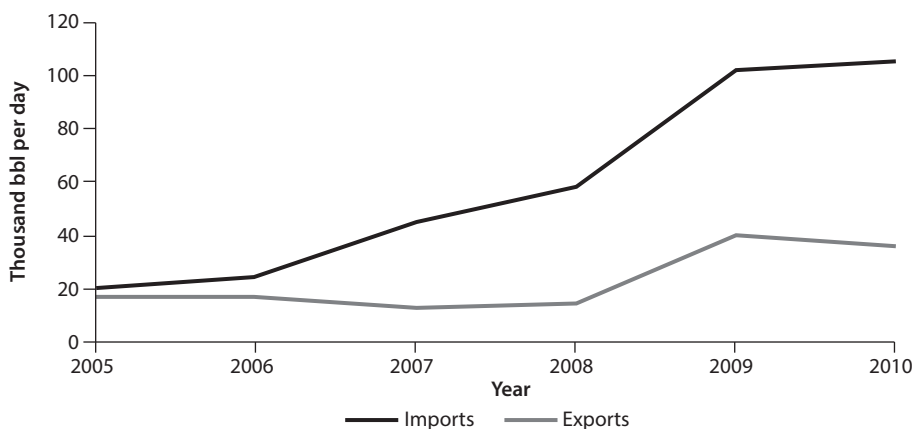
Source: World Bank Commodity Prices Database.

Figure 1.5 Sectoral Value Added as Share of GDP, 2000–08 (%)

Source: World Development Indicators Database.

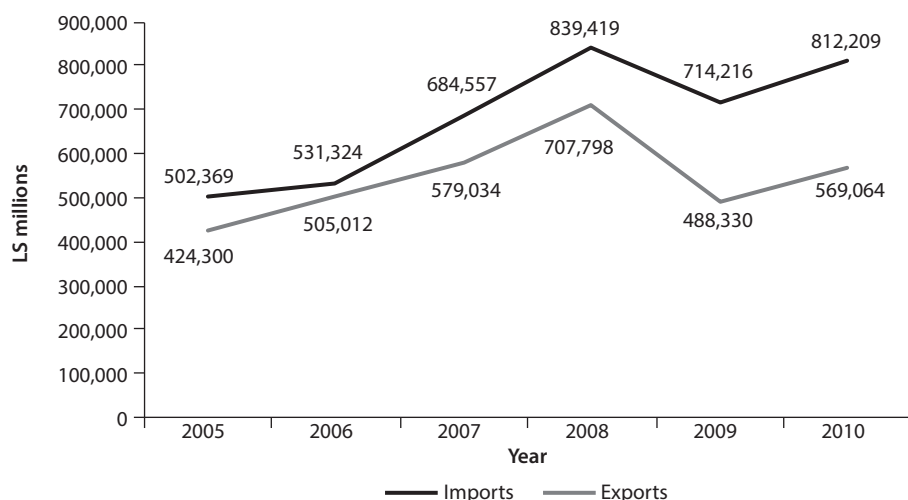
the service sector grew from 38.3 percent of GDP in 2000 to 49.3 percent in 2008 (figure 1.5). Growth in the 2000s was largely driven by increases in private consumption and to a lesser extent investment and government spending. The services and agricultural sectors experienced increases in labor productivity while industry registered declining productivity, which can be largely attributed to declines in the oil, electricity, and water sectors (World Bank 2010).

Syria has significant wealth in petroleum resources, which could have positive consequences for the budget, as oil is a major source of government revenue (SCPR 2013). However, figure 1.6 shows that Syria's oil exports decreased over time while imports increased. As a result, refined petroleum's trade balance

Figure 1.6 Syrian Imports and Exports of Refined Petroleum, 2005–10 (Thousand Barrels per Day)

Source: U.S. Energy Information Administration, International Energy Statistics.

Note: Total imports and exports of refined petroleum products (thousand barrels per day).

Figure 1.7 Trade Deficit in Syria, 2005–10 (LS million)

Source: Syrian Central Bureau of Statistics.

Note: Exports and imports in millions of Syrian pounds (LS millions).

worsened over time with almost three times as much refined petroleum imported than exported in 2010 as compared to the beginning of the decade. According to data from the Central Bureau of Statistics, Syria's trade deficit has increased every year since 2006 with imports exceeding exports by 243 billion Syrian pounds (LS 243 billion) in 2010 (figure 1.7). Imports rose much more quickly than exports, with finished products contributing the most to this significant increase as extractive industries such as oil decreased significantly. Therefore, as the country did not take full advantage of increasing oil prices as a producer, the trade deficit worsened while consumers suffered from increasing prices across most commodities, including food.

The global rise in food and agricultural prices also coincided with a severe and prolonged domestic drought between 2006 and 2009, a factor that is said to have contributed to the outbreak of the conflict in Syria (Kelley et al. 2015). About 75 percent of the entire land area of Syria is used for agriculture but only 10 percent of all agricultural land is irrigated (World Bank 2015). The lack of implementation of urgently needed modern irrigation systems made the sector highly dependent on rainfall. Thus, when the drought hit Syria in the second half of the 2000s, many farmers were not able to harvest for four consecutive years, and herders lost over 80 percent of their livelihood due to a lack of pasture and fodder (Erian et al. 2011).

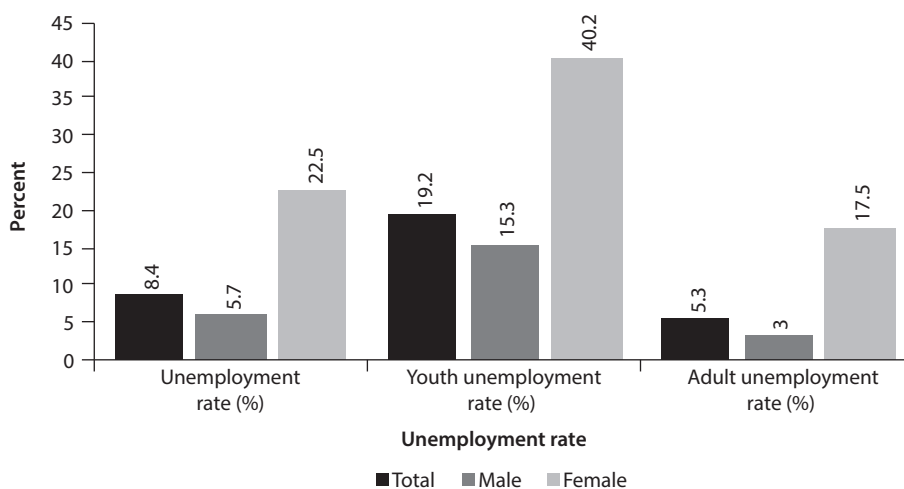
The drought led to dire economic and social consequences, resulting in the dislocation and migration of hundreds of thousands of farm workers from the rural Northeast to the overpopulated and under-serviced cities. According to the IFRC (2010), 60 percent of Syria's land and 1.3 million people were affected by the drought with just over 800,000 people having lost their livelihoods. "In the eastern governorates of Al Hassakeh, Deir-ez-Zor, Raqqah, Homs and Hama, the

drought has had an impact on almost the entire rural population. An area that used to be the granary of Syria” (IFRC 2010). The dislocation of rural populations to cities decreased agricultural employment in Syria, affecting many women, the vast majority of whom worked in occupations related to skilled agriculture, forestry, and fishery (about 41.5 percent in 2007). In 2006, about 20 percent of all employment in Syria was provided by the agricultural sector; agricultural employment declined to 5 percent within just four years.

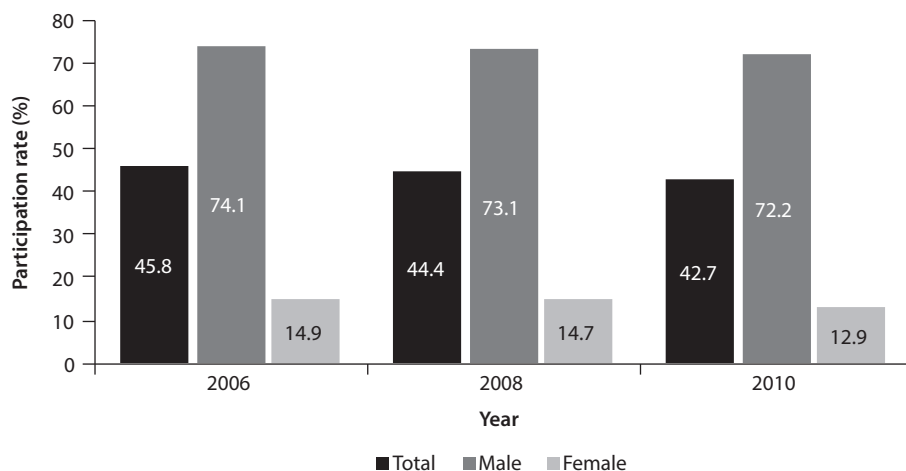
The internal migration of rural populations from the Northeast to urban centers served as a multiplier for social and economic pressures on a system already burdened by a large influx of Iraqi refugees. The 500,000 refugees from Iraq (of whom 225,000 were registered as refugees with the UNHCR) largely settled in urban areas, where they contributed to steep increases in prices of consumer goods, real estate, and increased demand for subsidized goods (IMF 2007). Furthermore, according to the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA 2011), over 500,000 Palestinian refugees were registered in Syria in 2010, many of whom lived in camps. Syria’s high population growth numbers (2.6 percent annually over the period 2001–10) combined with a large influx of refugees led to increased pressure on scarce natural and economic resources such as water, land, and jobs.

Another challenge to the Syrian economy was the fact that growth was not inclusive in the decade leading up to the crisis. Despite growth, job creation was weak and Syria experienced an unemployment rate of 8.4 percent in 2010 with large discrepancies in male (5.7 percent) and female (22.5 percent) unemployment (figure 1.8). The unemployment rates, which may not seem particularly high, coupled with low labor force participation rates (particularly for females of only 12.9 percent in 2010, figure 1.9), show that many Syrians did not contribute productively to the economy. In addition, figure 1.8 shows that young people

Figure 1.8 Syrian Unemployment Rates by Sex, 2010 (%)



Source: ILO 2013.

Figure 1.9 Syrian Labor Force Participation Rates by Sex, 2006, 2008, and 2010 (%)

Source: ILO 2013.

faced stark challenges in the labor market with youth unemployment rates (19.2 percent) almost four times as high as adult unemployment rates (5.3 percent) and young females suffering from an unemployment rate of 40.2 percent. Syria before the crisis had a very large young population and over 50 percent of all those unemployed were between 15 and 24 years old.

Syria had also a very young and growing population. As discussed in more detail in the following sections, the country had almost 60 percent of the population under the age of 25. Furthermore, the labor force grew rapidly, a growth of 36 percent from 2000 to 2008 according to the World Bank (2010). The demographic pressure, coupled with an economy that was not able to absorb the young labor market entrants by providing productive employment opportunities, led to a high youth unemployment rate and brought along social and political risks. The analysis by the World Bank (2010) of the Syrian economy furthermore states that “reforms after 2004 led to improvements in growth and efficiency, and the role of the private sector expanded. However, increases in private investment did not lead to a boost in investment rates, which remain low by international standards. Key obstacles to inclusive growth in Syria are regulatory uncertainty, credit misallocation, protection rates that introduce considerable anti-export bias, and infrastructure bottlenecks mainly related to electricity.”

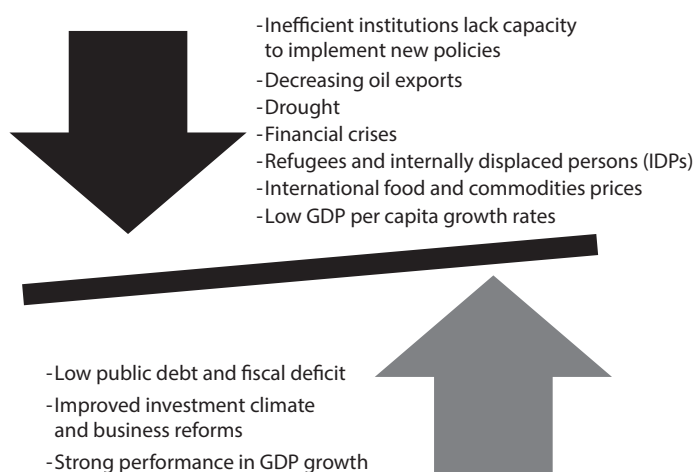
Growth in Syria was neither pro-poor nor inclusive and the benefits of growth do not appear to have trickled down to the majority of Syria’s population. According to the Syrian Center for Policy Research (SCPR), “the vast majority of Syrian households incurred a decline in their real expenditure between 2004 and 2009 due to the rise in commodity prices worldwide, local liberalizing of fuel and fertilizers prices, and poor market efficiency, all of which caused a considerable rise in prices and an erosion of purchasing power. In addition, data show a

considerable discrepancy between the various governorates with respect to average household spending” (SCPR 2013). Furthermore, the Syrian economy failed to absorb new labor market entrants and the vulnerability of Syrians increased.

In essence, it is clear that during the decade that led to the Syrian crisis, the country suffered from multiple and repeated shocks despite decent growth rates, good budget management, and an acceptable business climate. The positive factors did not contribute enough to achieve sustained increases in per capita GDP, the creation of jobs, and the reduction in poverty. According to the SCPR (2013), “the current crisis in Syria is rooted in ‘institutional bottlenecks,’ which marginalized large segments of society and deprived them of effectively contributing to the political, economic and social development.” The surge in the young population (represented by the large increase of the proportion of young people within the overall population), the migration of large parts of the population from rural to urban areas, the unequal distribution of development across regions, and the impossibility for many Syrians to attain a decent standard of living caused a deep and prolonged crisis in Syria. Furthermore, institutional constraints also seemed to have played a role.

On balance, the negative factors dominated the positive ones (figure 1.10). But what is most relevant for the analysis that follows is that millions of people living in Syria at the time of the outbreak of the crisis in March 2011 had been already on the move, including over a million Syrians who were internally displaced by the drought and economic distress. Most of these people migrated to areas that later became heavily affected by war and who eventually became refugees in neighboring countries. Hence, the welfare and vulnerability analyses of Syrian refugees that we will carry out in chapters 2 and 3 of this study are to be understood in the context of a population that was already heavily affected by economic hardship before the flight to neighboring countries.

Figure 1.10 Encouraging and Adverse Results of Syria's Economic Performance in the 2000s



Comparing Syrians, Jordanians, and Lebanese before the Crisis

To understand the challenges and opportunities that Syrian refugees face in their host communities in Jordan and Lebanon, it is vital to not only comprehend the socioeconomic profile of refugees, but also to compare it to the socioeconomic profile of their host communities’ populations. This section compares the socio-economic profiles of the populations of pre-crisis Syria, Lebanon, and Jordan to understand if these populations were systematically different from one another before the crisis, in which dimensions, and what implications this may have.

Age composition

The age composition of the populations in Syria and Jordan were fairly similar in 2010 with small proportions of the population (3 and 4 percent, respectively) over the age of 64 and about 35 percent of the population under the age of 15 (table 1.1). Lebanon’s population on the other hand appears to be older on average with a larger proportion of elderly people (8 percent) and a much smaller proportion of the population under the age of 15 (24 percent). The population growth rates for Syria, Jordan, and Lebanon are 2.4, 2.2, and 2.2 percent, respectively, and about 49 percent of the population is female.

As a result of the age composition, dependency ratios were similar in Syria and Jordan, with Syria having the highest age dependency ratio of 65.2 percent while Lebanon has a lower overall dependency ratio encompassing a much larger share of the older population (figure 1.11).

This difference in the age structure of Syrians, of which a subset are Syrian refugees, particularly compared to Lebanon, may create difficulties in terms of institutional frameworks and set-ups. Institutions or certain facilities (education, health care, and so forth) may not be set up to absorb such a large influx of a population that is so vastly different from the host communities’ populations.

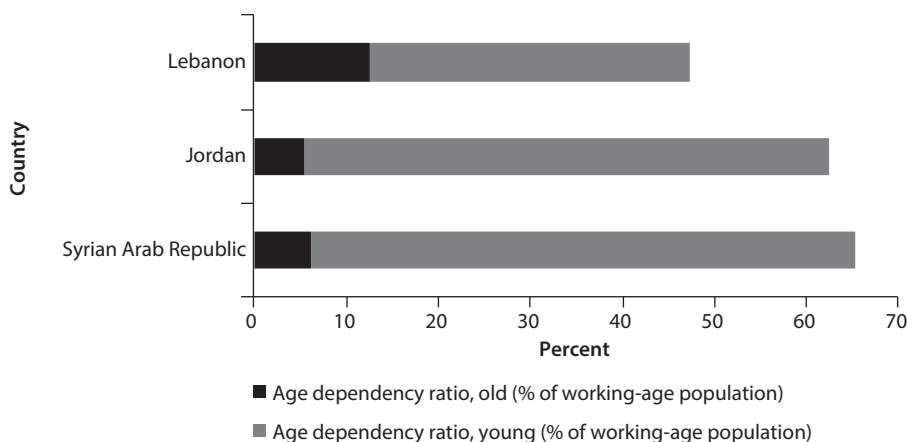
Education

Jordan had higher enrollment rates¹ for primary and secondary education than Syria and Lebanon while Syrian and Lebanese enrollment rates are fairly similar (figure 1.12). Considering educational enrollment, we assume that Syrian refugees will lag behind the enrollment rates of Jordan and presumably Lebanon when taking into account all refugee children, who currently miss out on

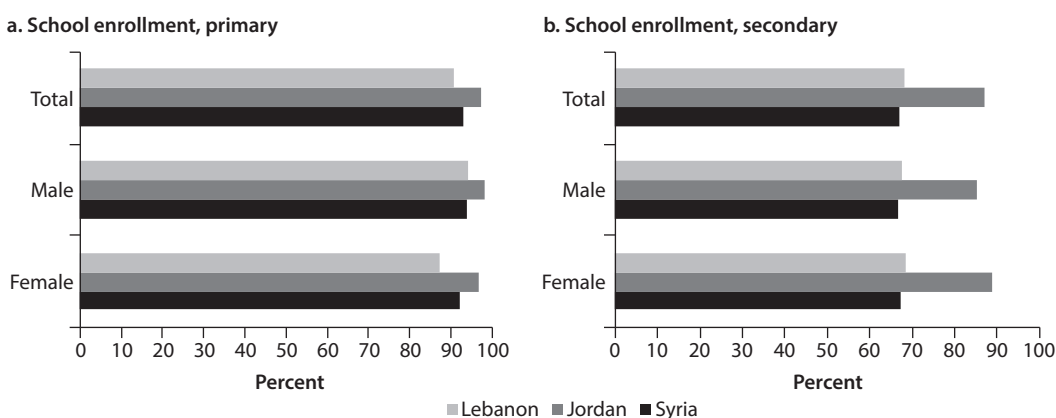
Table 1.1 Population in Syria, Jordan, and Lebanon by Age as a Percentage of Total Population, 2010

Country	Age range		
	0–14	15–64	65+
Syrian Arab Republic	35.7	60.5	3.7
Jordan	35.1	61.5	3.4
Lebanon	23.7	67.8	8.4

Source: World Development Indicators Database.

Figure 1.11 Dependency Ratios in Syria, Jordan, and Lebanon, 2010 (%)

Source: World Development Indicators Database.

Figure 1.12 Primary and Secondary School Enrollment Rates in Syria, Jordan, and Lebanon, 2010 (%)

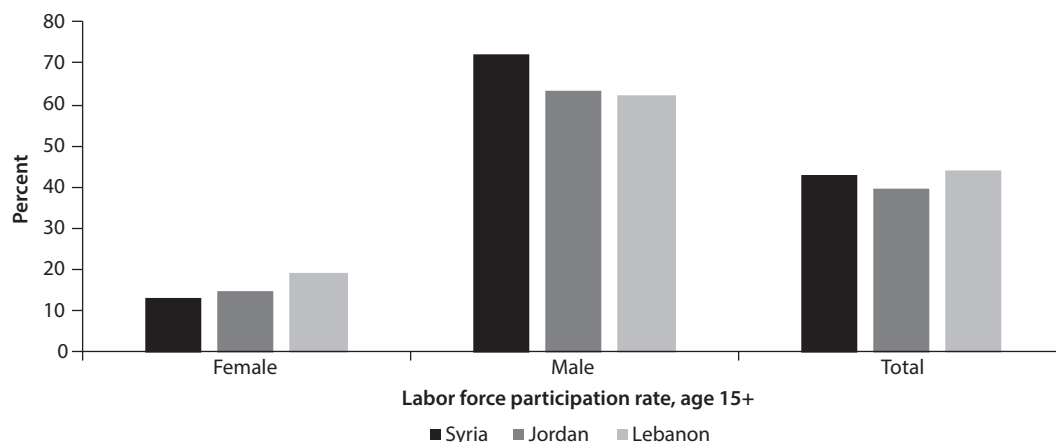
Source: World Development Indicators Database.

Note: Primary school enrollment rates for Syria are from 2009 and secondary school enrollment rates for Jordan are from 2008.

valuable educational years as they do not attend school in their host countries or have gaps in their educational history.

Employment

The labor force participation rates in Syria and Jordan are fairly similar, and both had very low female labor force participation rates of 12.9 and 14.7 percent, respectively, in 2010 (figure 1.13). In Lebanon, the female labor force participation rate in 2007 was higher at 19 percent. However, the overall labor force participation rate is similar in the three economies (44.2 percent in Lebanon in 2007 compared to 42.7 and 39.5 percent in Syria and Jordan, respectively, in 2010).

Figure 1.13 Labor Force Participation Rates in Syria, Jordan, and Lebanon by Sex, 2010 (%)

Source: World Development Indicators Database.

Note: Data for Syria and Jordan are from 2010; data for Lebanon are from 2007.

Employment patterns in Syria, Jordan, and Lebanon differ substantially (see more details in subsequent section). Table 1.2 shows that employment in the agricultural sector accounts for only 3 and 6.3 percent of all employment in Jordan and Lebanon, respectively, in 2009 while in Syria, 15.2 percent of the employed work in the agricultural sector. Furthermore, the industrial sector has much larger employment shares in Syria compared to Jordan and Lebanon.

The Syrian population differs in terms of composition and structure from the populations in Jordan and Lebanon. Syrians tend to be younger, are more likely to work in agriculture, and less likely to work in services. Structural differences in the labor markets in Syria, Jordan, and Lebanon will impact the opportunities of Syrian refugees in their host communities regarding skills and employability. Most Syrian refugees may not be qualified to work in the employment categories sought after in the economies of Jordan and Lebanon. Lack of qualifications, combined with tight restrictions to enter the Jordanian and Lebanese labor markets, will compel many refugees to move to low-paid and low-skilled employment. Another severe consequence is the resulting erosion in skills and employability of Syrian refugees, which may affect the long-term development trajectory of the Syrian economy after the crisis.

Table 1.2 Employment by Sector as a Percentage of Total Employment in Syria, Jordan, and Lebanon, 2009

Country	Agriculture	Industry	Services
Syrian Arab Republic	15.2	32.5	52.3
Jordan	3.0	19.5	77.5
Lebanon	6.3	21.0	72.6

Source: World Development Indicators Database.

Socioeconomic Dimensions of Syrian Refugees in Jordan and Lebanon

The adverse socioeconomic factors leading up to the crisis in Syria included: (i) the inability of the Syrian economy to create productive employment for youth, worsened by demographic trends such as an increase of the proportion of young people within the overall population; (ii) the migration of large parts of the population from rural to urban regions due to the drought; (iii) the unequal distribution of development across regions; and (iv) the challenge for some parts of the population to attain a decent standard of living. How do refugees differ from the Syrian pre-crisis population? What type of people had to flee? Is there a systematic difference between refugees and a “regular” population? To gain an understanding of the Syrian refugees’ population—which is a subset of the “regular” Syrian population—it is instructive to compare their socioeconomic profile to the socioeconomic profile of the Syrian pre-crisis population. This comparison provides clues as to the socioeconomic background Syrian refugees may have come from and determine similarities and differences of refugees compared to the overall Syrian population.

There are three distinct groups of Syrians who have left the country as a result of the crisis with presumably different economic and social means. Their common factor is that they cannot safely return to their place of origin. The first group was forcibly displaced and stayed within the borders of Syria as internally displaced persons (IDPs). The second group of people migrated as a result of the conflict in search of economic opportunity elsewhere (non-refugee migrants). The third group of people, also forcibly displaced, left Syria to register as refugees in other countries.

The SCPR (2015) estimated that there were 6.8 million IDPs in Syria at the end of 2014, most of whom fled conflict zones or badly damaged areas and resettled in safer areas within the borders of Syria. Most of these IDPs left everything behind and are in need of basic services and assistance. However, the SCPR (2015) estimates that the Syrian “government has been able to provide shelters and support for less than 5 percent of IDPs, with the majority residing in host communities throughout the country.” It is hard to have an assessment of the welfare of these IDPs but it is evident that this group of people faces economic hardship as well as being at risk of war, conflict, and widespread violence.

Non-refugee migrants leave Syria due to the conflict not as refugees but to find regular work and residence in other countries. This group consists mainly of middle-class professionals and wealthy Syrians who often left early on during the conflict and have means and/or good connections to migrate as non-refugees. The SCPR (2015) estimates that this group reached 1.55 million people by the end of 2014.

The third group of Syrians affected by the crisis are people registering as refugees, often taking on risky journeys to get to neighboring countries to register with the UNHCR. Refugees will either live (i) in refugee camps (official or unofficial) or (ii) in host communities. Syrian refugees in Lebanon and Jordan live for

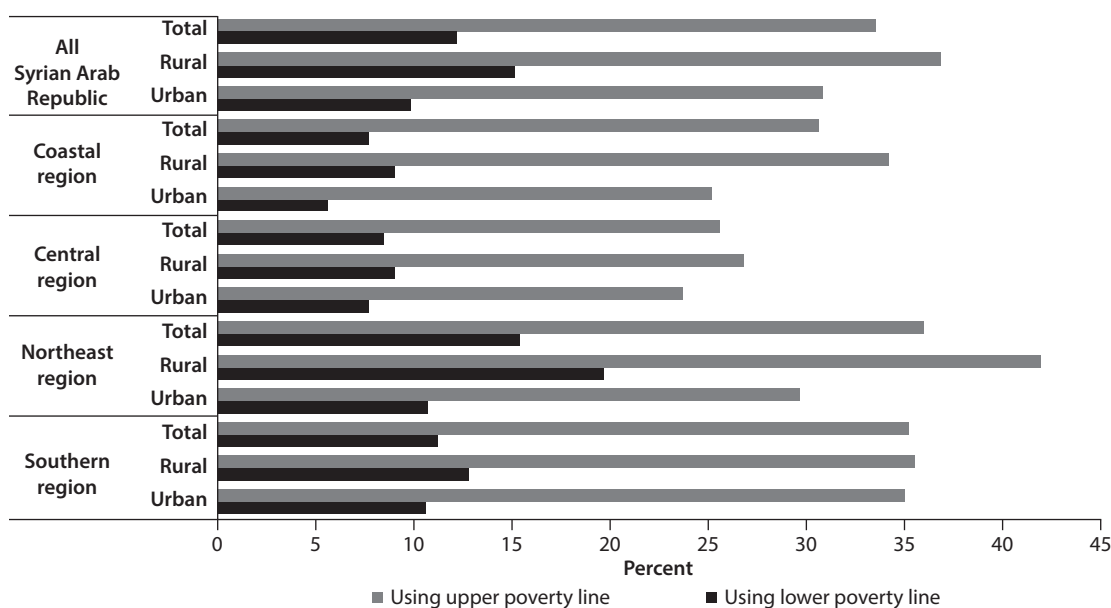
the large part in host communities. There are no official refugee camps in Lebanon and refugees are dispersed in local communities throughout the country. In Jordan, about 80 percent of Syrian refugees live in non-camp settings, mostly urban areas in the north of Jordan. The other 20 percent live in the refugee camps of Za'atari, Marjeeb al-Fahood, Cyber City, and Al-Azraq. The biggest refugee camp in Jordan (Za'atari) holds over 80,000 registered refugees.

As of November 2015, 1,075,637 Syrian refugees were registered in Lebanon and 633,644 were registered in Jordan (UNHCR 2015a). This study as well as this chapter focus exclusively on non-camp refugees living in host communities in Jordan and Lebanon and we cover a population of refugees of approximately 1.7 million people living in host communities. In the next section, we provide a basic socioeconomic profile of this population.

Origin and destination of refugees

According to Abu-Ismaïl et al. (2011), overall poverty in Syria in 2007, measured by the share of the population under an upper poverty line,² stood at 33.6 percent of the population (6.7 million Syrians). Furthermore, 12.3 percent of the population were estimated to live in extreme poverty, measured by the share of the population under a lower poverty line. Poverty has a strong spatial dimension; poverty in Syria was concentrated mainly in rural areas (figure 1.14). This fact is particularly stark in the Coastal and Northeast region, where poverty rates in rural areas are 10 percentage points higher than in urban areas.

Figure 1.14 Poverty Headcount Rates in Syria by Region, 2007 (%)

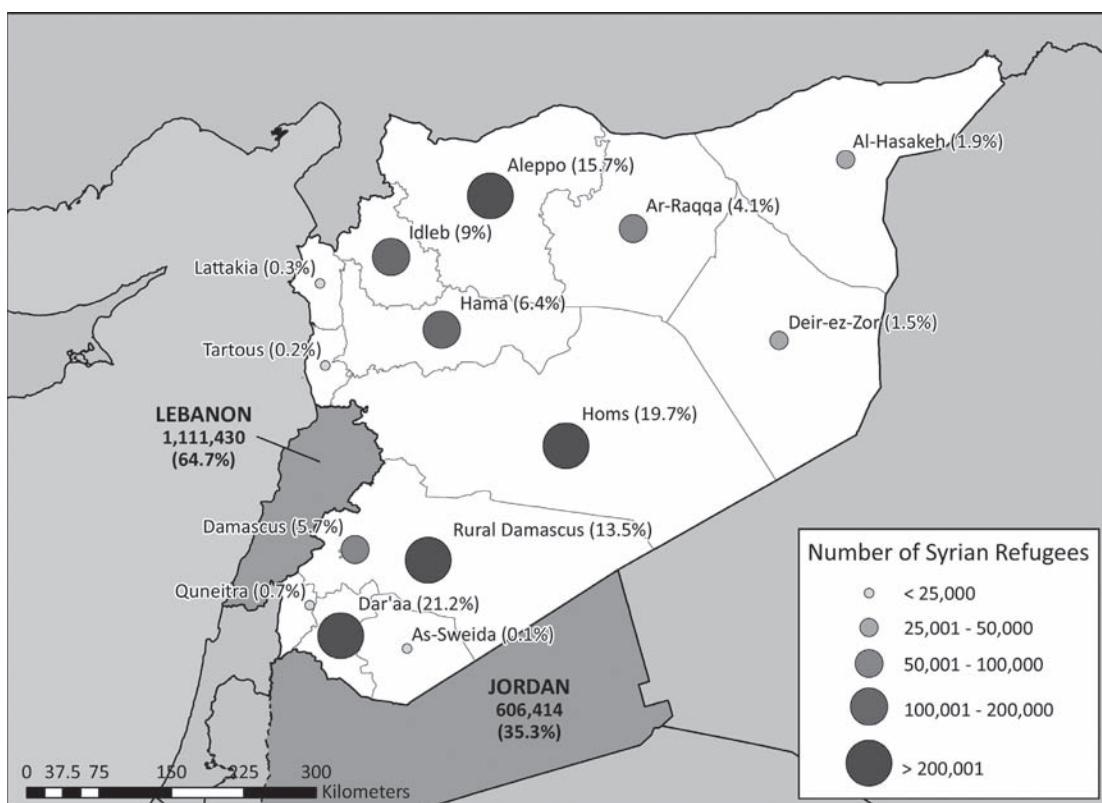


Source: UNDP Poverty Assessment based on HIES data produced by the Central Bureau of Statistics.

Comparing these poverty rates to refugee outflows shows that just under a third of all refugees comes out of the poorest Northeast regions of Idleb, Aleppo, Ar-Raqqa, Al Hasakeh, and Deir-ez-Zor. This should not be a surprise. First, the Syrian data are for 2007, a time when the drought had not reached its peak crisis. In fact, what these statistics tell us is that the population affected by the drought who later fled to the central cities of Syria already had a high poverty incidence before and during the drought. Moreover, as shown below, the cities to which the drought-related IDPs moved to are the same cities from which refugees fled. This fact can indeed be verified, as refugees originating from these Northeast regions have the highest incidence in poverty (for more details, see chapter 5 of this report).

Map 1.1 displays the density of all refugees leaving Syria by governorate who registered with the UNHCR in either Lebanon or Jordan.³ About 65 percent of all Syrian refugees in our data set went to Lebanon and about 35 percent to Jordan. Due to proximity, the overwhelming majority of Syrian refugees registered in Jordan come from Dar'a (47.1 percent), followed by Homs (16.4 percent)

Map 1.1 Density of Refugees Leaving Syria by Governorate, 2011–14 (%)



Source: Estimations based on ProGRES data.

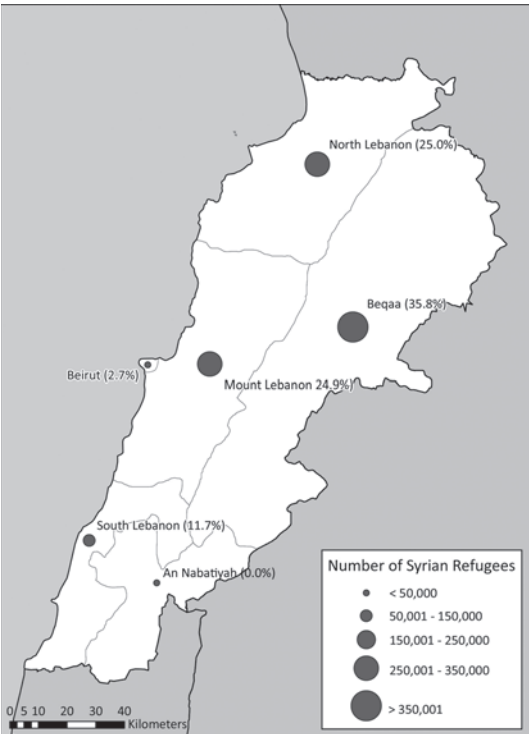
Note: The density map was kindly provided by the World Bank Group's Rapid Application Development (ITSQS) Unit based on ProGRES data.

and rural Damascus (12.9 percent). Just over 50 percent of Syrian refugees registered in Lebanon come from three governorates in Syria: Homs (21.4 percent), Aleppo (20.5 percent), and rural Damascus (14.1 percent). What is interesting to note here is that the place of origin did not necessarily determine the country of destination. Syrians who had to flee from Homs or Damascus, for example, went either to Lebanon or to Jordan with no apparent preference for one country over the other.

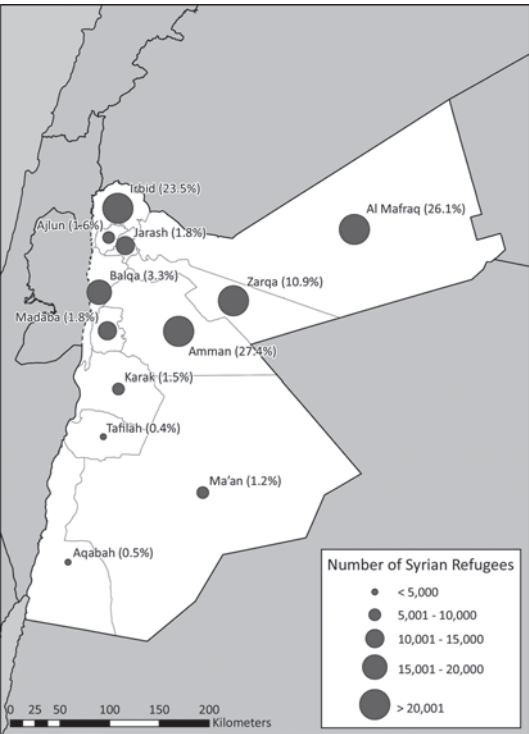
The majority of refugees, about 85 percent, fleeing to Lebanon settled in three governorates: Bekaa (36 percent), North Lebanon (25 percent), and Mount Lebanon (25 percent). Chapter 5 of this report shows that Bekaa and North Lebanon are also the regions hosting the poorest refugees. In Jordan, the majority of refugees settled in the border governorates of Al-Mafraq (26 percent) and Irbid (24 percent), followed by the governorate of the capital Amman (27 percent) (map 1.2). Refugees fleeing to Jordan saw an even greater concentration with the quasi-totality of refugees concentrating in four of the northern governorates (Irbid, Al-Mafraq, Zarqa, and Amman).

Map 1.2 Density of Syrian Refugees in Host Communities by Governorate in Lebanon and Jordan, 2011–14 (%)

a. Syrian refugees in Lebanon



b. Syrian refugees in Jordan



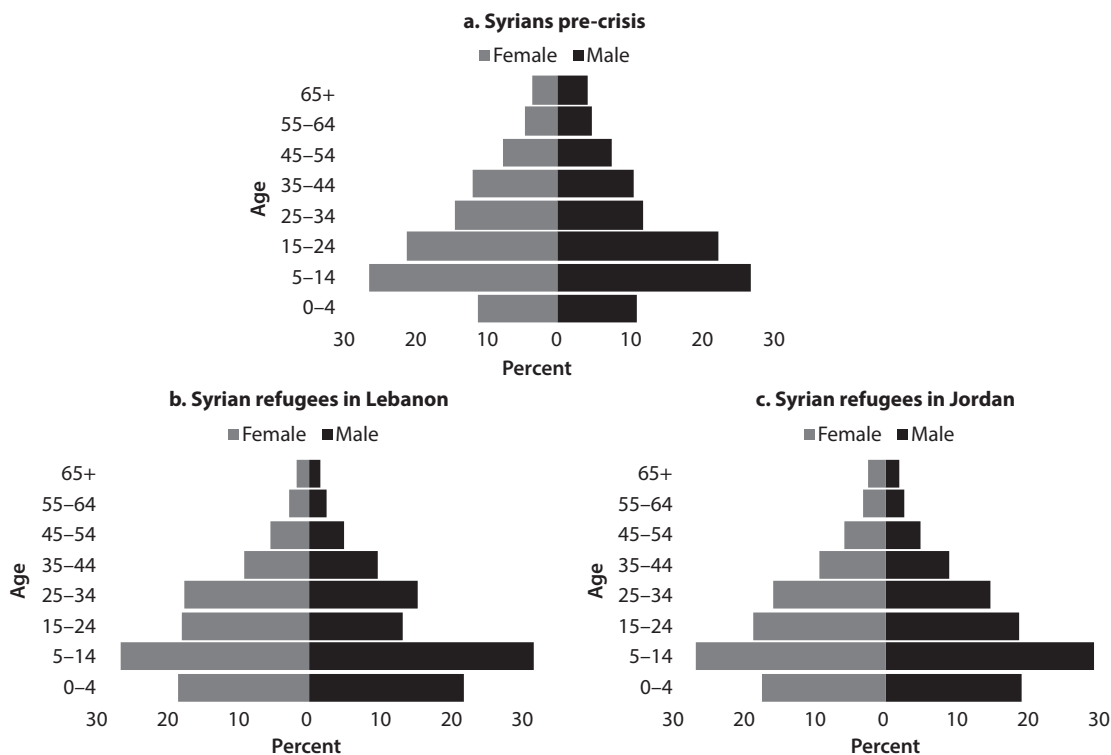
Source: Estimations based on ProGRES data.
Note: The governorates South Lebanon and An Nabatiyah are combined into one governorate in the ProGRES data (South Lebanon). The scales of the two panels of the map are different. The density map was kindly provided by the World Bank Group's Rapid Application Development (ITSQS) Unit based on ProGRES data.

Sex and age composition

The Syrian pre-crisis population in 2007⁴ was very young but the Syrian refugee population in 2014⁵ is even younger and consists of a larger share of females than the pre-crisis population; 52.2 percent of all Syrian refugees in Jordan and Lebanon are females (figure 1.15). In the Syrian pre-crisis population about 11 percent of the population was between 0 and 4 years while only 4 percent of the population was 65 years or older. The Syrian refugee population is younger and has a larger share of young children (aged 0–4) of 19.4 percent while only 2 percent of the refugee population is over 65 years. About 45 percent of the Syrian pre-crisis population was under the age of 18 and about 73 percent was under the age of 35 against 54 and 81 percent, respectively, for the refugee population.

Even though the Syrian refugee population is younger than Syrians pre-crisis, curiously, there are fewer 15–24 year olds who registered as refugees in Lebanon and Jordan compared to the pre-crisis population. This is particularly stark for the male refugee population registered in Lebanon—a “dent” in the age pyramid can be observed—only 13.1 percent of all Syrian male refugees are between 15 and 24 while 18.8 percent are in this respective age group of Syrian refugees in Jordan and 22.5 percent in the Syrian pre-crisis population. This can be

Figure 1.15 Age Pyramid by Sex of Syrians (Panel A), Syrian Refugees in Lebanon (Panel B), and Syrian Refugees in Jordan (Panel C), 2007 and 2014



Source: Estimations based on HIES 2007 and ProGres data.

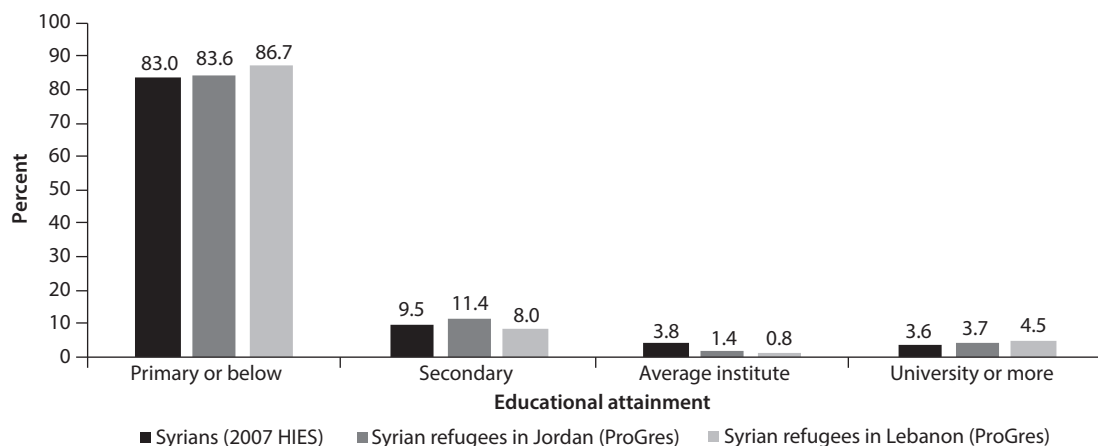
attributed to several factors. For example, the way the registration is conducted in Lebanon may be slightly different and refugees in that age group may have fewer incentives to register as refugees with the UNHCR. However, this could also mean that many individuals in this age group stay in Syria to engage in the conflict or have been victims of the conflict.

The age composition of Syrian refugees poses several challenges. Understanding the challenges that come along with such a young population is imperative to recognizing the human capital embodied (or not embodied) in refugees, as this may have long-term developmental consequences. Most refugees are children who therefore have specific needs in terms of schooling, training, and health care (physical and psychological). If refugee children do not go to school (and survey data in Jordan and Lebanon led us to believe that many do not), human capital cannot be built, with consequent long-term developmental implications. Understanding the potential dimensions of this loss helps us to design policies that prevent or at least mitigate these losses. Furthermore, the comparative analysis of welfare and poverty of Syrian refugees in chapter 5 shows that the welfare of refugees increases with the age of the household head. The younger the Syrian refugee population, the younger the household head tends to be, and therefore the poorer the household is expected to be.

Educational attainment

Educational attainment for Syrians in 2007 was bunched in the lower segments with only 9.5 percent of the population with completed secondary education. Syrian refugees have even lower levels of educational attainment than the Syrian pre-crisis population. Discrepancies in male and female educational attainment tend to be small for the aggregated educational groups displayed in figure 1.16. About 86.7 percent of all Syrian refugees in Lebanon have primary education or

Figure 1.16 Educational Attainment for Pre-Crisis Syrians and Syrian Refugees Five Years and Older, 2007 and 2014 (%)



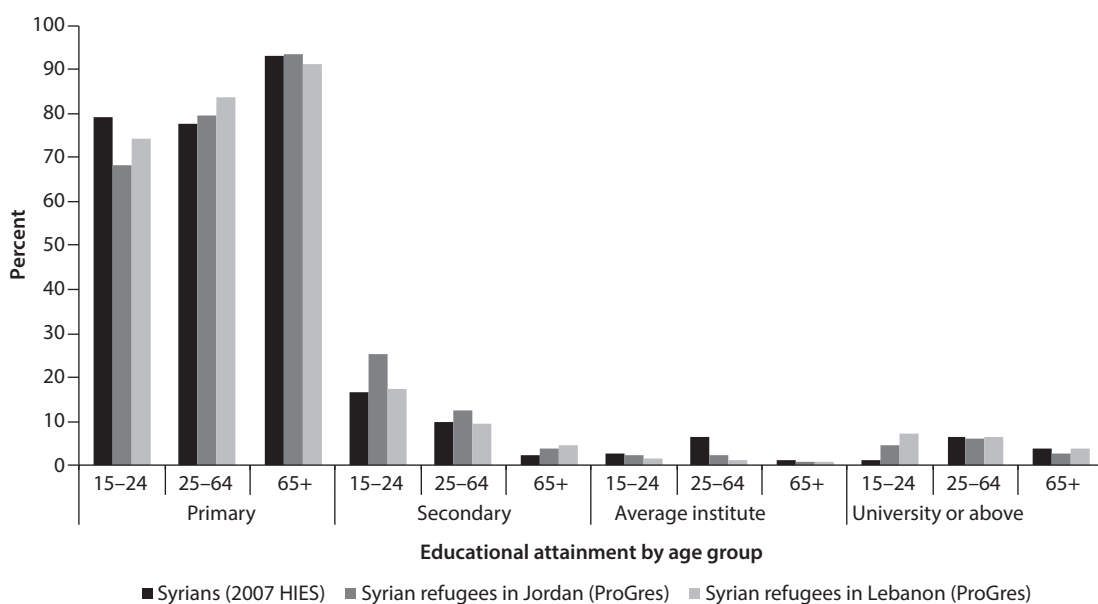
Source: Estimations based on HIES 2007 and ProGres data.

below while this percentage stands at 83.6 percent in Jordan.⁶ Fewer Syrian refugees in Lebanon and Jordan have average institute degrees as compared to the Syrian pre-crisis population (0.8 and 1.4 in Lebanon and Jordan and 3.8 percent for pre-crisis Syrians, respectively), but university education is similar across the three populations.

Looking at educational attainment by broad age groups (figure 1.17) of the working age population (15 years or more) shows that primary educational attainment for young Syrians, those between 15 and 24 years, is lower than for older Syrians (those 25 and older) but a higher percentage of younger Syrians has completed secondary education. The Syrian population of 65 years and older has much lower levels of education in all three populations (Syria pre-crisis, Syrian refugees in Jordan, and Syrian refugees in Lebanon), which points to the fact that Syria made substantial progress in educational attainment in the decades before the crisis. Figure 1.17 also shows that Syrian refugees between 15 and 24 years have higher levels of education than the Syrian pre-crisis population with higher rates of secondary and university-level education.

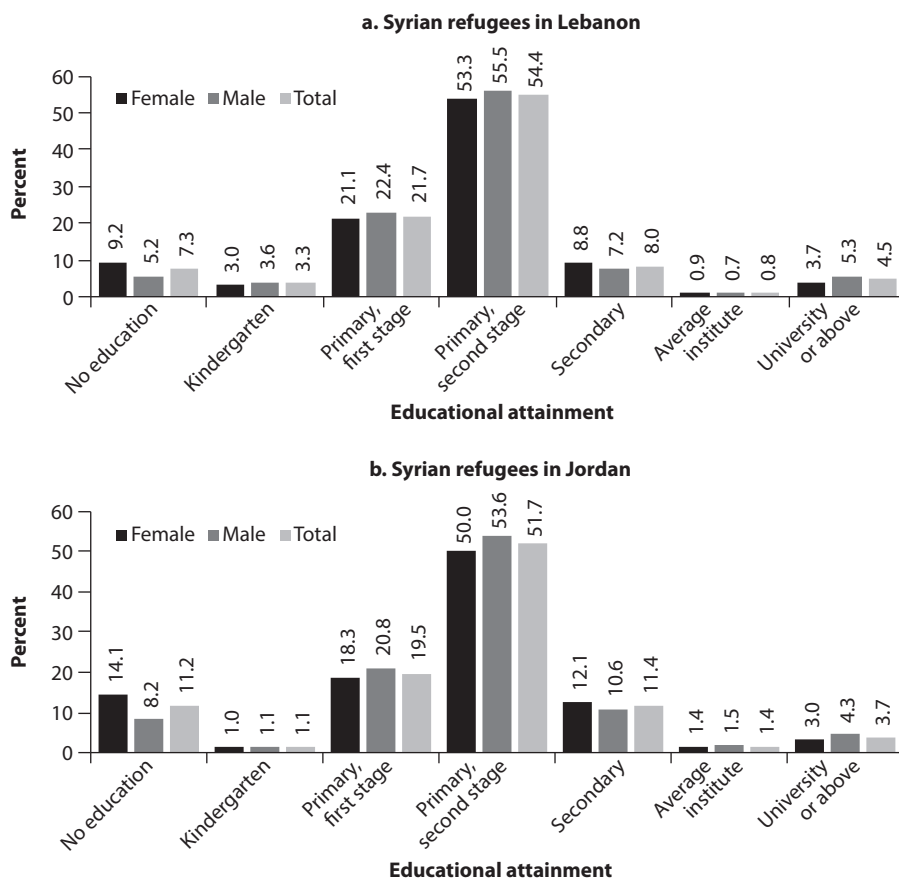
Comparing Syrian refugees in Lebanon and Jordan, we find that refugees in Lebanon fare slightly worse in terms of educational attainment with only 13.3 percent of refugees with secondary education or above (figure 1.18). In Jordan, 11.2 and 19.5 percent have no education or completed the first stage of primary education, compared to 7.3 and 21.7 percent, respectively, in Lebanon. Female Syrian refugees in Lebanon (panel a) and Jordan (panel b) are more likely to have no education (9.2 percent and 14.1 percent, respectively) compared to their

Figure 1.17 Educational Attainment by Age Group for Pre-Crisis Syrians and Syrian Refugees 15 Years and Older, 2007 and 2014 (%)



Source: Estimations based on HIES 2007 and ProGres data.

Figure 1.18 Educational Attainment of Syrian Refugees Five Years and Older in Lebanon (Panel A) and Jordan (Panel B) by Sex, 2014 (%)

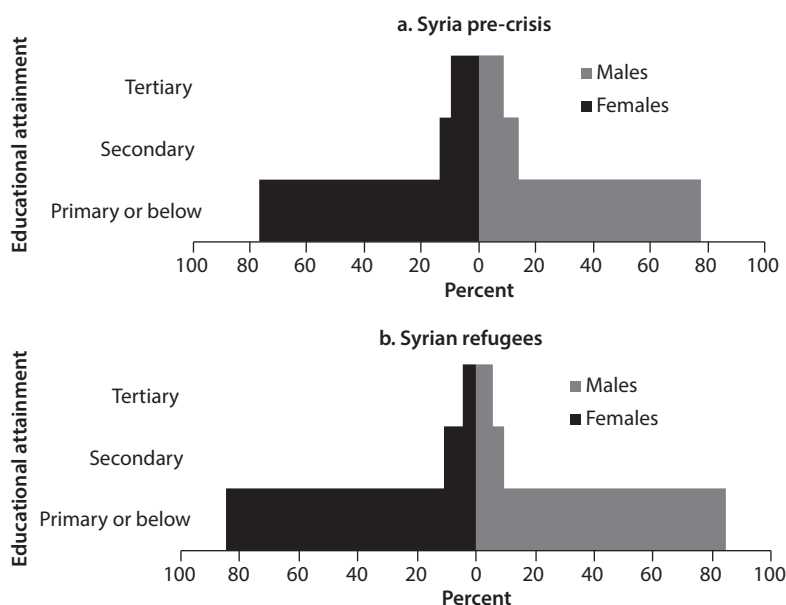


Source: Estimations based on HIES 2007 and ProGres data.

male counterparts (5.2 and 8.2 percent, respectively). However, Syrian refugees in Jordan have a higher rate of secondary education (11.4 percent) compared to Syrian refugees in Lebanon (8 percent). The differences in educational attainment between refugees and the Syrian pre-crisis population could stem from the fact that the Syrian refugee population is much younger than the Syrian pre-crisis population and is therefore less likely to be of age for certain levels of educational attainment. Furthermore, refugees living in households where the household head has a higher level of education have a higher welfare on average than those living in households with a household head with lower levels of education (see chapter 5 for details).

Considering the age of the large majority of Syrian refugees (almost half are under the age of 15), it is inevitably important to invest in their education, particularly for children and young adults. In Jordan for example, official enrollment records by the Jordanian Ministry of Education indicate that 127,857 Syrian

Figure 1.19 Educational Attainment at Five Years or Older for Pre-Crisis Syrians (Panel A) and Syrian Refugees (Panel B), 2007 and 2014 (%)



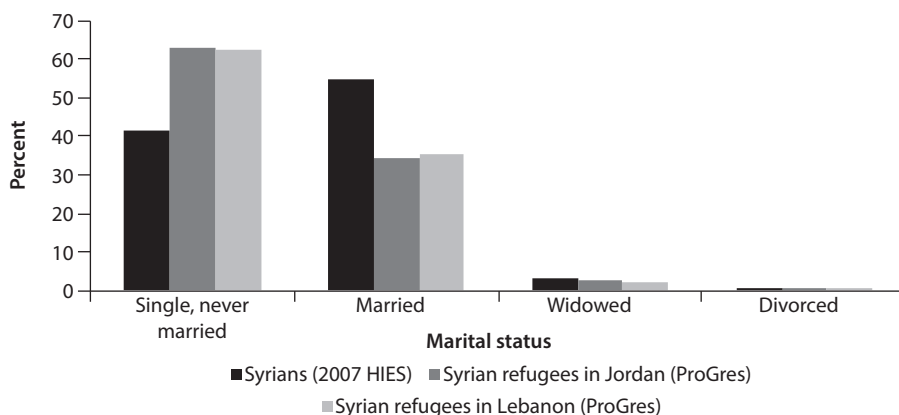
Source: Estimations based on HIES 2007 and ProGres data.

children are enrolled in public schools across Jordan in the school year 2014/2015 (UNHCR 2015). However, our data show that there are a total of 297,014 school-aged children, those between the ages of 5 and 17. Furthermore, an upcoming report by the WFP, UNHCR, and UNICEF (2015) shows that two-thirds of Syrian refugee children in Lebanon did not receive any education and 44 percent of all children of school age (3–17 years) have not attended school for at least one year. Figure 1.19 shows the educational pyramid of the Syrian pre-crisis population and Syrian refugees, which tends to have become “flatter” from pre-crisis Syrians to refugees, with a higher percentage of the refugee population attaining primary education or below. We expect this educational pyramid to become even flatter in the years to come as the gap to pre-crisis Syria will widen if young refugees do not receive education in their host communities.

Marital status

The Syrian refugee population is much more likely to be single than the Syrian pre-crisis population (figure 1.20). This presumably stems largely from the much younger age of refugees and the fact that getting married can be very costly and is therefore often not attainable for refugees. The conflict in Syria has also kept many young adults at marriage age away from marriage. The marital status of Syrian refugees in Jordan and Lebanon is similar, with about a 10 percentage point higher occurrence of single males compared to females and a higher percentage of married females compared to males.

Figure 1.20 Marital Status of Pre-Crisis Syrians and Syrian Refugees in Lebanon and Jordan, 2007 and 2014 (%)



Source: Estimations based on HIES 2007 and ProGres data.

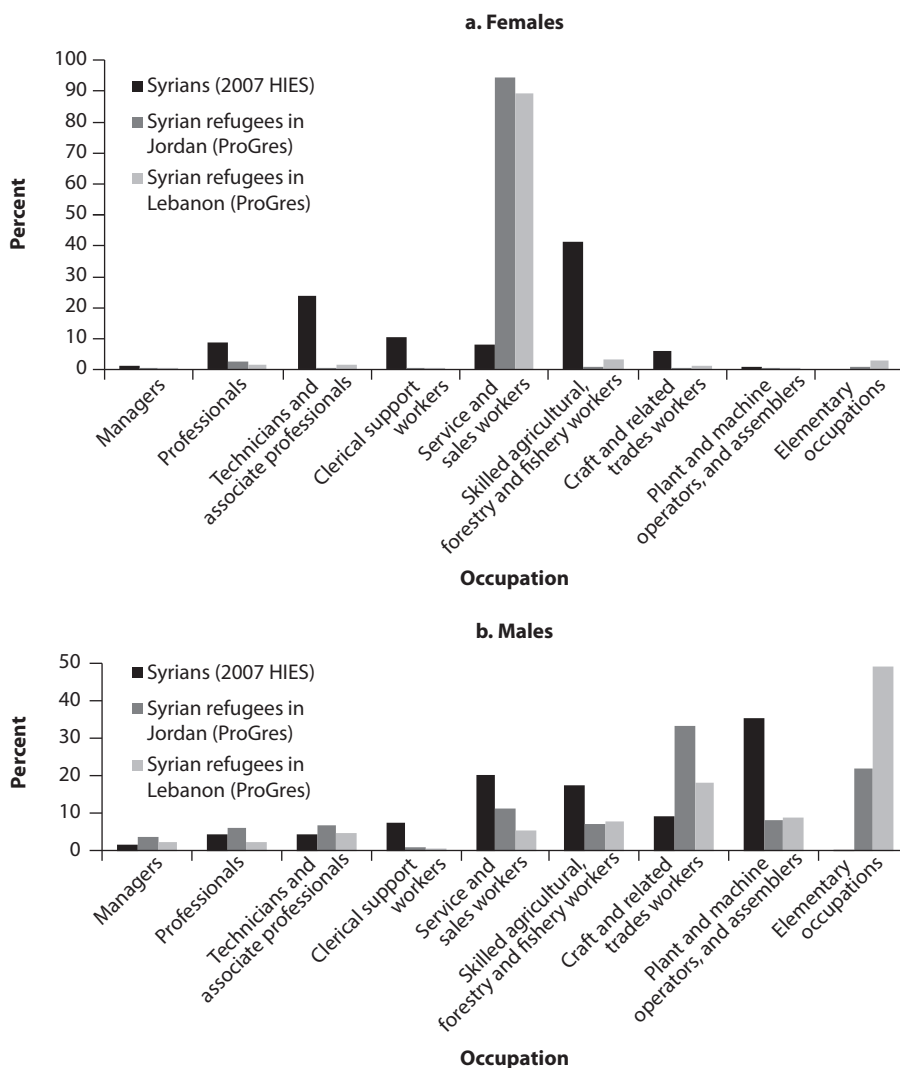
Syrian female refugees are married much younger than their male counterparts. One percent of all female refugees is married under the age of 18 and 7.8 percent are married between 18 and 24. As a percentage, this may not seem large, but 8,628 refugee girls under 18 are married. Looking at the percentage of all married refugee females (rather than all female refugees), those under the age of 18 make up 2.7 percent and between 18 and 24, 20.9 percent. Out of all male refugees, 0.1 percent are married under the age of 18 and 1.5 percent under the age of 25. In comparison, only about 0.4 percent of all Syrian females are married under the age of 18 and 0.8 percent of all married females are under 18; for males, these percentages are both about 0.1 percent.

Employment by occupation

The registration database containing entries on refugees' former occupational employment (in their country of origin) shows very large discrepancies in occupational employment compared to the Syrian pre-crisis population. Some 90 percent of Syrian female refugees indicated that they were occupied as service and sales workers in their previous employment, whereas only about 8 percent of females were occupied as services and sales workers before the crisis (figure 1.21). Furthermore, persons employed in skilled agricultural, forestry, and fishery occupations, which were dominant forms of occupation before the onset of the crisis, are not widespread in Syrian refugees.

These large discrepancies in employment by occupation are curious and could stem from various sources. First, refugees are a self-selected group that is not spread evenly across all occupations. It is possible, for example, that refugees are disproportionately represented by people who were occupied in the informal service sector. Second, women, whose labor force participation rate was very low in Syria, may have classified their household duties as service and sales work. Third, the registration database does not actually refer to former employment by

Figure 1.21 Employment by Occupation of Pre-Crisis Syrians and Syrian Refugees in Lebanon and Jordan by Sex, Females (Panel A) and Males (Panel B), 2007 and 2014 (%)



Source: Estimations based on HIES 2007 and ProGres data.

occupation but rather current employment by occupation (or a mix of the two). Fourth, people who register (due to this stressful situation) may not answer truthfully or with enough care. Finally, structural changes occurred in Syria between the time of the Syrian survey in 2007 and the time of the beginning of the crisis in 2011. Any of these possible explanations would require a more detailed investigation with a focus on how employment is accounted for upon registration.

Large differences in the structure of the labor markets in Syria, Jordan, and Lebanon exist (see previous section). Syrian refugees who worked in agriculture

before the crisis will not be able to apply those skills to the labor markets in Lebanon and Jordan; agricultural jobs do not exist to the same extent they did in Syria as the agricultural sectors in Lebanon and Jordan are much smaller. Furthermore, Syrian refugees have tight restrictions on access to the Jordanian and Lebanese labor markets and are therefore constrained to pursue informal employment or work in the informal economy. Consequences of these dynamics are not only the immediate struggle for a livelihood, but also the long-term developmental challenges for Syrians and the Syrian economy at large. Syrian refugees' employability is impeded through an erosion of skills and refugees may struggle to enter the Syrian labor market upon return to Syria after the crisis.

Even though Syrian refugees in Lebanon are, upon registration with the UNHCR, allowed to enroll in public schools for free and have access to primary health care, a work permit is required to take up legal employment. An agreement between Syria and Lebanon exists that allows for free movement, employment, and stay of nationals for both countries. However, the Lebanese government is reluctant to issue work permits (required to work legally at a cost to the applicant depending on the work category). Therefore, many Syrian refugees are forced to work illegally, often at much lower wages than Lebanese nationals (Sadek 2013; ILO 2014).

In Jordan, refugees are granted access to public school and health care upon registration with the UNHCR. However, work permits that provide legal rights to employment in Jordan are virtually impossible to come by as they require proof that the specific skill set is unavailable in Jordanian candidates. Furthermore, certain professions and industries are strictly reserved for Jordanian nationals. The Jordanian Ministry of Labor estimated that about 160,000 Syrians work illegally in Jordan (mostly in Amman), many in the informal sector under hazardous conditions and low pay (Sadek 2013). The number of Syrian refugees with a work permit is much lower, about 6,000 in 2014, and the number of refugees who declared an income from work is low.

The legal framework, skills mismatch between domestic labor demand and the supply of refugees' skills, and low levels of education for most Syrian refugees result in precarious informal employment or employment in the informal sector. These mismatches in the labor market situation of Syrian refugees have negative consequences for Syrians as their skills and qualifications erode over time and many end up in precarious and hazardous working conditions. Furthermore, the development trajectory of Syria will be impeded as returning Syrian refugees may not be able to contribute to the Syrian economy as they did before the crisis due to a loss in skills and employability.

We observe that Syrian refugees are systematically different from the Syrian pre-crisis population but also from the populations in Jordan and Lebanon. The Syrian refugee population is much younger than either of their host countries' populations. There is also a clear divide in the levels of education between Syrian refugees and their host populations, with refugees having lower levels of education and many refugee children not attending school. Structural differences in the labor markets in Syria, Jordan, and Lebanon will also impact the

opportunities of Syrian refugees in their host communities regarding skills and employability. Most Syrian refugees may not be qualified to work in the employment categories sought after in Jordan's and Lebanon's economy. Lack of qualifications, combined with tight restrictions to enter the Jordanian and Lebanese labor markets, will compel many refugees to move to low-paid and low-skilled employment.

Such a large influx of young Syrian refugees with specific needs in terms of schooling, training, skills, and employability poses serious challenges on the host communities' populations, infrastructure, legal framework, and political systems. Institutions or certain facilities (education, health care, and so forth) may not be set up to absorb such a large population that is so vastly different from the host communities' populations. Increased attention is inevitable to assure that the long-term challenges of both refugees and host communities are met with great care.

Conclusion

This chapter analyzed the economic situation of Syria before the onset of the crisis to determine what impact it had on the Syrian refugee crisis. The distress for Syrians did not start only at the onset of the crisis in 2011; it started a decade earlier and is explained by a combination of global financial shocks and domestic agricultural shocks. The positive development observed in terms of growth, budget stability, and a favorable business environment were outweighed by the negative consequences of the economic shocks on trade, institutions, labor market, social exclusion, and population welfare.

Since the beginning of the Syrian crisis, there have been over 6.5 million IDPs, almost 4.4 million registered refugees, and 1.5 million non-refugee migrants (UNHCR 2015a, 2015b). This amounts to about half of the pre-crisis Syrian population. However, the outflow of Syrians was not even across socioeconomic groups. Partly due to circumstances, partly due to self-selection, and partly due to the evolving war pattern, the Syrian population that migrated has a different socioeconomic profile from the Syrian pre-crisis population.

This chapter focused on Syrian refugees who are registered with the UNHCR and live among local communities throughout Jordan and Lebanon using UNHCR registration and household survey data. A comparative analysis of Syrian refugees in Jordan and Lebanon and the Syrian population before the crisis was undertaken to determine the socioeconomic profile of Syrian refugees in Jordan and Lebanon as well as of the pre-crisis population in Syria. We determined that Syrian refugees are systematically different in their socioeconomic dimensions from the Syrian pre-crisis population. Syrians are very young, but refugees tend to be even younger—the Syrian refugee population has a larger share of young children (aged 0 to 4) and people aged 25 to 34. Approximately 65 percent of all registered Syrian refugees in Lebanon and Jordan are under the age of 25 and about 19.4 percent of all refugees are infants under the age of 4. This very young age structure points to the fact that large parts of the population have specific needs, particularly for schooling and health care.

Furthermore, the levels of education among Syrian refugees are lower than for Syrians before the onset of the crisis, with slightly higher educational attainment for Syrian refugees in Jordan compared to Lebanon. About 13.3 percent of all Syrian refugees in Lebanon have secondary education or above while this percentage stands at 16.5 percent in Jordan.

In terms of family status, the Syrian refugee population is much more likely to be single than the Syrian pre-crisis population and a higher percentage of Syrian refugee females are married compared to males. Syrian female refugees are also more likely to be married under the age of 18 than either Syrian females before the crisis or their male counterparts.

Due to large differences in the structure of the labor markets in Syria, Jordan, and Lebanon, and tight labor market restrictions placed on Syrian refugees, Syrian refugees are often constrained to pursue informal employment or work in the informal economy. As a result, refugees not only face an immediate struggle for their livelihood, but also long-term developmental challenges as their skills erode and employability is at stake upon return to Syria after the conflict ends.

Syrian refugees' socioeconomic profile showed that they are systematically different from the Syrian pre-crisis and their host communities' populations. Therefore, we conclude that refugees not only have large humanitarian needs, but also face critical development challenges. These challenges include: (i) the capacity of institutions in host communities providing basic services to accommodate the different age profile of the Syrian refugee population—including specific needs for health care and schooling; (ii) the risk that refugee children will lag behind host country children in school enrollments and experience gaps in their education—and the long-term development impact of this loss of human capital; and (iii) the mismatch between the skills/occupations of Syrian refugees and the demand for labor in the Lebanese/Jordanian economies, resulting in a lack of employment opportunities and the consequent erosion in skills and employability of Syrian refugees. Furthermore, due to the unprecedented scale and duration of the current Syrian refugee crisis, a large burden is placed on hosting communities. Attention therefore must be given to the perspective of hosting countries and the differences that exist between Jordan and Lebanon in terms of (i) social cohesion and (ii) the provision of public services to refugees. These two aspects should be taken into account when thinking about assimilation of this new population into the hosting countries. These development challenges require special and increased attention to assure that the long-term development trajectories not only of refugees themselves but of Syria, Jordan, and Lebanon as a whole are not irreversibly damaged.

Notes

1. Enrollment rates refer to the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age.
2. The upper poverty line is constructed by adjusting the food poverty line (a food consumption bundle that yields a predetermined caloric requirement) by expenditures

on non-food items for households whose expenditure on food is equivalent to the food poverty line. The lower poverty line adjusts the food poverty line by essential expenditures on non-food items.

3. Based on the Profile Global Registration System (PG) provided by the UNHCR as of December 2014. Only those refugees whose status is “active” and excluding those whose arrival date to the respective country is earlier than January 1, 2011 were included in the analysis. This results in a data set of 609,285 Syrian refugees in Jordan and 1,112,546 Syrian refugees in Lebanon.
4. All references to statistics on the Syrian pre-crisis population (unless otherwise stated) are derived from the Syria Household Income and Expenditure Survey (HIES) 2007 conducted by the Central Bureau of Statistics (CBS) in Syria under the assumption that this survey is representative at the national level.
5. All references to statistics on the Syrian refugee population (unless otherwise stated) are derived from the UNHCR ProGres database as of December 2014 and include only those refugees in non-camp settings.
6. The educational system in Syria is divided into a first stage of primary education including grade 1 through grade 4 and a second stage of primary education encompassing grade 5 through grade 9. The statistics displayed above combine these two stages of primary education. Secondary education refers to education from grade 10 through grade 12. The average institute follows secondary education and includes a two-year program (grade 13 through grade 14). University or more includes university and post-graduate degrees.

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Welfare and Poverty

Introduction

This chapter provides a poverty profile of refugees from the Syrian Arab Republic living in Jordan and an analysis of the main predictors of welfare and poverty.¹ The purpose of the poverty profile is three-fold. It provides a first indication of the socioeconomic characteristics of the poor, which helps to detect poverty pockets of the population that aggregate analyses or welfare modeling would miss. It helps to provide some useful indications of the important variables that one should consider in a welfare model tailored to a refugee population and it contributes to highlighting the dimensions that should be prioritized from a policy perspective.

The purpose of the welfare and poverty models is also multi-fold. First, we are interested in identifying the main predictors of welfare and poverty for a population of refugees. Second, welfare modelling can indicate how variables that are already included in the ProGres (PG) data perform in terms of predicting welfare and, consequently, we can learn about variables that are important for predicting welfare but not already included in the PG data. Third, the welfare model can be used to evaluate the targeting of the World Food Programme (WFP) aid and United Nations High Commissioner for Refugees (UNHCR) cash program. Fourth, it can be used for developing a targeting approach based on a proxy means test (PMT) or other methods. Fifth, it can be used to simulate alternative policies toward refugees and test in advance of implementation the potential welfare effects of these policies.

As this is the first poverty and welfare assessment of a refugee population ever undertaken by the UNHCR or the World Bank, we will take particular care in describing the data sets used, the sampling and data collection procedures, the unit of observation considered, the construction of the welfare aggregates, and the choice of the poverty line. A refugee population evidently differs from a regular population. Syrian refugees had to abandon, for the most part, their livelihood and assets when they fled conflict in Syria and they have to rebuild or develop a livelihood in a foreign country with few opportunities for work and limited access to services. The nature of refugees' deprivation is both financial

and non-financial and requires reassessing welfare measures, poverty lines, unit of observations, and other measurement concepts that are now taken for granted when measuring poverty in a development context.

This chapter shows that the Syrian refugee population in Jordan has clear predictors of welfare and poverty, including migration patterns; characteristic of the principal applicant (PA); housing, water, sanitation, hygiene (WASH); coping strategies; and protection indicators. These predictors can change if we focus on the entire distribution of cases or on the poor only and they can change according to the poverty line, but, overall, there is a set of indicators that is robust to any modelling. This set includes most of PG variables and a selected group of JD-HV2 variables including case size, paying rent, concrete housing, having electricity, and being eligible for UNHCR assistance.

The chapter is organized as follows. The next section discusses data in detail. The third section provides a poverty profile focusing on those variables that may be more of interest for a population of refugees. Here the objective is not to cover all possible angles of a poverty profile but rather to be very selective in highlighting important aspects related to refugee status. The fourth section provides the results of the welfare and poverty models. This section is the result of a careful screening of all available variables and a final selection of the most relevant variables. The final section concludes.

Data

The chapter uses two data sets: the Profile Global Registration System (ProGres) and the Home Visits, round II (JD-HV2) data. Below, we describe each data set in turn.

ProGres data

The first data set is the **Profile Global Registration System (ProGres)**. This is the main global database used by the UNHCR and the data provided include all registered refugees in Jordan as of December 2014. The value of this database is its size and the inclusion of key socioeconomic characteristics of refugees. Its shortcoming is that this database contains only selected variables and no variables measuring welfare. We call this data set “PG” in the remainder of the chapter. The PG data record all registered refugees and represent our reference population. Of course, not all refugees are registered; but due to immigration rules in hosting countries and UNHCR procedures and incentives to register, most refugees would register at some point in time.

The PG data set includes all data collected during the first registration and those added during follow-up updates. Registration of new arrivals takes place in two urban UNHCR registration centers based in Amman (Khaldia) and Irbid, and a third one at the Raba Sarhan joint GoJ/UNHCR registration center close to the Syrian border. This last registration center is where refugees crossing informal border points are registered. The UNHCR also organizes mobile registration missions to remote areas and registers refugees in the two existing camps, Za’atari

camp and the Emirates Jordanian camp. Refugees belonging to the same family are registered jointly as a case. A case is a processing unit, which is headed by a principal applicant and includes its dependents.

At registration, personal information for each individual is collected as well as information relevant for the case. The data set collected as part of UNHCR Jordan's enhanced registration practice includes all relevant personal data such as name, date of birth, place of birth, gender, date of flight, arrival date in Jordan, registration date, ethnicity, religion, specific needs, and vulnerabilities. It also includes a very short summary of the refugee claim; the whereabouts of close relatives whether in country of origin, country of asylum, or other countries; educational details; professional skills; occupation in country of origin and asylum, if any; the addresses in country of origin and the country of asylum including key movements within the country of origin; and reasons for flight. If refugees have relatives who are registered refugees in Jordan, then the cases are linked.

As a result of registration, UNHCR issues an Asylum Seeker Certificate with 12 months' validity to registered persons of concern in the urban centers. Every person of concern comes once a year to a UNHCR registration center for renewal of the Asylum Seeker Certificate, and is then reverified once a year as part of this process. The Asylum Seeker Certificate is used as a continuous registration mechanism, whereby the information collected is reverified, validated, and updated as appropriate, so as to maintain an updated profile of the refugees' population. UNHCR Jordan also uses quality control and audit reports. The systematic and comprehensive use of audit reports at the registration stage is crucial to achieving and ensuring high data quality and preventing fraud.

Home Visits data

The second data set is the Jordanian **Home Visits database** (JD-HV). The HV data have been administered in Jordan in three successive rounds with improved questionnaires. The first round (JD-HV1) was carried out in 2013 and terminated at the end of October 2013. The second round (JD-HV2) was implemented between November 1, 2013 and September 30, 2014. JD-HV2 is the round used for this analysis. The third round (JD-HV3) started as a pilot in July 2014 and it was still ongoing at the time of writing. The JD-HV2 data are a subsample of the PG data.

The JD-HV2 data collection process is not random and is designed for the purpose of targeting. There are three criteria that are used to select cases for Home Visits. The first relates to newly registered cases, which are all included by default. The second relates to cases that are due for reassessment based on a monthly list. The third relates to urgent cases, essentially cases that request a visit for urgent needs. JD-HV2 covers approximately a third of the cases registered by the UNHCR in the PG database. The JD-HV questionnaire results in almost 200 variables that can be used for analysis and includes questions on income and expenditure, which we will use to construct our welfare aggregate.

The final data set used in this paper joins both data sets PG and JD-HV2 using the household (case) identification number. The JD-HV2 data are a subsample

of the PG data covering approximately a third of all registered refugee cases. Therefore, the final data set used includes all variables coming from both data sets but is limited to the size of the JD-HV2 data. We consider only cases outside refugee camps, since refugees in camps benefit from various types of assistance including shelter, free education, and free health care. Refugees living outside camps are all considered urban residents and there is, therefore, no need to split the analysis by urban and rural areas.

JD-HV2 data are not necessarily representative of PG data because JD-HV2 data are not a randomly selected sample of PG data. It is instructive, therefore, to test the differences between these two data sets. This is normally done by testing whether the means of the variables that are common to both the PG and JD-HV2 data are significantly different. T-tests, which are available in most statistical packages, can do this. However, the structure of our data is particular and the t-test required is one that takes into account the fact that the JD-HV2 data are a subsample of the PG data. These are sometimes referred to as t-tests for partly overlapping groups and they are not usually available in standard statistical packages. The formula for this test is the following: let μ_i be the mean for group i ; $S(\mu_i)$ the standard error of the mean of group i ; group i the population (PG); group j the sample (JD-HV2); and p the proportion of cases in group j from group i .² The t-test is shown in equation 2.1:

$$(2.1) \quad t = \frac{|\mu_i - \mu_j|}{\sqrt{S(\mu_i)^2 + (1-p)S(\mu_j)^2}} \geq T_{.025}$$

where $T_{.025}$ is the 0.025 percentile in the t-distribution with n degrees of freedom (n being the sample size). The values of the t-distribution for the 0.025 percentile varies between 12.71 (1 degree of freedom) and 1.96 (1,000 degrees of freedom). Our t-statistics has to be larger than these values for the means between the population and the sample to be statistically different. Given the large number of observations that we have, we have also very large degrees of freedom, so that a value of 1.96 applies as a threshold.

Table 2.1 reports results for key variables that are common in the PG and JD-HV2 data. Only five of the 22 variables considered show a t-statistic smaller than the threshold 1.96, indicating that the two populations contained in PG and JD-HV2 data are statistically different across several dimensions. This is particularly true for the spatial distribution in certain governorates of origin or destination, for skills, case size, and cases with more than three children.

It is possible to adjust the JD-HV2 sample to the PG characteristics through a process known as “raking,” where one attempts to correct the JD-HV2 sample means based on the PG sample means through a process of re-weighting the JD-HV2 data. However, correcting the JD-HV2 means has several drawbacks. The first is that when we correct for the mean of one variable and re-weight the JD-HV2 sample, all other means are affected. The second is that those factors that show the highest differences between JD-HV2 and PG data (such as place

Table 2.1 T-Tests for Selected Variables in PG and JD-HV2 Data

<i>Variable</i>	<i>PG mean</i>	<i>JD-HV2 mean</i>	<i>t-stat</i>
Amman	35.0	32.5	15.4
Irbid	26.8	28.4	10.7
Mafraq	13.8	13.3	4.7
Zarqa	11.3	11.8	4.3
Other destination	13.1	14.0	8.0
Damascus	11.9	11.4	4.8
Dar'a or As-sweida	39.9	38.6	7.9
Hama or Homs	23.4	25.4	13.4
Rural Damascus	11.9	11.4	4.8
Other origin	24.7	24.6	0.8
Female	34.9	33.8	6.5
Religion	99.6	99.7	1.8
Ethnic	99.1	99.2	1.7
Education	40.5	38.9	9.4
Skills	44.0	47.0	17.9
Case size= 1	29.4	26.3	20.6
Case size= 2 or 3	25.0	25.1	0.4
Case size= 4 or 5	26.4	27.6	8.2
Case size= 6+	19.2	21.1	13.6
No children	37.0	34.5	15.3
N. of children= 1 or 2	30.0	29.9	0.7
N. of children= 3	32.9	35.6	16.2

Source: Estimations based on JD-PG and JD-HV2 data.

of origin and destination or case size) are expected to be better recorded in JD-HV2 data. That is because the PG interview is the first for refugees when they enter the country; it is short and conducted under great pressure, especially during the periods of high refugee inflows. JD-HV2 data, instead, are collected during lengthy interviews in a more relaxed environment, when refugees have already settled. Moreover, the date of registration of this information is different for PG and JD-HV2 data with JD-HV2 data being subsequent to PG data. During the period between the two interviews, cases' conditions may have changed—for example, a reunion with an additional child. This may explain some of the differences that we observe between PG and JD-HV2 means. A third reason for using JD-HV2 data as they are is that variables that are collected only with JD-HV2 interviews relate better to JD-HV2 than PG data, as they are evidently collected at the same time. Therefore, our final decision was to keep the JD-HV2 data intact on the assumption that they are more representative than PG data of the population of refugees.³

Unit of observation

The unit of observation used by the study is the “case,” the UNHCR unit used to register refugees. 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 care-giver.*” The case identifier is present in both PG and JD-HV2 data and interviews for both data sets are conducted at the case level. The PG data also collect information on individuals who are part of a case.

For other purposes, the UNHCR also defines “household” and “family.” A household is a group of persons (one or more) living together who pool their resources, make common provisions for food or other essentials for living/surviving, and where the members are dependent on each other and all trying to meet their combined set of needs. A family includes members of a household who are related to a specific degree through blood, adoption, or marriage. The degree of relationship used in determining the limits of the family is dependent on the uses (common in the area of intervention and/or UNHCR) and cannot be defined on a worldwide basis. Throughout this chapter, we will focus exclusively on cases.

Welfare aggregates

The first problem to address given the available data was the construction of the main welfare aggregate to be used for the welfare model. The JD-HV2 data contain three questions on welfare, one question on income structured in seven items, and two questions on expenditure, the first structured in six items and the second structured in ten items. Questions on income and expenditure refer to a recall period of one month prior to the interview. These questions are not ideal. It is known that values reported for income and expenditure decrease as the number of items listed in questions decreases and as the recall period increases. A recall period of 30 days is fairly long and six or ten items for expenditure questions are not many. Therefore, we expect income and expenditure figures to be underestimated compared to their true values.

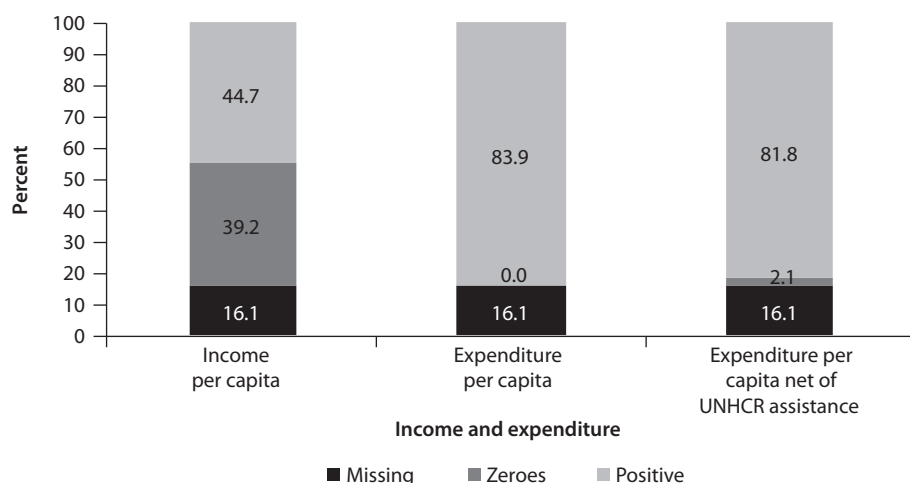
However, in the context of a refugee population, under-reporting due to long recall periods and short lists of items may be less problematic than for a regular population. A refugee population is likely to be endowed with less resources than a regular population; the variety of consumption items is often reduced and so is the frequency and amounts of purchases. Many refugees live on humanitarian assistance and this often reduces the frequency, amounts, and variety of consumption. Also, the question of under-estimation is problematic for distributional analyses if the pattern of under-estimation varies across the distribution—if, for example, rich and poor households under-report expenditure by different degrees. There is little evidence of this phenomenon occurring for regular populations, although it is known that richer households are less likely to participate

in surveys. We should also expect this phenomenon to be more limited for a refugee population because of the reasons already cited for under-reporting and because households are visited to establish eligibility for the UNHCR cash assistance program. The program is of interest to households and this makes the non-response rate in the Home Visits data an almost negligible issue.

Given the considerations above, under-reporting is expected to be problematic when we estimate statistics that are mean dependent such as mean expenditure or the poverty rate; but they are less problematic for statistics that are not mean-dependent such as the Gini inequality index. It is also possible to test how statistics perform under mean changes by using, for example, different poverty lines or stochastic dominance analysis. By performing these sensitivity tests, we overcome the problem of exact estimate of the welfare aggregate and also the normative problem of selecting a particular poverty line for the analysis.

To make the most of the data available, we constructed a unique expenditure aggregate based on the two expenditure questions available. On the assumption that replies to both questions were under-reported, this was done by taking the highest reported value for each of the items common to both expenditure questions and the highest value of the rest of the items combined together. This new expenditure aggregate resulted in an average increase of JD 10 per case per month as compared with the higher of the two other expenditure measures. Next, on the assumption that expenditure includes expenditure made with UNHCR cash assistance, we created an additional expenditure item by subtracting UNHCR cash assistance from all cases that were receiving this assistance at the time of the visit. This last assumption was checked by comparing expenditure of those receiving UNHCR cash assistance with the expenditure of those not eligible and also by exchanging information with UNHCR and WFP staff. This last expenditure aggregate was then selected as the main welfare aggregate for the analysis. It is important to note that expenditure deducted by UNHCR cash grants is not equal to expenditure in the absence of UNHCR cash grants. Possibly, households would consume more (out of savings, increased labor supply, and so forth), were they not recipients of aid. Therefore, we are not taking into account behavioral effects due to the UNHCR cash assistance program. It is also important to note that expenditure does not include the value of the WFP food voucher as confirmed by the interviewers we spoke to. That is because the food voucher is exchanged directly for goods.

With the caveats discussed above, we are now ready to explore the welfare aggregates in more detail. We focus on three aggregates: income per capita, expenditure per capita derived from the two expenditure questions discussed, and this last measure net of the UNHCR cash assistance. Figure 2.1 shows the structure of the three distributions by positive values, zero values, and missing values as found in the available data. Income per capita has 16.1 percent of missing values and 39.2 percent of zero values. The missing values are people unwilling to reply, while the large share of zeroes is due to households who have declared to have no income. This is expected in a refugee population living in a country like Jordan where refugees do not work for the most part. Expenditure

Figure 2.1 Structure of Welfare Aggregates by Responses, 2014 (%)

Source: Estimations based on JD-HV2 data.

per capita has no zero values, as expected, while expenditure per capita net of UNHCR cash assistance has 2.1 percent of zero values. These are household cases that essentially rely only on UNHCR cash assistance for living. The welfare assessment that follows will rely on this last variable. We are therefore assessing welfare in the absence of UNHCR cash assistance and WFP food voucher.

Table 2.2 provides the summary statistics for the main welfare aggregates. Income per capita including the zero values is JD 34.75 per month, while it is JD 65.23 if we eliminate the zeroes. Income is clearly under-reported. Of the 25,288 cases that report a positive income, 16,852 have an income smaller than expenditure (66.6 percent). This is typical of household surveys in developing and emerging economies, so much so that expenditure is usually used as the best proxy for income, which is what we do in this chapter. However, even if income is under-reported, the average income per capita for positive values is JD 65.23 per month, not far from the JD 77.8 per month of expenditure per capita. Hence, cases that manage to have an income are closer to matching the average expenditure per capita needs. Table 2.2 also shows that the UNHCR cash assistance program contributes, on average, to JD 7.35 per capita per month.

Table 2.2 Summary Statistics for Welfare Aggregates, 2014

Variable	Obs.	Mean	Std. Dev.	Min	Max
Income per capita	47,468	34.75	64.06	0	3,000
Income per capita with no zeroes	25,288	65.23	75.60	0.5	3,000
Expenditure per capita	47,468	77.80	74.74	1	1,675
Expenditure per capita net of UNHCR cash assistance	47,468	70.45	76.29	0	1,675

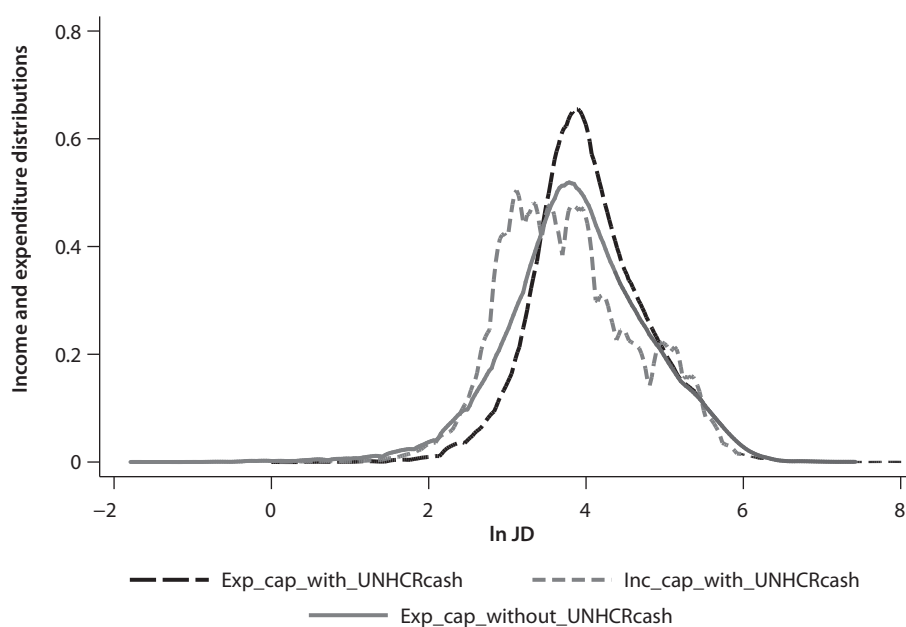
Source: Estimations based on JD-HV2 data.

To test the various welfare aggregates in terms of conformity with theory and empirics, we plotted the distributions of the natural logarithm functions of income (Inc/cap with UNHCR cash) and expenditure with (Exp/cap with UNHCR cash) and without (Exp/cap without UNHCR cash) UNHCR cash assistance. Figure 2.2 illustrates the results. As a rule of thumb and according to theory, a distribution of log-income or log-expenditure should have a regular “bell” shape with few observations on the two tails of the income or expenditure range and more observations as one approaches its central moments (mean and median). This theoretical statement is based on probabilistic theory and is also consistent with empirics. For example, if one plots income or expenditure distributions using each of the 1,800 plus surveys available at the World Bank, the greatest majority of these distributions would be bell-shaped.

This is also what we find with the expenditure aggregates constructed from the JD-HV2 data. The aggregates with and without UNHCR assistance are clearly bell-shaped with a saddle point around a value of 4 (ln JD). This is much less the case for income, the distribution of which is extremely irregular. We can also observe that the expenditure aggregate net of UNHCR cash assistance is more regular and a less narrow distribution as compared to the expenditure aggregate that contains UNHCR cash assistance. This visual exploration of the income and expenditure distributions confirms that the constructed measure of expenditure net of UNHCR cash assistance is the best choice given the available data.

One should also keep in mind that welfare models typically utilize ordinary least square (OLS) regression as estimators. These estimators perform

Figure 2.2 Income and Expenditure Distributions of Syrian Refugees in Jordan, 2014



Source: Estimations based on JD-HV2 data.

particularly well if the dependent continuous variable such as income or expenditure has a bell-shaped distribution. In fact, this is one of the requirements of OLS models. Therefore, a bell-shaped distribution serves both the purpose of confirming what we should expect in a welfare distribution, and the purpose of satisfying the basic requirements of an OLS model.

The expenditure aggregate may also include expenditures financed by donations not provided by the UNHCR. In addition to UNHCR cash assistance, refugees receive WFP food vouchers and occasional assistance in-kind or in cash by many different local and international organizations. The UNHCR tries to keep track of these donations but does not have a full record for each case. This means that, for some cases, the expenditure measure could include other donations in cash. The JD-HV2 questionnaire contains questions on non-financial assistance and we will use these questions to control for these donations. Looking at the UNHCR records of financial donations from other organizations and following consultations with UNHCR and WFP staff, we concluded that the additional cash received by all other organizations combined is small; but this could not be validated with data that cover all these financial donations as they are nonexistent. As already mentioned, the WFP voucher provided to cases is not accounted for in either income or expenditure. However, we cannot totally exclude that some cases reported expenditure financed by donors who did not record donations with the UNHCR.

Poverty lines

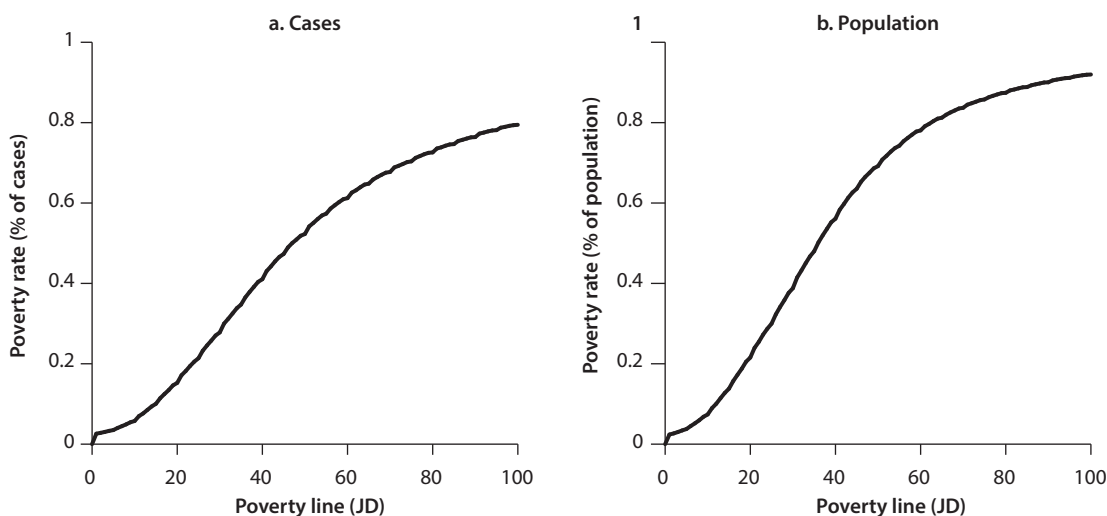
For the purpose of the poverty profile and poverty models, we adopt a poverty line of JD 50/capita/month. This is the poverty line adopted by the UNHCR for providing cash assistance. This line is equivalent to US\$71 and US\$160 at purchasing power parity (PPP) per capita per month (2013 prices). In per day equivalent, the U.S. dollar PPP value is US\$5.25, which is significantly higher than the international poverty line of US\$1.25 (see table 2.3). As Jordan is a middle-income country, this poverty line is not unreasonable, also considering that the national poverty line used by Jordan around the same period was JD 78.3 (US\$250 per month or US\$8.2 per day at PPP value).

A poverty line of JD 50/capita/month results in a poverty rate of 52.5 percent for cases and 69.2 percent for the population. To test how sensitive the poverty rate is to the chosen poverty line, we plot poverty rates by different poverty lines in the range between JD 0 and JD 100. Figure 2.3 shows the results. It is clear that the poverty rate is very sensitive to the poverty line, especially if we consider

Table 2.3 Poverty Line of Syrian Refugees in Jordan, 2014

<i>Poverty line</i>	<i>Per month</i>	<i>Per day</i>
UNHCR Poverty Line (LCU)	50.0	1.64
UNHCR Poverty Line (US\$)	70.8	2.33
UNHCR Poverty Line (US\$ PPP)	159.6	5.25

Source: Information provided by the UNHCR..

Figure 2.3 Poverty Rate Curves of Syrian Refugees in Jordan, 2014

Source: Estimations based on JD-HV2 data.

the share of population as opposed to the share of cases. For example, poverty lines of JD 40 and JD 60 lead to individual poverty rates of 55.9 and 78 percent respectively, which is a large change compared to the figure of 69.2 percent obtained with the JD 50 poverty line. Hence, for the purpose of targeting, it is important to keep in mind that inclusion and exclusion rates could change very significantly depending on the chosen poverty line.

Poverty Profile

In this section, we provide a poverty profile of Syrian refugees living in Jordan based on selected indicators. Poverty profiles rely essentially on cross-tabulations or graphs of poverty by socioeconomic characteristics of the population. As such, one could derive poverty rates for hundreds of population groups. In this section, we will focus on those characteristics that may matter more for the welfare model and from a policy perspective, such as education and occupation. We divide this analysis into three parts: migration patterns, characteristics of the PA, and characteristics of the case.

Migration patterns

Syrian refugees follow particular trajectories depending on where they flee from and where they are able to finally settle in hosting countries. These trajectories can reveal something about differences in poverty, given that both places of origin and destination can be characterized by different living conditions. Table 2.4 provides poverty rates by governorate of origin in Syria and governorate of destination in Jordan (empty cells show where the number of cases observed was below 50). It is visible, for example, that Tafilah is the governorate in Jordan that

Table 2.4 Poverty Rates of Syrian Refugees by Governorate of Origin and Destination, 2014

Destination in Jordan (Governorate)														
	Ajloun	Amma	Aqaba	Balqa	Irbid	Jarash	Karak	Maan	Madab	Mafrq	Tafilah	Zarqa	Total	
Origin in Syria (Governorate)	Al-hasakeh	40						91		77		89	54	
	Aleppo	76	57	61	65	61	63	77	83	80	91	72	65	
	Ar-raqqa		40		64	69				86		77	46	
	Damascus	81	43	45	50	58	67	59	68	74	91	66	52	
	Dar'a	76	67	72	69	69	76	84	74	77	88	79	72	
	Hama		71		89	76		80	87	92	89	85	83	
	Homs	83	69	62	73	75	86	75	76	74	83	80	73	
	Idleb		71		87	83		60	86	90		81	82	
	Rural Damascus	62	53	59	62	64	60	68	74	66	80	76	73	62
	Tartous													52
	As-sweida									70		59	56	
	Deir-ez-zor		45		68	44				72		80	58	
	Lattakia		44		58	58						47	47	
	Quneitra		39		73	85				67		86	64	
Total	77	59	61	70	69	73	76	75	77	78	85	77	69	

Source: Estimations based on JD-HV2 data.

Note: cells are blank where the number of cases observed is below 50.

Origin in Syria (Governorate)

shows the highest poverty rates (85 percent) while Amman is the governorate with the lowest poverty rate (59 percent). In terms of origin in Syria, Ar-raqqa is the governorate that shows lowest poverty (46 percent) while Hama is the one with the highest poverty rate (83 percent).

It is also possible to identify the trajectory that leads to the highest poverty rates. Refugees coming from Aleppo and Damascus governorates and going to Tafilah are among the poorest with over 90 percent poverty rates. Recall that many among these refugees had been already displaced before the crisis due to the persistent drought in Northeast Syria. Poor agricultural workers moved to the urban centers such as Aleppo and Damascus in search of work during the years that preceded the popular uprising and this internal migration contributed to the impoverishment of this group of the population even before the crisis. This may explain in part the higher poverty rates observed for people who followed certain trajectories in addition to the general living standards of the governorate of origin and destination.

Another useful angle is to look at the time of entry into the country and the time of the Home Visit. The refugee influx has followed different phases that are depicted in the top panel of table 2.5. Some of the refugees who would later register with the UNHCR entered Jordan before the Syrian crisis. This is the group labelled “Before 15 March 2011” and they represent about 2 percent of all registered refugees. The influx of refugees followed a slow process in 2011 with less than 5 percent of total registered refugees coming into Jordan during the year. The period between January 2012 and November 2013 saw the peak influx of refugees, with almost 87 percent of all refugees coming in during this period. We use November 2013 as a cut-off point for 2013 because this is when the

Table 2.5 Population and Poverty of Syrian Refugees by Date of Arrival and Date of Home Visit

	<i>Date of Home Visit</i>				<i>Total</i>
	<i>1 Nov. 2013– 15 Jan. 2014</i>	<i>16 Jan.– 25 Feb. 2014</i>	<i>26 Feb.– 8 Apr. 2014</i>	<i>09 Apr.– 1 Oct. 2014</i>	
<i>Date of arrival</i>	<i>Percentage of population</i>				
Before 15 March 2011	0.5	0.5	0.6	0.4	2.0
15 March–31 Dec. 2011	1.8	0.9	1.0	0.9	4.6
1 Jan.–31 Dec. 2012	15.3	4.4	4.9	8.1	32.6
1 Jan.–1 Nov. 2013	11.9	14.7	14.8	12.6	54.0
1 Nov. 2013–19 June 2014	0.0	2.0	2.2	2.5	6.8
Total	29.5	22.4	23.5	24.6	100.0
	<i>Poverty rate</i>				
Before 15 March 2011	73.8	46.9	68.8	63.0	63.8
15 March–31 Dec. 2011	80.7	56.7	68.8	67.6	71.3
1 Jan.–31 Dec. 2012	79.2	56.2	68.1	75.8	73.9
1 Jan.–1 Nov. 2013	55.5	58.5	74.4	80.6	67.1
1 Nov. 2013–19 June 2014	65.7	65.1	62.6	61.4	62.9
Total	69.7	58.3	71.7	76.4	69.3

Source: Estimations based on JD-HV2 data.

JD-HV2 data started to be collected. The top panel of table 2.5 also shows that the distribution of refugees across columns for each time period of entry is rather homogeneous, meaning that there is no particular association between time of entry and time of Home Visit.

The poverty rate of the different groups follows some clear patterns. The group that entered Jordan before the Syrian crisis and the latest group of entrants have the lowest poverty rates, while the peak of poverty is associated with those who entered in 2012. By the beginning of JD-HV2 (November 2013), the poverty rate for those who entered the country after November 2013 declined to a level similar to pre-crisis refugees. This may be explained by the fact that those late entries are probably people who did not need to flee immediately and had initially more resources and opportunities to stay in Syria.

More insights can be drawn from looking at the point of entry and the formal status of refugees (table 2.6). The majority of refugees entered the country informally (57.5 percent) and one can also see that few refugees entered informally by air (forged documents). As one would expect, refugees who entered Jordan informally suffer from higher poverty irrespective of the point of entry with a difference in poverty rates of almost 18 percentage points. We can also see that poverty is associated with the point of entry. Poverty is the highest for Ruwaished and Hadallat (77.4 percent) and Tal Shihab (Sud) (75.6 percent). However, this difference is almost entirely explained by formal entries. For those who entered informally, the point of entry makes little difference in terms of poverty. Informal entrants invariably have higher poverty rates.

Characteristics of the principal applicant

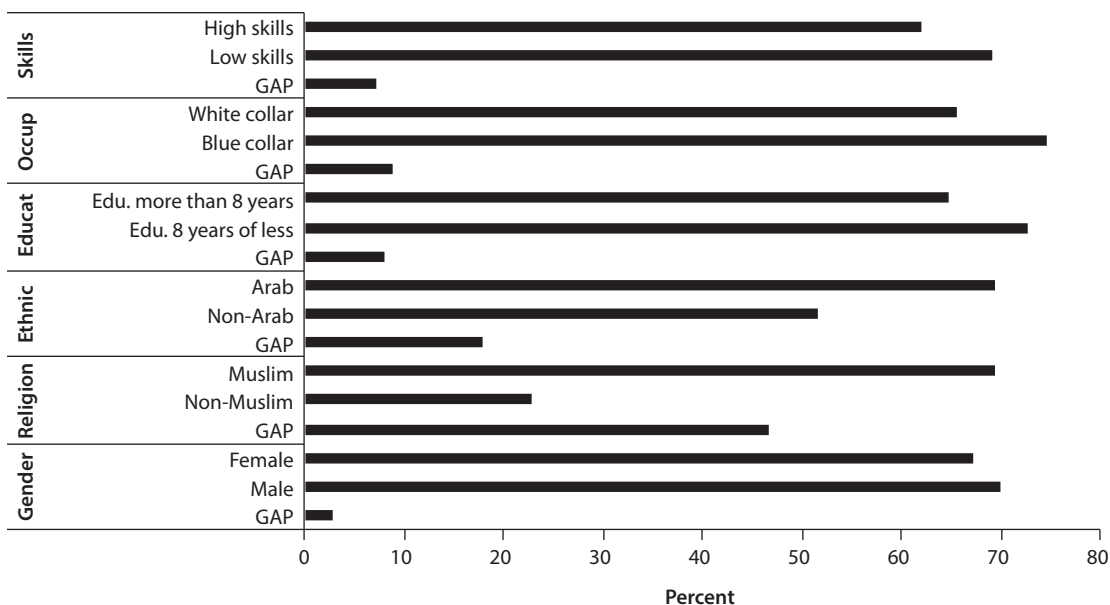
A first snapshot of poverty is provided in figure 2.4, where we plot poverty rates for different population groups according to the characteristics of the PA. Results are largely as expected but with some peculiarities to be attributed to the fact that this is a refugee population of mostly non-employed people, at least formally.

Highly skilled people have a lower poverty rate than low-skilled people but the difference is not as large as we would expect in regular populations. Similarly, white-collar workers and people with eight years or less of education have lower poverty rates than white-collar workers and higher educated people but the

Table 2.6 Population and Poverty of Syrian Refugees by Entry Point and Formal Status, 2014

<i>Point of entry</i>	<i>Percentage of respondents</i>			<i>Poverty rate</i>		
	<i>Informal</i>	<i>Formal</i>	<i>Total</i>	<i>Informal</i>	<i>Formal</i>	<i>Total</i>
Airport	0.0	10.5	10.5	76.7	47.3	47.4
Ruwaished-Hadallat	11.7	0.1	11.8	77.6	58.7	77.4
Tal Shihab	13.6	0.1	13.7	75.7	62.6	75.6
Nasib (official or unofficial)	14.6	24.0	38.6	75.9	66.0	69.8
Other or no data	17.6	7.7	25.3	77.2	53.0	70.0
Total	57.6	42.4	100.0	76.6	59.0	69.3

Source: Estimations based on JD-HV2 data.

Figure 2.4 Poverty Rates of Syrian Refugees by Characteristics of the Principal Applicant, 2014 (%)

Source: Estimations based on JD-HV2 data.

Note: The gaps are all significant at the 5 percent level. The values of the z-statistics are the following: Gender: 5.8; Religion: 113.1, Ethnic: 4.6; Education: 3.69; Occupation: 19.7; Skills: 15.3.

differences are also not very large. These small differences are explained by the fact that education and occupations (occupations refer to the pre-crisis status) have small returns due to the fact that most refugees do not work. Refugees have great difficulty in obtaining a work permit and are forced to either not work or work informally for low wages. However, even though higher educational attainment currently does not have an impact on labor market outcomes, investment in education should be seen more broadly and education returns should not be measured in terms of poverty in the short term (for example, children are kept out of the streets and Syrians may be able to capitalize on educational attainment upon return to Syria).

Religious and ethnic status make a large difference with non-Muslims and non-Arabs being less poor than their counterparts. However, non-Muslims and non-Arabs are very small groups (0.4 and 1.0 percent of the total of refugees, respectively) and these statistics are therefore less reliable. The time of interview shows a small difference, with the people interviewed earlier showing higher poverty (not shown here). Finally, male-headed households have higher poverty than female-headed households, although the difference is only three percentage points. This phenomenon can have multiple explanations, including the possibility that women are more accurate in reporting expenditure than men, or that female heads of households have husbands who shuttle across the border or work elsewhere to provide for their families. Recall that the PA is the person

interviewed who registered the case and not necessarily the head of household if this head does not live with the household regularly.

We may want to dig deeper in the characteristics of the PA with the aim of identifying poverty pockets otherwise little visible in statistical and econometric analyses. Table 2.7 cross-tabulates age and marital status groups of the PA. The top panel on population shares shows that married PAs below the age of 18 are about 0.3 percent of the population. This is a small group in percentage terms but a sizable group in numbers (about 650 cases). The largest group is represented by people who live in a case with a PA married or engaged and in age group 35–49, followed by the respective 19–34 group. Other groups by marital status are not large. Poverty (bottom panel) is the highest for the age group 35–49, presumably because this is the group with the largest number of children of young age. For the same reason, poverty is also higher for married and engaged people as opposed to other marital status group. Single people have the lowest poverty rate and this seems to apply also to people aged 50 and above.

Table 2.8 provides population and poverty statistics by the former occupation of the PA and the current level of education of the PA. The largest group by former occupation of the PA are clerical, service, and sales workers at over a third of the total Syrian refugee population; this is followed by craft and related trades workers. In general, poverty increases as we pass from white-collar types of occupations to blue-collar types and the highest poverty rate is found among skilled agricultural workers. The largest group by current highest educational level attained are those with 6–8 years of education, almost half of the population, and this group is, somehow surprisingly, also the one with the highest poverty rate. We can also find cells with extreme poverty rates such as skilled agricultural workers with 9–11 years of education, where the poverty rate reaches

Table 2.7 Population and Poverty of Syrian Refugees by Age and Marital Status of Principal Applicant, 2014

	Marital status				Total
	Married or engaged	Divorced or separated	Single	Widowed	
Age group	Percentage of respondents				
0–18	0.3		1.1		1.4
19–34	30.5	0.5	4.6	1.2	36.7
35–49	40.9	0.6	1.1	1.9	44.6
50+	14.2	0.2	0.3	2.7	17.3
Total	85.8	1.3	7.1	5.8	100.0
	Poverty rate				
0–18	51.3		60.9		59.0
19–34	63.9	49.3	39.1	72.4	61.1
35–49	80.2	59.7	63.3	69.7	79.2
50+	61.9	37.8	49.2	44.3	59.4
Total	71.6	52.7	46.0	60.1	69.3

Source: Estimations based on JD-HV2 data.

Note: cells are blank where the number of cases observed is below 50.

Table 2.8 Population and Poverty of Syrian Refugees by Former Occupation and Education of Principal Applicant, 2014

<i>Former occupation</i>	<i>Highest education of principal applicant</i>				<i>Total</i>
	<i>Below 6 years</i>	<i>68 years</i>	<i>9–11 years</i>	<i>12 and above</i>	
	<i>Population share</i>				
Managers	0.3	1.2	1.0	1.0	3.4
Professionals	0.1	0.5	0.4	3.7	4.8
Technicians, associate prof., and army	0.4	1.7	1.4	1.7	5.3
Clerical, service, and sales workers	7.6	13.6	9.0	4.9	35.1
Skilled agricultural, forestry, and fisheries	2.0	2.5	1.0	0.5	6.0
Craft and related trades workers	4.1	12.0	4.6	1.8	22.6
Plant and machine operators	1.3	4.1	1.9	0.8	8.0
Elementary occupations	3.8	7.2	2.6	1.1	14.8
Total	19.6	42.9	21.9	15.6	100.0
	<i>Poverty rate</i>				
Managers	66.6	75.2	62.8	56.2	65.5
Professionals	62.2	67.3	63.3	57.7	59.4
Technicians, associate prof., and army	64.4	65.4	61.2	54.8	60.8
Clerical, service, and sales workers	66.7	70.4	67.5	62.1	67.7
Skilled agricultural, forestry, and fisheries	79.1	78.8	80.9	76.2	79.0
Craft and related trades workers	73.8	71.5	67.6	68.6	70.9
Plant and machine operators	76.9	77.8	73.9	78.3	76.8
Elementary occupations	79.6	77.7	75.7	70.6	77.3
Total	73.0	73.1	69.0	62.6	70.6

Source: Estimations based on JD-HV2 data.

almost 81 percent. Hence, agricultural workers who were particularly affected by the drought in Syria before the crisis remain the poorest population group among refugees.

Characteristics of the case

As we will see in the welfare model, case size and the share of children in the case are important predictors of welfare and poverty; this is a common result among poor populations. One interesting question, however, is whether the case size or the number of children is more relevant. Table 2.9 plots case size against the number of children in the case. It is interesting to note that while the average case size is 3.7 persons per case, the largest share of refugees (60.6 percent) lives in cases with five or more people. That is because, of course, one six-person case weighs the same as six one-person cases in the population. We can also see (bottom panel) that the people living in larger cases (five persons and more) have also, by far, the highest poverty rates. The poverty rate also jumps very significantly for each additional case member and for each additional child. For example, from one to two members, the poverty rate jumps from 12.5 percent to 22.4 percent and it jumps from 39.8 percent to 57 percent from one to two children. It is also noteworthy that for a few cases, the case size is equal to the number of children. These are all-children cases. Overall, both case size and number of

Table 2.9 Population and Poverty of Syrian Refugees by Case Size and Number of Children, 2014

	<i>Number of children</i>						<i>Total</i>
	<i>0</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5+</i>	
<i>Case size</i>	<i>Population shares</i>						
1	6.6	0.4					7.0
2	4.0	2.5	0.2				6.7
3	1.3	4.9	3.6	0.1			10.0
4	0.9	1.3	9.4	3.9	0.1		15.7
5+	0.6	1.4	3.3	15.0	17.2	23.1	60.6
Total	13.5	10.6	16.6	19.0	17.3	23.1	100.0
	<i>Poverty rate</i>						
1	12.3	16.6					12.5
2	20.3	25.1	39.4				22.4
3	37.1	34.8	46.5	73.8			39.2
4	48.4	52.0	53.8	63.5	85.7		55.5
5+	76.3	69.0	76.5	76.4	86.1	93.8	85.6
Total	24.0	39.8	57.0	74.1	86.1	93.8	69.2

Source: Estimations based on JD-HV2 data.

Note: Blank cells correspond to empty groups.

children are important and it is not possible to say with certainty which of the two factors is more important. This question will be addressed in the multivariate welfare and poverty models.

Children of school age are expected to be in school but refugee children face many challenges in enrolling in educational institutions due to scarce supply, financial constraints, crowding, psychological distress, and other issues that would not normally exist for children in regular populations. Only about half of Syrian refugee children in Jordan attend school despite the fact that Jordan provides free education to refugees. It is therefore instructive to see the proportion of children in school according to the number of children of school age and the relative poverty rates. Table 2.10 shows the results.

About a third of the refugee population lives in cases with no children of school age. The numbers on the diagonal of the top panel of table 2.10 indicate the population shares of people living in cases where all children attend school. This is about 66 percent of the total population. In the rest of the population, at least one child is not attending school. For example, 3 percent of the population lives in cases with four school-age children of which none goes to school and 2.7 percent of the population lives in cases with five or more children of school age, none of whom attend school. Poverty rates somewhat reflect these deficiencies. The highest poverty rates are found for this last case of five or more children where the quasi-totality of the population living in this type of case is poor (97.9 percent). The highest poverty rates are indeed found for the population living in cases with many children and where several children do not attend school (bottom panel, bottom-left of the table).

Table 2.10 Population and Poverty of Syrian Refugees by Number of School-Age Children and School Attendance, 2014

Number of school-age children	Number of children in school						Total
	0	1	2	3	4	5+	
	Population share						
0	35.5						35.5
1	5.9	7.6					13.5
2	4.9	2.4	9.9				17.2
3	4.3	1.4	2.9	7.3			15.8
4	3.0	0.5	1.3	2.0	3.7		10.4
5+	2.7	0.2	0.6	0.9	1.2	2.1	7.6
Total	56.2	12.0	14.7	10.2	4.9	2.1	100.0
Poverty rate							
0	46.9						46.9
1	61.8	65.1					63.7
2	77.5	69.7	75.4				75.2
3	88.1	80.2	82.6	82.5			83.8
4	93.1	90.6	90.9	89.7	87.4		90.0
5+	97.9	96.8	92.6	95.3	93.8	95.2	95.8
Total	60.2	69.4	78.9	85.0	89.0	95.2	69.2

Source: Estimations based on JD-HV2 data.

Note: Blank cells correspond to empty groups.

Of course, children out of school are more at risk of child labor and this is what we explore next in table 2.11. About 3.6 percent of the population lives in cases where at least one child is working. This is likely to be a lower-bound estimate, as child work is one of the questionnaire items that is most likely to be under-reported because of shame or legal issues. Interestingly, the largest share of

Table 2.11 Population and Poverty of Syrian Refugees by Children School Attendance and Child Work, 2014

<i>No. of children not attending school</i>	<i>Children at work</i>		
	<i>No</i>	<i>Yes</i>	<i>Total</i>
<i>Population share</i>			
0	65.5	0.2	65.7
1	13.2	1.2	14.4
2	7.5	1	8.4
3	4.9	0.5	5.4
4+	5.4	0.7	6
Total	96.4	3.6	100
<i>Poverty rate</i>			
0	61.8	77.7	61.8
1	74.6	69	74.1
2	82.5	78.9	82.1
3	88.7	93.4	89.2
4+	95.2	96.5	95.3
Total	68.7	80.9	69.2

Source: Estimations based on JD-HV2 data.

the population living in cases with working children is where only one child is not attending school. The poverty rate is the highest for the population living in cases with four and more children out of school and working. These are evidently households that cannot afford to send any children to school, as they are engaged in work to support their families.

Next, we look at contractual arrangements and type of accommodation as these may be good indicators of poverty (table 2.12). A majority of refugees live in cases with a contract arrangement of 7–12 months (60.3 percent). Over half of these people live in apartments as opposed to cement houses or makeshift accommodations. Those living in makeshift accommodations do not usually have a contract but the column “makeshift” shows that some do. Poverty is higher for those living in makeshift accommodations, houses, and apartments in this order. Evidently houses are not villas but single houses made of concrete situated in urban areas. For those living in apartments, poverty is higher if the contract duration is longer. This is not surprising given the fact that in Jordan, rent is customarily paid in advance. Therefore, if refugees sign a lease for 12 months, they will have to make the payment for the entire rental period in advance, which could decrease their current expenditures and result in higher poverty.

As a last exercise, we provide a basic profile of quintiles to show what the “prototype case” would look like by level of welfare (table 2.13). A typical poor case (first quintile), would be composed of almost seven people, and would be headed most likely by a male who is married with low education and around the age of 40. About 60 percent of the case members would be children, with five or six children attending school. The case would most likely come from Dar’a,

Table 2.12 Population and Poverty of Syrian Refugees by Contract Duration and Type of Accommodation, 2014

Contract duration (months)	Type of accommodation			
	Makeshift	Apartment	House	Total
	Population share			
0-1	1.1	10.2	1.7	12.9
2-3	0.1	4.4	0.7	5.2
4-6	0.5	17.2	3	20.7
7-12	1.4	51.4	7.6	60.3
>12	0	0.7	0.1	0.9
Total	3.1	83.8	13.1	100
Poverty rate				
0-1	80.9	59.9	71.7	63.3
2-3	73.0	60.8	70.2	62.3
4-6	73.2	67.7	69.4	68.1
7-12	76.5	66.7	74.7	67.9
>12		74.3		76.0
Total	77.3	65.8	73.0	67.1

Source: Estimations based on JD-HV2 data.

Table 2.13 Profile of Average Cases of Syrian Refugees by Quintile, 2014

Profile	Expenditure quintile				
	1	2	3	4	5
Case size	6.9	6.0	5.0	3.7	2.1
Age of PA	40.1	39.5	39.1	38.8	38.5
Proportion of children <18 years	0.6	0.6	0.6	0.4	0.2
Proportion of children attending school	0.5	0.5	0.4	0.3	0.1
Female PA	0.2	0.2	0.3	0.3	0.3
Married PA	91.1	91.4	90.6	84.3	65.6
PA with education greater than 8 years	0.3	0.4	0.4	0.4	0.5
Skilled worker PA	0.8	0.8	0.8	0.8	0.7
Formal arrival	33.1	35.9	43.3	56.0	67.1
Destination	Irbid, Amman, Mafrqa	Irbid, Amman, Mafrqa	Amman, Irbid, Mafrqa	Amman, Irbid, Mafrqa	Amman, Irbid
Origin	Dar'a, Homs, Hama	Dar'a, Homs, Rural Damascus	Dar'a, Homs, Rural Damascus	Dar'a, Homs, Rural Damascus, Damascus	Dar'a, Damascus, Homs, Rural Damascus

Source: Estimations based on JD-HV2 data.

Homs, or Hama governorates in Syria and settling in Irbid, Amman, or Mafrqa in Jordan and having arrived in the country informally. On the contrary, a typical non-poor case (fifth quintile) would be headed by someone who is much less likely to be married, who is better educated, a bit younger, and living in a case made of only two people with the unlikely presence of children. The provenance and destination of the case, the skill level of the PA, and the probability of being headed by a female would not be a factor that clearly distinguishes poor and rich cases.

Poverty Predictors

In this section, we study the possible predictors of welfare and poverty. We first describe the models, estimators, and the variable selection process we follow to optimize the final models. Next, we present the results for the welfare model, providing details on each key predictor and their explanatory power. In the last part, we present the results of the poverty models and compare different estimations under different poverty lines and sets of predictors.

Models

As already stressed in the Data section at the beginning of this chapter, the JD-HV2 and PG data can be merged into one data file using the UNHCR identification code. This results in a file where all observations (cases) have information coming from the PG data set and a subsample (approximately a third) of observations has information coming from the JD-HV2 data set. As a consequence, only about a third of the cases registered has information on income and expenditure.

Central to the various objectives set in this chapter is the estimation of the welfare and poverty models that best exploit the JD-HV2 and PG data available. The general models are described as follows:

$$(2.2) \quad W_i = \alpha + \beta_1 PGHV_i + \beta_2 PG_i + \beta_3 HV_i + \varepsilon_i$$

$$(2.3) \quad P_i = \alpha + \gamma_1 PGHV_i + \gamma_2 PG_i + \gamma_3 HV_i + \varepsilon_i$$

where W_i = welfare measure (income or expenditure) and P_i = poor where $P_i = 1$ if the case is under the poverty line and $P_i = 0$ if the case is on the poverty line or above; $PGHV$ = the vector of case characteristics present in both the PG and the JD-HV2 databases; PG = vector of case characteristics present in the PG data but not in the JD-HV2 data; HV = vector of case characteristics present in the JD-HV2 data but not in the PG data; ε_i = normally distributed error term with zero mean; and i = case. As W_i is only available in JD-HV2 data, the total number of observations on which the model can be run is equal to the total number of observations in the JD-HV2 data.

If JD-HV2 data are perfectly representative of the PG population of refugees, then the statistics produced from the JD-HV2 sample will be representative of the refugee population and there is no need to use cases in PG that are not included in the JD-HV2 data set. If, vice versa, JD-HV2 data are not representative of the refugee population, then one may want to consider imputing the missing welfare values using information from other variables common to the PG and JD-HV2 data sets. In the Data section, we showed that we have good reasons to believe that the data set most representative of the refugee population is the JD-HV2 data. Therefore, no welfare imputations will be necessary and we will work with JD-HV2 observations only for welfare modeling.

The objective of this section is to maximize the explanatory power of the models. For this purpose, we followed a systematic approach.⁴ First, variables at the individual level (like level of education) were aggregated at the household (case) level by choosing the values from the household head (PA). Second, variables representing counts per household (like number of children in school) were transformed into case variables by dividing for the case size. Third, dummy (0/1) variables were created for the remaining categorical variables. Fourth, the remaining count variables were transformed into dummies so as to use only dummies in the final model. Using only binary (dummy) variables in the model has the advantage of avoiding the problem of finding the right nonlinear transformation for continuous variables and also indicates more precisely the population category considered.

To select the final welfare model, each variable was individually regressed on the main log-transformed per capita welfare aggregate. Variables were selected if they were able to explain more than 1 percent of the variance of the welfare aggregate ($R^2 > 0.01$) and were not missing in most cases. The list of selected variables was further refined through the means of a backward stepwise selection, in which we choose the value of 0.01 as significance level for removal from

the model and the value of 0.009 as significance level for inclusion into the model. We applied also a forward stepwise selection with the same significance values, obtaining analogous results.⁵ The selected variables were then used to build the full model. In subsequent steps, variables were individually tested for collinearity,⁶ substitution by similar/aggregated variables, and loss of explanatory power if removed. The final model selected was the one that provided the highest adjusted R squared.

Welfare results

Table 2.15 shows the results of the welfare models. The dependent variable is the logarithm of expenditure net of UNHCR assistance as described in the previous section on Welfare aggregates. The independent variables are organized by groups of variables, with the first group being the variables available in PG and the other groups following the order of the JD-HV2 questionnaire (housing, WASH [water, sanitation and hygiene], food security, education, poverty and dependency, health, documentation, and protection and specific needs). Only the variables that were retained by the best model were also retained in the table, which means that not all groups of variables are represented. The models section explained the methodology we followed to reach the final model. The final model includes 23 variables, 10 of which are from the PG data.

The first and most important variable of the model is case size. This is partly by construction, as the dependent variable is in per capita terms measured with case size on the denominator. However, case size can potentially take any sign and is used in combination with all other variables in the model, which means that the coefficient is not predictable by construction. Removing this variable alone would reduce the explanatory power of the model by 18.1 percent. The variable is used in categorical dummies and all categories are significant with a coefficient that increases linearly as the case size increases. The t-values are also all very high (t-values of three and above indicate statistical significance). The proportion of children in the case is significant with increasing coefficients across the categories, but it is a less important variable than case size. After controlling for case size, the removal of this variable leads to an R squared reduction of only 0.1 percent. Hence, case size predicts welfare much better than the share of children in the case.

The next set of variables relates to the socioeconomic characteristics of the PA. The occupation measured in terms of skill level is significant only for professionals, which increases welfare as expected. This variable contributes little to the overall model (0.1 percent), whereas the variable occupational category, which we also tested, turned out to be non-significant. This is understandable, because the occupation refers to the status of the PA before the crisis and not to the current occupational status. Hence the former occupation and, to a minor extent, the skills of the PA matter little for the current welfare of the case, indicating that returns to skills are very low for refugees. If refugees manage to work at all, the occupational employment is unlikely to match the skill level the refugees possess. This is evidently a non-negligible loss in human capital and productivity.⁷

The age of the PA is significant and contributes to the model by 0.2 percent. Older age increases welfare as compared to younger age, while there is little difference between the age classes of 35–54 and 55 and older. If the PA is of pension age, this is not a sign of reduced welfare for the case. Marital status is also a significant factor with a 0.2 percent importance, and if the PA is married or engaged then the case is more likely to be better off. Interestingly, being widowed reduces welfare as compared to being married but less so than being single, divorced, or separated. Education of the PA is not such an important variable in the economy of the model (0.1 percent) but it is clear that higher education is associated with higher welfare, with values that increase rather linearly as education increases. This is particularly true for university degrees and higher.

The following set of variables relates to migration patterns as initially explored in the poverty section. The place of origin is generally important (0.2 percent) and cases coming from Damascus are almost invariably better off than cases coming from other governorates in Syria. Cases coming from Hama and Idleb are those most likely to be worse off. Whether the arrival has been formal or not is significant with formal entry increasing the probability of being wealthier for a case. The place of destination in Jordan is more important than the place of origin, with the removal of this variable reducing the explanatory power of the model by 1.1 percent. Those settling in Amman are almost invariably better off than those settling in other governorates. Cases settling in Tafilah, Zarqa, and Mafraq are those worse off despite the fact that we are not considering cases hosted in camps but only cases living outside camps. People crossing the border by land have lower welfare than people crossing the border by air as expected. Particularly deprived are those who came through the Tal Shihab and Nasib (official and unofficial) border crossings. This destination variable reduces the model prediction capacity by 0.2 percent if removed.

The variables illustrated so far are available in the PG data and together have an explanatory power of 48 percent. This may not seem much but it is a fairly good result in econometric modeling and only 5 percentage points below the full model that includes all JD-HV2 variables that were retained in the final model as discussed in what follows.

Among housing variables, we found having a kitchen, electricity, and ventilation to be important. These all increase welfare, and the most important of these is having a kitchen, which, if removed, reduces the explanatory power of the model by 0.39 percent. Also relevant is having the combination of piped sewerage and water (these variables were not significant if taken independently). A house built in cement increases welfare and is fairly relevant (0.16 percent). But the most important variable for housing and the second most important of the model is whether the case pays rent or owns their accommodation (3.55 percent). This is expected of course. We should also consider that the large majority of cases pays rent or owns the accommodation (92.5 percent), which means that the group worse off is rather small. Finally, the crowding variable, measured in terms of square meters per capita, is important (0.31 percent). Increased space per person is associated with increased welfare as expected.

The last set of variables adds little to the overall model (the R squared does not change) but some variables are nevertheless significant. These include seeking humanitarian assistance or assistance from host family or community among the coping strategies, all with negative values, and whether the certificate of asylum is valid, which has a positive value.

In all models, we also control for whether the case receives UNHCR financial assistance. This variable is consistently negative in all models and is the third most important variable for the overall model (2.28 percent). Recall that our dependent variable does not include UNHCR financial assistance for the reasons already explained in the Welfare aggregates section. The reason for including the indicator of whether the case receives UNHCR assistance (binary 0/1 variable) is that this signals whether (pre-assistance) eligible cases are effectively poorer. This is indeed the case as shown by the sign and importance of the variable and confirms that the UNHCR cash assistance is provided to cases more in need.

As a last test, we use as a dependent variable per capita adult equivalent expenditure instead of per capita expenditure (table 2.19). We consider two different equivalence scales, the square root of the case size (column 2) and the modified OECD scale (column 3). Table 2.19 reveals that case size remains the covariate with the strongest effect on expenditure, also when considering adult equivalent expenditure; however, its effect is much weaker than in the case of per capita expenditure as dependent variable (column 1). In particular, the impact of case size on expenditure is higher when using the modified OECD equivalence scale than the square root scale. All the remaining regressors maintain very similar values of beta coefficient and t-ratio with both per capita expenditure and per capita adult equivalent expenditure as a dependent variable (the only exception is the percentage of children in case of the modified OECD scale).

Poverty results

The difference between welfare modeling and poverty modeling is that welfare modeling provides results for the whole distribution of cases while poverty modeling focuses on the factors that matter for the cases below the poverty line. Hence, it is important to understand that the results of poverty modeling largely depend on the level of the poverty line. If this level is very high and all cases fall under the poverty line, then the poverty model will be equal to the welfare model in terms of the factors that matter (coefficients are different because in poverty modeling we use logit or probit estimators while in welfare models we use OLS estimators). If, vice versa, the poverty line is very low, then the cases that fall under the poverty line are few and the model will focus on these cases and will result in a model that looks quite different from the welfare model in terms of predictors. Therefore, if one wants to have general rules for predicting welfare irrespective of the poverty line, the welfare model is more appropriate. If one, instead, is confident of the poverty line and wishes to focus only on those cases below the poverty line, then the poverty model is more appropriate.

In the first of the poverty models (table 2.16), we use the same poverty line used for the poverty profile and discussed in the section on Poverty lines (JD 50/capita/person). Results are very similar to the welfare model. This is not particularly surprising because, as already explained, the poverty line is fairly high and includes over half of the cases considered. However, some changes are visible. For example, cases with 12 and more people predict poverty perfectly, which explains why the model drops the last category of the case size. There are also variables that are excluded as compared to the welfare model and new variables that are added to the model. For example, having a kitchen or ventilation and searching for host family support are dropped from the poverty model, while having sanitary and latrine and having children not attending school as a coping strategy are new variables that appear in the poverty model and were not significant in the welfare model. The importance of variables that are retained by both the welfare and poverty models also changes in the poverty model, although the most important variables of case size and rent remain the same. Overall, the welfare and the JD 50 poverty model are very similar and almost identical if we consider PG variables only.

The second of the poverty models (table 2.17) considers the same variables of the first model but a different poverty line of half the previous line (JD 25/capita/person). This is to see how the same variables change in importance when we lower the poverty line and we focus on the extreme poor. The most important variables remain essentially in the same order. It is noteworthy, however, that the UNHCR assistance dummy becomes much more important in the JD 25 poverty model as compared to the JD 50 model. This clearly signals that the UNHCR assistance, which is partly based on a poverty line of 50 JD, predicts better who is poor below the JD 25 threshold. This is expected of course because the likelihood of covering those cases below JD 25 with a JD 50 poverty line is higher than the likelihood of capturing those below the JD 50 poverty line with a JD 50 poverty line. Compared to the previous model (JD 50 poverty line), the case size reduces its importance, while employment and age of the PA, governorate of origin, being owner or renting the house, and seeking humanitarian assistance become more important. The pseudo-R squared also decreases in the second poverty model, because we simply kept the variables that suited the first poverty model with no ad hoc selection process.

This is what we do in the third and last of the poverty models (table 2.18). Results show that the final set of predictors is similar to the welfare and the first poverty model but that there are further changes in terms of variables dropped and added as compared to the first poverty model. For example, employment, education, sanitary, piped sewerage and water, non-food items (NFIs), and coping with community are all excluded from the last poverty model. Instead ventilation is recovered as in the welfare model. A new entry is the date of arrival, which reveals that the refugees arrived in Jordan in 2012 and in 2013 are the poorest. PG variables continue to be very much the same in all models (except for education and occupation) and there are also JD-HV2 variables that are consistent across the welfare and all poverty models including rent, cement house, electricity,

crowding, coping with aid, and the dummy for UNHCR assistance. Therefore, some variables seem to be solid foundations for any welfare or poverty model while other variables require a more attentive scrutiny and depend on the poverty line set for the poverty models.

Predictions tests

We now test the capacity of the poverty models used in the previous section to predict poverty correctly. In essence, the exercise consists in using the parameters estimated by the models to predict the dependent variable of the model (poor/non-poor) as if we did not have information on this variable. Table 2.14 shows the results using different poverty lines and different probabilities thresholds. The models estimate probabilities of poverty for each case and these probabilities vary between 0 and 1. For example, a case can have a probability of being poor of 60 percent. To test the goodness of the model, we need to determine the probability threshold that we wish to use to decide whether the model assigns a value of poor or non-poor to the case. This threshold is usually 50 percent. If a case is more than 50 percent likely to be poor, then we can say that the model predicts this case to be poor. Sometimes, we may want to change this threshold. That is because each threshold corresponds to a specific coverage rate and leakage rate. Changing the threshold may improve on one of the two rates such as the leakage rate, while making the coverage rate worse. Depending on which rate we are most interested in, we may adapt the threshold to optimize that particular rate. This is why it is important to see how the inclusion and exclusion errors vary as we vary the probability threshold.

The top panel of table 2.14 shows that, using a poverty line of JD 50 and a 50 percent threshold, the model would be able to predict correctly if a case is poor 90.1 percent of the time, which implies that 9.9 percent of the time the model would predict poor cases as non-poor (under-coverage rate or exclusion error).

Table 2.14 Coverage and Leakage Rates for Different Poverty Lines (PL) and Probability Thresholds (Cut-off)

		Observed poor	
		0	1
<i>PL=50 JD; Cut-off 50%</i>			
Predicted poor	0	60.9	9.9
	1	39.1	90.1
	<i>PL=25 JD; Cut-off 50%</i>		
	0	92	53.8
	1	8	46.2
	<i>PL=25 JD; Cut-off 30%</i>		
	0	73.8	27.4
	1	26.2	72.6

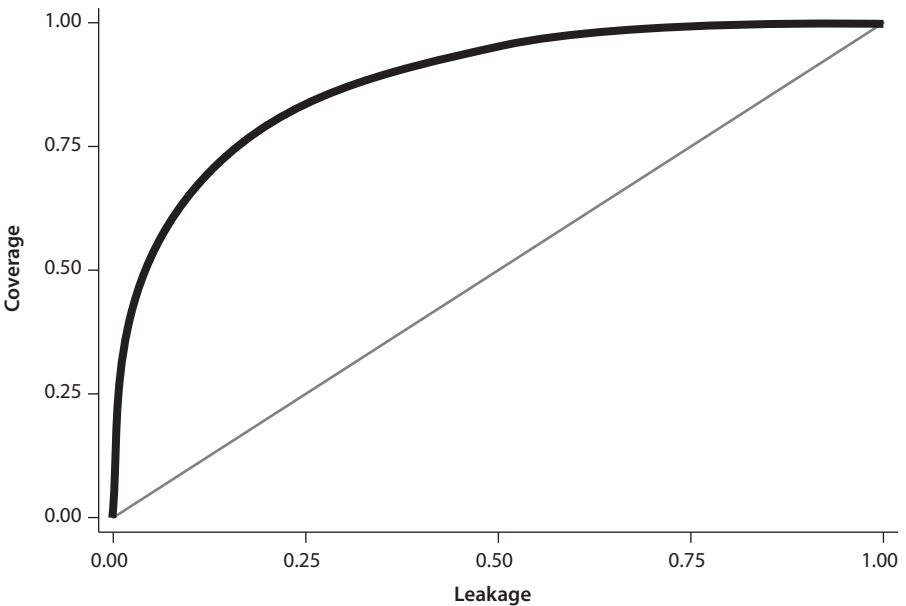
Source: Estimations based on JD-HV2 data.

The model would also predict correctly if a case is non-poor 60.9 percent of the time, which means that 39.1 percent of the time the model would predict as poor non-poor cases (leakage rate or inclusion error). Evidently, the first type of error (under-coverage) is more problematic from a policy and welfare perspective, while the second type of error (leakage) is more problematic from a budget perspective.

The middle panel repeats the exercise using a poverty line of JD 25 and a 50 percent threshold. We can see now that the exclusion error becomes much larger (53.8 percent) while the leakage rate is much lower (8 percent). Hence, as we lower the poverty rate, the prediction capacity of the model worsens from the perspective of under-coverage but improves from the perspective of leakage. The bottom panel repeats the exercise with a poverty line of JD 25 and a probability threshold of 30 percent. This time, the under-coverage rate improves (27.4 percent) while the leakage rate worsens. Clearly, changing the poverty line and the probability threshold affects targeting results. Hence, it is important to fine tune both parameters (poverty line and probability threshold) to obtain results the closest as possible to the error we want to minimize (under-coverage or leakage).

As a final exercise, we test more precisely the performance of our model in terms of the trade-off between coverage and leakage. Figure 2.5 plots the coverage rate (y-axis) against the leakage rate (x-axis) and draws the curve that derives from using different probability thresholds. The interpretation of the curve is the following. The diagonal represents an equal probability of coverage and leakage,

Figure 2.5 Coverage and Leakage with Different Probability Thresholds (JD 50 Poverty Line)



Source: Estimations based on JD-HV2 data.
Note: Area under ROC curve = 0.8824

which is what one would obtain if we were targeting refugees randomly (blindly) with no model. Points on the left of the diagonal show the performance of models that do better than random draws. Clearly, our model does better than random targeting as all points of the curve are on the left of the diagonal. The points further away from the diagonal are those that indicate the best performance and there is clearly one point on the curve where the distance between the curve and the diagonal is maximized. This is the point that offers the best coverage while minimizing leakage. To this point corresponds a particular probability threshold, which is what can be used to maximize the targeting performance of the model.

Conclusions

This chapter provided a poverty profile and welfare assessment of the Syrian refugees in Jordan. The purpose of the poverty profile was three-fold. It provides a first indication of the poverty pockets, it helps to provide some useful indications of the important variables to be used in the welfare model, and it helps to highlight the dimensions that could matter from a policy perspective. In the second part of the chapter, we studied the possible predictors of welfare and poverty. The purpose of the work was also multi-fold. First, we are interested in identifying the main predictors of welfare and poverty for a population of refugees. Second, welfare modeling can indicate how variables that are already included in the PG data perform in terms of predicting welfare and consequently learn about variables that are important for predicting welfare but are not already included in the PG data. Third, the welfare model can be used to evaluate the targeting of the WFP food program and UNHCR cash program. Fourth, it can be used for developing a targeting approach based on a proxy means test (PMT) or other methods. Fifth, it can be used to simulate alternative policies toward refugees and test the potential effects of these policies in advance of implementation.

The chapter provided a detailed scrutiny of the data and explained in detail the measures used. We focused on refugees outside camps living in urban areas and used Home Visits data, which we considered the most representative data set of refugees living in Jordan currently available. As a welfare measure, we used an expenditure aggregate net of UNHCR financial assistance. The UNHCR poverty line of JD 50/person/month was used as a threshold to separate the poor from the non-poor.

The poverty profile showed that Syrian refugees follow particular trajectories depending on where they flee from and where they settle in Jordan and that these trajectories reveal different paths of poverty. It is visible, for example, that refugees coming from the Syrian governorates of Aleppo and Damascus and going to the Jordan governorate of Tafilah are among the poorest with over 90 percent poverty rate. Many among these refugees had already been displaced before the crisis due to the persistent drought in the Northeast of Syria. This affected poor agricultural workers, who moved to the urban centers such as Aleppo and Damascus in search of work during the years that preceded the popular uprising.

Another useful angle is to look at the time of entry into the country. The group that entered Jordan before the Syrian crisis and the latest group of entrants have the lowest poverty rates, whereas the peak of poverty is associated with those who entered in 2012 and 2013, which coincides with the peak of the crisis. Additional insights can be learned looking at the point of entry and the formal status of refugees. The majority of refugees entered the country informally (57.5 percent) and we observe that a few refugees entered informally by air (forged documents). As one would expect, refugees who entered Jordan informally suffer from higher poverty irrespective of the point of entry, with a difference in poverty rates of almost 18 percentage points. We also observe that poverty is associated with the point of entry. The highest poverty rates are found for refugees entering Jordan via the Ruwaished and Hadallat borders.

Socioeconomic characteristics of the PA provide some clues about the poverty status of a case. Married PAs below the age of 18 make up about 0.3 percent of the population. This is a small group in percentage terms but a sizable group in numbers (about 650 cases). Poverty is the highest for the age group 35–49, presumably because this is the group with the largest number of children of young age. For the same reason, poverty is also higher for married and engaged people as opposed to other marital status groups. Single people have the lowest poverty rate and this seems to apply also to people aged 50 and above. In general, poverty increases as we pass from white-collar types of occupations (pre-crisis) to blue-collar types and the highest poverty rate is found among skilled agricultural workers. The largest group by current highest educational level attained are those with 6–8 years of education (almost half of the population) and this group is, somehow surprisingly, also the one with the highest poverty rate. We can also find cells with extreme poverty rates such as skilled agricultural workers with 9–11 years of education where the poverty rate reaches almost 81 percent. Hence, agricultural workers who were particularly affected by the drought in Syria before the crisis remain the poorest population group in the post-crisis refugee status.

Case characteristics provide additional insights. Case size and the share of children in the case are very important for poverty, as is common among poor populations, but this phenomenon seems to be extreme with the Syrian refugee population. People living in larger cases (5 persons and more) have, by far, the highest poverty rates. The poverty rate jumps for each additional case member and for each additional child. For example, from one to two members, the poverty rate jumps from 12.5 percent to 22.4 percent and it jumps from 39.8 percent to 57 percent from one to two children. It is also noteworthy that for a few cases, the case size is equal to the number of children.

The situation of children is also revealing. Children of school age are expected to be in school but refugee children face many challenges in enrolling in educational institutions due to scarce supply, financial constraints, crowding, psychological distress, and other issues that would not normally exist for children in regular populations. Only about half of Syrian refugee children in Jordan attend school despite the fact that Jordan provides free education to refugees. About 34 percent of the population lives in cases where at least one child is not attending

school. Children out of school are at higher risk of child labor, and indeed we find that about 3.6 percent of the population lives in cases where at least one child is working. This is likely to be a lower-bound estimate as child labor is one of the questionnaire items that is most likely to be under-reported because of shame or legal issues.

Through welfare and poverty modeling, we were able to identify the key predictors of poverty. Following a systematic process of variable selections, we reached a final welfare model including a total of 23 variables, 10 of which are from the PG data.

The first and most important variable of the model is case size. The proportion of children in the case is also significant, with increasing coefficients as the share of children increases, but is still a far less important variable than case size. Occupation measured in terms of skill level is significant only for professionals, which increases welfare as expected, but the former occupation and, to a minor extent, the skills of the PA matter little for the current welfare of the case. Hence, returns to skills are very low for refugees. When refugees do manage to work, these occupations do not reflect their skills level. This is a non-negligible loss in human capital and productivity.

The age of the PA is significant, with older age increasing welfare as compared to younger age. If the PA is of pension age, this is not a sign of reduced welfare for the case. Marital status is also a significant factor. If the PA is married or engaged, the case is more likely to be better off. Interestingly, being widowed reduces welfare as compared to being married but less so than being single, divorced, or separated. Education of the PA is not such an important variable in the economy of the model. However, it is clear that higher education is associated with higher welfare, with values that increase rather linearly as education increases. This is particularly true for university degrees and higher.

As for the poverty profile, migration patterns offer some insights into the predictors of welfare. The place of origin is generally important (0.2 percent) and cases coming from Damascus are almost invariably better off than cases coming from other governorates in Syria. Cases coming from Hama and Idleb are those most likely to be deprived. Whether the arrival has been formal or not is very significant with formal entry increasing significantly the probability of being wealthier for a case. The place of destination in Jordan is more important than the place of origin. Those settling in Amman are almost invariably better off than those settling in other governorates. Those settling in Tafilah, Zarqa, and Mafraq are those most deprived despite the fact that we are not considering cases in camps. People crossing the border by land are worse off than people crossing the border by air as expected. Particularly in distress are those who came through the Tal Shihab and Nasib (official and unofficial) border crossings.

The variables illustrated so far are available in the PG data and together have an explanatory power of 48 percent, only 5 percent lower than the best model we could reach using all variables. This is an important indication that the PG data alone can be used for estimating welfare in the absence of welfare measures such as income or expenditure.

Home Visit variables include variables related to housing, non-financial assistance, WASH, food security, education, dependency, health, protection, and special needs. Among housing variables, we found having a kitchen, electricity, and ventilation to be important. These all increase welfare, and the most important of these is having a kitchen. Also relevant is having the combination of piped sewerage and water. A house built in cement increases welfare and is fairly relevant; but the most important variable for housing, and the second most important of the model, is whether the case pays rent or owns its accommodation. This is expected of course and we should consider that the large majority of cases pay rent or own the accommodation (92.5 percent). The crowding variable measured in terms of square meters per capita is also important and associated with increased welfare. Seeking humanitarian assistance or assistance from host families or communities signal lower welfare, whereas having a valid certificate of asylum increases welfare.

In all models, we also controlled for whether the case receives UNHCR financial assistance. This variable is consistently negative in all models and is the third most important variable for the overall model. Our dependent variable does not include UNHCR financial assistance for reasons explained in the section on welfare measures. The reason for including the indicator of whether the case receives UNHCR assistance is that this signals whether (pre-assistance) eligible cases are effectively poorer. This is indeed the case as shown by the sign and importance of the variable and confirms that the UNHCR cash assistance is provided to cases more in need.

In the last section of the paper, we turned to model poverty. The difference between welfare modeling and poverty modeling is that welfare modeling provides results for the whole distribution of cases while poverty modeling focuses on the factors that matter the most for the poor. Therefore, the results of poverty modeling largely depend on the level of the poverty line selected. If this level is very high and all cases fall under the poverty line, then the poverty model will be almost identical to the welfare model in terms of the factors that matter. If, vice versa, the poverty line is very low, then the cases that fall under the poverty line are few and the model will focus on these cases, resulting in a model that looks quite different from the welfare model in terms of predictors. Therefore, if one wants to have general rules for predicting welfare irrespective of the poverty line, the welfare model is more appropriate. If one, instead, is confident of the poverty line and wishes to focus only on those cases below the poverty line, then the poverty model is more appropriate.

With a poverty model that uses a poverty line of JD 50/capita/person, results are very similar to the welfare model. This is not particularly surprising because the poverty line is fairly high and includes over half of the cases considered and almost 70 percent of the population. However, some changes are visible. For example, cases with 12 or more people predict poverty perfectly. There are also variables that are excluded as compared to the welfare model and new variables entered the model. For example, having a kitchen or ventilation and searching for

host family support are dropped from the poverty model, while having sanitary and latrine facilities and having children not attending school as a coping strategy are new variables that appear in the poverty model and are not significant in the welfare model. The importance of variables that are retained by both the welfare and the poverty models also changes in the poverty model, although the most important variables of case size and rent remain the same. Overall, the welfare and the JD 50 poverty model are very similar and almost identical if we consider PG variables only.

Comparing the welfare model to poverty models with different poverty lines shows that some variables seem to be solid foundations for any welfare or poverty model, while other variables require a more attentive scrutiny and depend on the poverty line set for the poverty models. PG variables are very much the same in all models (except for education and occupation). In addition, there are JD-HV2 variables that are consistent across the welfare and all poverty models, including rent, cement house, electricity provision, crowding, coping with aid, and the dummy for UNHCR assistance.

Finally, we tested the capacity of the poverty models to predict poverty correctly. Considering a JD 50 poverty line and a 50 percent probability threshold, the model would be able to predict correctly if a case is poor 90.1 percent of the time, which implies that 9.9 percent of the time the model would predict poor cases as non-poor (under-coverage or exclusion error). The model also predicts correctly if a case is non-poor 60.9 percent of the time, which means that 39.1 percent of the time the model predicts non-poor cases as poor (leakage rate or inclusion error). Evidently, the first type of error (under-coverage) is more problematic from a policy and welfare perspective, whereas the second type of error (leakage) is more problematic from a budget perspective. We also found that there is a clear trade-off between increasing coverage of the poor and decreasing leakage to the non-poor. However, one can fine tune the cut-off point chosen for the probability threshold to optimize the best trade-off between these two outcomes using the curve proposed in the last section of this chapter.

Table 2.15 Welfare Model

		Only PG variables		PG + house + wash		All variables		Variable importance
		Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	
Case size (Ref. Csize=1)	2	-0.47	-34.9	-0.47	-36.5	-0.47	-35.8	18.09%
	3	-0.83	-48.5	-0.83	-50.0	-0.83	-49.0	
	4	-1.04	-61.3	-1.04	-62.9	-1.05	-61.9	
	5	-1.19	-67.6	-1.19	-68.9	-1.20	-68.0	
	6	-1.42	-77.2	-1.40	-77.9	-1.41	-76.4	
	7	-1.45	-68.4	-1.43	-68.8	-1.44	-67.9	
	8-11	-1.66	-80.4	-1.62	-79.9	-1.63	-78.8	
	>=12	-2.36	-36.6	-2.32	-37.3	-2.32	-36.9	
Proportion of children <18 years (Ref. =0)	0-50%	-0.05	-2.9	-0.06	-4.0	-0.06	-3.7	0.05%
	50%-75%	-0.06	-4.2	-0.07	-4.9	-0.06	-4.4	
	>75%	-0.09	-5.4	-0.08	-5.1	-0.07	-4.4	
Employment of PA (Ref. None)	Low Skilled	0.00	0.1	0.03	2.4	0.03	2.2	0.07%
	Skilled	0.01	1.0	0.02	1.6	0.01	1.1	
	High Skilled	0.02	1.6	0.01	0.9	0.01	0.7	
	Professional	0.07	5.1	0.06	4.4	0.06	4.4	
Age of PA (Ref: <=34 years)	35-54 years	0.07	8.7	0.06	7.8	0.06	8.0	0.15%
	>=55 years	0.07	5.8	0.04	3.7	0.05	4.3	
Marital status of PA (Ref. Married or engaged)	Divorced or separated	-0.13	-5.5	-0.10	-4.3	-0.10	-4.2	0.20%
	Single	-0.12	-9.7	-0.10	-8.6	-0.10	-8.2	
	Widowed	-0.10	-7.0	-0.07	-5.3	-0.06	-4.3	
Highest education of PA (Ref. Below 6 years)	6-8 years	0.06	7.1	0.02	2.2	0.02	2.2	0.10%
	9-11 years	0.11	10.1	0.05	5.0	0.05	4.6	
	12-14 years	0.13	10.6	0.07	5.8	0.06	5.2	
	At least university	0.25	14.9	0.18	10.9	0.16	9.9	
Origin (Ref. Damascus)	Al-hasakeh	-0.11	-2.8	-0.01	-0.2	-0.03	-0.7	0.17%
	Aleppo	-0.03	-2.2	-0.05	-3.2	-0.06	-4.0	
	Ar-raqqqa	-0.04	-1.6	-0.02	-0.9	-0.04	-1.6	
	Dar'a	0.00	0.2	-0.03	-2.2	-0.02	-1.7	
	Hama	-0.33	-19.3	-0.02	-1.2	-0.02	-1.4	
	Homs	-0.06	-4.7	-0.11	-8.5	-0.09	-7.3	
	Idleb	-0.32	-11.8	-0.04	-1.3	-0.05	-1.7	
	Rural Damascus	-0.03	-2.2	-0.03	-1.9	-0.02	-1.7	
	Tartous	-0.10	-0.9	-0.13	-1.1	-0.13	-1.1	
	As-sweida	-0.05	-0.6	0.04	0.5	0.06	0.8	
	Deir-ez-zor	-0.17	-4.3	-0.14	-3.6	-0.14	-3.6	
	Lattakia	0.07	1.2	0.05	1.0	0.06	1.1	
	Quneitra	0.05	1.1	-0.01	-0.2	0.00	-0.1	
Formal arrival		0.12	13.3	0.09	9.9	0.08	9.0	0.16%
Destination (Ref. Amman)	Ajloun	-0.12	-4.6	-0.14	-5.6	-0.16	-6.2	1.12%
	Aqabah	0.06	1.0	0.04	0.7	0.02	0.4	
	Balqa	-0.08	-4.9	-0.07	-4.2	-0.07	-4.3	
	Irbid	-0.08	-8.7	-0.08	-9.0	-0.09	-9.7	
	Jarash	-0.13	-5.6	-0.15	-6.5	-0.19	-8.0	
	Karak	-0.14	-6.3	-0.15	-7.2	-0.15	-6.9	
	Maan	-0.14	-4.5	-0.14	-4.7	-0.13	-4.2	
	Madaba	-0.16	-7.2	-0.12	-5.4	-0.11	-5.1	
	Mafraq	-0.21	-19.8	-0.10	-9.3	-0.08	-7.0	
	Tafilah	-0.40	-9.5	-0.45	-11.1	-0.48	-11.8	
	Zarqa	-0.25	-22.6	-0.21	-20.0	-0.20	-18.6	
Border crossing point (Ref. Airport)	Ruwaished-Hadallat	-0.01	-0.6	0.06	4.1	0.06	3.6	0.19%
	Tal Shihab	-0.06	-3.7	-0.05	-3.2	-0.04	-2.8	
	Nasib-official or unofficial	-0.07	-6.2	-0.05	-5.1	-0.04	-4.0	
	Other or no data	-0.04	-3.0	-0.02	-1.8	-0.02	-1.3	

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Table 2.15 (continued)

	Only PG variables		PG + house + wash		All variables		
	Coef.	t-stat.	Coef.	t-stat.	Coef.	t-stat.	Variable importance
House: kitchen			0.10	11.6	0.11	11.5	0.39%
House: electricity			0.04	3.3	0.04	3.5	0.07%
House: ventilation			0.05	5.5	0.05	5.3	0.07%
House: for rent or owned			0.59	39.8	0.60	39.9	3.55%
House: concrete house			0.10	6.8	0.12	8.1	0.16%
House area: square meters	10-15 sq meters		0.02	3.0	0.02	2.7	0.31%
per capita (Ref. <10 sq meters)	>15 sq meters		0.11	14.4	0.09	11.5	
Wash: water through piped AND piped sewerage			0.04	5.3	0.04	4.5	0.05%
Receiving NFIs					-0.05	-5.9	0.08%
Coping strategy: humanitarian assistance					-0.15	-16.0	0.58%
Coping strategy: host family					-0.12	-17.5	0.70%
Coping strategy: host community					-0.04	-6.0	0.09%
Is certificate valid					0.06	7.1	0.13%
UNHCR financial assistance					-0.34	-31.7	2.28%
	Constant	-0.35 -34.4	-0.40 -40.2		4.05	142.5	
	F statistic	4.88 212.5	4.05 152.4		651.11		
	Adjusted R-squared	721.20	727.92		0.53		
	N	0.48	0.53		0.53		
		42,217	40,541		38,694		

Source: Estimations based on JD-HV2 data.

Table 2.16 Poverty Model 1 (JD 50 Poverty Line)

		Only PG variables		PG + house + wash		All variables		
		Coef.	z	Coef.	z	Coef.	z	Variable importance
Case size (Ref. Csize=1)	2	0.27	8.89	0.30	9.00	0.28	8.32	22.2%
	3	0.86	23.24	0.92	23.40	0.89	22.46	
	4	1.19	32.04	1.26	31.93	1.23	30.94	
	5	1.63	41.77	1.70	40.88	1.66	39.69	
	6	2.15	50.84	2.20	48.98	2.16	47.64	
	7	2.36	45.18	2.40	43.62	2.37	42.79	
	8-11	2.87	48.67	2.89	46.48	2.85	45.49	
	>=12	(omitted)		(omitted)		(omitted)		
Proportion of children <18 years (Ref. =0)	0-50%	-0.03	-0.95	0.01	0.27	0.00	0.06	0.4%
	50%-75%	0.19	6.41	0.23	7.17	0.21	6.50	
	>75%	0.25	6.82	0.26	6.73	0.23	5.91	
Employment of PA (Ref. None)	Low Skilled	-0.06	-1.82	-0.12	-3.50	-0.11	-3.28	0.2%
	Skilled	-0.12	-4.31	-0.13	-4.47	-0.13	-4.32	
	High Skilled	-0.12	-4.19	-0.11	-3.58	-0.10	-3.48	
	Professional	-0.25	-7.69	-0.24	-7.02	-0.24	-6.99	
Age of PA (Ref. <=34 years old)	35-54 years old	-0.09	-5.12	-0.07	-3.68	-0.09	-4.82	0.2%
	>=55 years old	0.02	0.62	0.08	2.79	0.06	1.95	
Marital status of PA (Ref. Married or engaged)	Divorced or separated	0.24	4.49	0.22	4.00	0.20	3.58	0.2%
	Single	0.10	3.54	0.08	2.58	0.07	2.44	
	Widowed	0.22	7.17	0.20	6.03	0.18	5.65	
Highest education of PA (Ref. Below 6 years)	6-8 years	-0.11	-5.09	-0.03	-1.42	-0.03	-1.41	0.1%
	9-11 years	-0.21	-8.79	-0.12	-4.86	-0.12	-4.71	
	12-14 years	-0.22	-7.96	-0.12	-4.06	-0.11	-3.70	
	At least university	-0.38	-9.93	-0.27	-6.71	-0.25	-6.13	

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Table 2.16 (continued)

		Only PG variables		PG + house + wash		All variables		
		Coef.	z	Coef.	z	Coef.	z	Variable importance
Origin (Ref. Damascus)	<i>Al-hasakeh</i>	-0.09	-0.89	-0.30	-2.70	-0.25	-2.26	0.3%
	<i>Aleppo</i>	0.01	0.18	0.04	1.05	0.05	1.48	
	<i>Ar-raqqa</i>	-0.23	-3.63	-0.27	-4.12	-0.23	-3.48	
	<i>Dar'a</i>	0.03	0.90	0.06	2.15	0.05	1.74	
	<i>Hama</i>	0.57	14.19	0.06	1.23	0.06	1.19	
	<i>Homs</i>	0.09	3.17	0.16	5.28	0.13	4.20	
	<i>Idleb</i>	0.56	8.45	0.09	1.22	0.08	1.10	
	<i>Rural Damascus</i>	0.06	1.90	0.05	1.65	0.04	1.36	
	<i>Tartous</i>	0.17	0.60	0.20	0.69	0.18	0.62	
	<i>As-sweida</i>	0.24	1.31	0.00	-0.01	-0.05	-0.23	
	<i>Deir-ez-zor</i>	0.08	0.87	0.03	0.31	0.04	0.40	
	<i>Lattakia</i>	-0.25	-1.75	-0.21	-1.44	-0.22	-1.48	
	<i>Quneitra</i>	-0.06	-0.54	0.00	0.03	0.01	0.09	
Formal arrival		-0.23	-11.14	-0.18	-8.39	-0.17	-7.96	0.3%
Destination (Ref. Amman)	<i>Ajloun</i>	0.31	5.11	0.37	5.84	0.38	5.97	1.5%
	<i>Aqabah</i>	-0.18	-1.44	-0.21	-1.63	-0.20	-1.51	
	<i>Balqa</i>	0.10	2.58	0.03	0.89	0.05	1.26	
	<i>Irbid</i>	0.06	2.71	0.07	3.00	0.07	2.99	
	<i>Jarash</i>	0.27	4.98	0.33	5.70	0.34	5.96	
	<i>Karak</i>	0.29	5.79	0.35	6.53	0.33	6.05	
	<i>Maan</i>	0.23	3.26	0.31	4.07	0.27	3.64	
	<i>Madaba</i>	0.32	6.31	0.28	5.15	0.30	5.55	
	<i>Mafrq</i>	0.36	14.49	0.16	5.83	0.10	3.63	
	<i>Tafilah</i>	0.52	5.02	0.67	6.08	0.70	6.35	
	<i>Zarqa</i>	0.42	16.89	0.39	14.81	0.38	14.02	
Border crossing point (Ref. Airport)	<i>Ruwaished–Hadallat</i>	0.09	2.36	-0.04	-1.05	-0.05	-1.24	0.2%
	<i>Tal Shihab</i>	0.13	3.72	0.09	2.59	0.07	1.99	
	<i>Nasib-official or unofficial</i>	0.17	6.84	0.14	5.18	0.11	4.04	
	<i>other or no data</i>	0.09	3.00	0.05	1.58	0.03	0.99	
House: electricity				-0.11	-4.46	-0.12	-4.57	0.1%
House: sanitary				-0.17	-7.99	-0.16	-7.20	0.2%
House: for rent or owned				-1.04	-27.15	-1.05	-27.07	3.6%
House: concrete_house				-0.16	-4.16	-0.17	-4.45	0.1%
House area: square meters per capita (Ref. <10 sq m)	<i>10-15 sq meters</i>			-0.09	-4.39	-0.09	-4.33	1.3%
	<i>>15 sq meters</i>			-0.30	-16.63	-0.30	-16.28	
Wash: water through piped AND piped sewerage				-0.08	-4.11	-0.07	-3.79	0.1%
Wash: having adequate and functioning latrine				-0.12	-5.39	-0.12	-5.48	-0.2%
Receiving any kind of NFIs						0.11	5.68	0.2%
Coping strategy: humanitarian assistance						0.30	13.35	0.8%
Coping strategy: host community						0.07	3.94	0.1%
Coping strategy: dropping children from school						0.11	3.86	0.1%
UNHCR financial assistance		0.66	26.62	0.74	28.60	0.64	23.88	2.7%
<i>Constant</i>		-1.24	-23.30	0.25	3.67	0.24	3.58	
<i>N</i>		43,207.00		41,408.00		41,055.00		
<i>Pseudo R-squared</i>		0.3388		0.3763		0.3794		

Source: Estimations based on JD-HV2 data.

Table 2.17 Poverty Model 2 (JD 25 Poverty Line, Same Variables of Poverty Model 1)

		Only PG variables		PG + house + wash		All variables		Variable importance
		Coef.	z	Coef.	z	Coef.	z	
Case size (Ref. Csize=1)	2	0.01	0.36	0.00	0.06	-0.01	-0.24	16.8%
	3	0.39	9.01	0.40	8.57	0.38	8.02	
	4	0.52	11.87	0.53	11.32	0.50	10.69	
	5	0.67	15.00	0.68	14.12	0.65	13.38	
	6	1.04	22.76	1.04	21.35	1.00	20.33	
	7	1.12	21.90	1.12	20.59	1.09	19.97	
	8-11	1.53	30.81	1.51	28.50	1.48	27.6	
	>=12	3.53	11.46	3.83	9.56	3.77	9.44	
Proportion of children <18 years (Ref. =0)	0-50%	0.07	1.91	0.12	2.91	0.10	2.49	0.1%
	50%-75%	0.10	2.83	0.12	3.19	0.10	2.5	
	>75%	0.13	3.24	0.12	2.83	0.09	1.98	
Employment of PA (Ref. None)	Low Skilled	-0.16	-4.70	-0.24	-6.67	-0.24	-6.6	0.7%
	Skilled	-0.19	-6.38	-0.21	-6.67	-0.21	-6.5	
	High Skilled	-0.14	-4.51	-0.12	-3.88	-0.12	-3.79	
	Professional	-0.26	-7.44	-0.25	-6.73	-0.25	-6.79	
Age of PA (Ref: <=34 years old)	35-54 years old	-0.11	-5.90	-0.11	-5.54	-0.13	-6.52	0.9%
	>=55 years old	0.07	2.50	0.14	4.46	0.12	3.83	
Marital status of PA (Ref. Married or engaged)	Divorced or separated	0.32	5.66	0.32	5.41	0.30	5.06	
	Single	0.03	1.00	0.00	0.06	0.00	-0.08	
	Widowed	0.22	6.98	0.19	5.57	0.18	5.24	
Highest education of PA (Ref. Below 6 years)	6-8 years	-0.12	-5.57	-0.03	-1.14	-0.02	-1.02	-0.1%
	9-11 years	-0.19	-7.79	-0.08	-3.10	-0.08	-2.87	
	12-14 years	-0.21	-7.25	-0.10	-3.29	-0.09	-2.81	
	At least university	-0.38	-8.62	-0.27	-5.83	-0.25	-5.37	
Origin (Ref. Damascus)	Al-hasakeh	0.10	0.88	-0.31	-2.32	-0.27	-1.97	1.1%
	Aleppo	-0.19	-4.55	-0.14	-3.25	-0.13	-3.02	
	Ar-raqqa	-0.24	-3.08	-0.32	-3.68	-0.27	-3.12	
	Dar'a	0.06	2.00	0.12	3.64	0.11	3.21	
	Hama	0.59	14.72	0.03	0.69	0.04	0.83	
	Homs	0.10	3.08	0.18	5.33	0.16	4.52	
	Idleb	0.50	8.05	-0.01	-0.14	0.00	-0.05	
	Rural Damascus	0.07	1.98	0.05	1.38	0.05	1.2	
	Tartous	-0.31	-0.79	-0.34	-0.83	-0.32	-0.8	
	As-sweida	-0.15	-0.64	-0.22	-0.90	-0.26	-1.03	
	Deir-ez-zor	0.09	0.83	0.02	0.14	0.04	0.33	
	Lattakia	-0.24	-1.32	-0.16	-0.87	-0.15	-0.81	
	Quneitra	-0.10	-0.75	0.00	0.01	0.02	0.16	
Formal arrival		-0.19	-9.06	-0.14	-6.50	-0.14	-6.5	0.4%
Destination (Ref. Amman)	Ajloun	-0.02	-0.28	0.05	0.83	0.10	1.48	1.7%
	Aqabah	-0.38	-2.41	-0.44	-2.55	-0.39	-2.24	
	Balqa	-0.01	-0.26	-0.06	-1.34	-0.03	-0.77	
	Irbid	0.05	2.37	0.07	2.84	0.09	3.46	
	Jarash	0.02	0.38	0.07	1.11	0.10	1.65	
	Karak	0.15	2.92	0.21	3.88	0.22	4.03	
	Maan	0.13	1.81	0.14	1.86	0.14	1.8	
	Madaba	0.20	4.08	0.15	2.88	0.20	3.66	
	Mafrq	0.27	11.12	0.07	2.66	0.05	1.7	
	Tafilah	0.48	5.23	0.61	6.46	0.66	6.9	
	Zarqa	0.31	12.42	0.29	11.04	0.30	11	
Border crossing point (Ref. Airport)	Ruwaished-Hadallat	0.07	1.70	-0.10	-2.28	-0.10	-2.43	0.8%
	Tal Shihab	0.14	3.68	0.12	3.07	0.10	2.44	
	Nasib-official or unofficial	0.21	7.05	0.18	5.61	0.15	4.52	
	other or no data	0.14	4.17	0.10	2.80	0.07	2.11	
House: electricity				-0.14	-5.53	-0.14	-5.63	0.5%
House: sanitary				-0.08	-3.89	-0.07	-3.4	0.1%

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Table 2.17 (continued)

	Only PG variables		PG + house + wash		All variables		
	Coef.	z	Coef.	z	Coef.	z	Variable importance
House: for rent or owned			-0.98	-29.34	-0.99	-29.34	8.3%
House: concrete_house			-0.15	-4.09	-0.17	-4.53	0.2%
House area: square meters per capita (Ref. <10 sq m)		-0.08	-3.75	-0.08	-3.65	1.5%	
10-15 sq meters							
>15 sq meters		-0.25	-12.28	-0.25	-12.12		
Wash: water through piped AND piped sewerage			-0.01	-0.51	-0.01	-0.51	0.0%
Wash: having adequate and functioning latrine			-0.12	-5.68	-0.12	-5.45	-0.3%
Receiving any kind of NFIs					0.04	2.36	0.1%
Coping strategy: humanitarian assistance					0.32	15.54	2.3%
Coping strategy: host community					0.04	2.1	0.0%
Coping strategy: dropping children from school					0.12	4.67	0.2%
UNHCR financial assistance	0.72	34.95	0.82	38.11	0.72	31.64	9.7%
Constant	-1.58	-26.60	-0.27	-3.83	-0.26	-3.65	
N	43,322.00		41,521.00		41,168.00		
Pseudo R-squared	0.1874		0.2340		0.2400		

Source: Estimations based on JD-HV2 data.

Table 2.18 Poverty Model 2 (JD 25 Poverty Line, Optimal Model)

		Only PG variables		PG + house + wash		All variables		
		Coef.	z	Coef.	z	Coef.	z	Variable importance
Case size (Ref. Csize=1)	2	0.02	0.58	0.01	0.34	-0.01	-0.19	16.0%
	3	0.39	9.07	0.39	8.59	0.37	7.93	
	4	0.50	11.70	0.51	11.15	0.47	10.19	
	5	0.65	14.86	0.66	13.89	0.61	12.82	
	6	1.02	22.81	1.02	21.24	0.96	19.69	
	7	1.09	21.99	1.08	20.34	1.04	19.24	
	8-11	1.52	31.32	1.48	28.59	1.42	26.84	
	>=12	3.54	11.63	3.84	9.66	3.74	9.50	
Proportion of children <18 years (Ref. =0)	0-50%	0.07	1.81	0.12	2.94	0.09	2.23	0.1%
	50%-75%	0.11	3.21	0.14	3.57	0.10	2.61	
	>75%	0.17	4.27	0.17	4.01	0.12	2.85	
Age of PA (Ref: <=34 years old)	35-54 years old	-0.12	-6.71	-0.12	-6.47	-0.13	-6.91	1.0%
	>=55 years old	0.11	3.90	0.14	4.90	0.14	4.59	
Marital status of PA (Ref. Married or engaged)	Divorced or separated	0.33	6.04	0.35	6.00	0.33	5.63	0.8%
	Single	0.03	1.09	0.01	0.42	0.00	0.13	
	Widowed	0.31	10.18	0.27	8.56	0.25	7.87	
Origin (Ref. Damascus)	Al-hasakeh	-0.26	-2.41	0.20	1.49	0.16	1.19	1.1%
	Aleppo	-0.33	-2.67	-0.02	-0.10	-0.02	-0.15	
	Ar-raqqa	-0.15	-1.37	0.31	2.32	0.25	1.84	
	Dar'a	-0.02	-0.22	0.48	3.66	0.37	2.76	
	Hama	0.49	4.62	0.34	2.50	0.27	2.00	
	Homs	0.03	0.27	0.54	4.09	0.42	3.13	
	Idleb	0.41	3.53	0.31	2.16	0.26	1.74	
	Rural Damascus	-0.05	-0.45	0.38	2.86	0.31	2.28	
	Tartous	-0.48	-1.21	-0.08	-0.19	-0.11	-0.26	
	As-sweida	-0.14	-0.58	0.21	0.81	0.14	0.53	
	Deir-ez-zor	-0.06	-0.45	0.29	1.71	0.26	1.50	
	Lattakia	-0.31	-1.57	0.20	0.92	0.11	0.50	
	Quneitra	-0.20	-1.24	0.36	1.99	0.30	1.66	

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Table 2.18 (continued)

		Only PG variables		PG + house + wash		All variables		Variable importance
		Coef.	z	Coef.	z	Coef.	z	
Destination (Ref. Amman)	<i>Ajloun</i>	-0.05	-0.82	-0.11	-1.78	-0.15	-2.28	1.9%
	<i>Aqabah</i>	-0.40	-2.46	-0.53	-3.00	-0.51	-2.84	
	<i>Balqa</i>	-0.04	-0.57	-0.16	-2.21	-0.18	-2.50	
	<i>Irbid</i>	0.02	0.39	-0.03	-0.46	-0.05	-0.78	
	<i>Jarash</i>	-0.03	-0.35	-0.06	-0.68	-0.07	-0.80	
	<i>Karak</i>	0.12	1.63	0.12	1.54	0.10	1.27	
	<i>Maan</i>	0.09	0.94	0.04	0.36	-0.02	-0.19	
	<i>Madaba</i>	0.20	2.66	0.07	0.88	0.06	0.72	
	<i>Mafrq</i>	0.28	4.55	0.00	0.06	-0.06	-0.95	
	<i>Tafilah</i>	0.47	4.33	0.53	4.78	0.53	4.72	
	<i>Zarqa</i>	0.29	4.61	0.20	3.09	0.16	2.50	
Border crossing point (Ref. Airport)	<i>Ruwaished-Hadallat</i>	0.31	8.85	0.09	2.38	-0.06	-1.35	0.3%
	<i>Tal Shihab</i>	0.31	9.25	0.23	6.53	0.07	1.85	
	<i>Nasib-official or unofficial</i>	0.28	9.39	0.20	6.27	0.11	3.23	
	<i>other or no data</i>	0.27	8.81	0.18	5.49	0.06	1.60	
Date of arrival (Ref. Before 15mar2011)	15mar2011-31dec2011	0.16	2.37	0.12	1.68	0.12	1.60	0.8%
	1gen2012-21dec2012	0.27	4.62	0.20	3.12	0.14	2.13	
	1gen2013-1nov2013	0.23	3.91	0.11	1.83	0.06	0.93	
	after 1nov2013	-0.04	-0.59	-0.20	-2.69	-0.25	-3.29	
House: electricity				-0.14	-5.43	-0.13	-5.16	0.5%
House: ventilation				-0.10	-4.54	-0.10	-4.14	0.3%
House: concrete house				-0.15	-4.24	-0.16	-4.49	0.2%
House: for rent or owned				-1.01	-30.48	-1.01	-30.13	8.7%
House area: square meters per capita (Ref. <10 sq m)	10-15 sq meters		-0.08	-4.02	-0.08	-3.88	1.6%	
	>15 sq meters		-0.26	-13.22	-0.26	-12.86		
Wash: having adequate and functioning latrine				-0.14	-6.48	-0.12	-5.86	-0.3%
Receiving any kind of NFIs						0.04	2.21	0.0%
Coping strategy: humanitarian assistance						0.31	14.66	2.1%
Coping strategy: dropping children from school						0.15	5.83	0.3%
Was entry formal						-0.17	-7.54	0.3%
UNHCR financial assistance		0.70	31.53	0.78	33.55	0.70	28.42	7.7%
<i>Constant</i>		-2.34	-32.10	-0.71	-8.34	-0.58	-3.41	
<i>N</i>		44,661		42,677.00		41,585.00		
<i>Pseudo R-squared</i>		0.1839		0.2341		0.2404		

Source: Estimations based on JD-HV2 data.

Table 2.19 Welfare Model with Dependent Variable in Per Capita Adult Equivalent Terms

		Per capita expenditure		Equivalent expenditure (square root)		Equivalent expenditure (modified-OECD)	
		Coef.	t	Coef.	t	Coef.	t
Case size (Ref. Csize=1)	2	-0.47	-35.8	-0.13	-9.59	-0.19	-14.52
	3	-0.83	-49.0	-0.28	-16.74	-0.39	-22.66
	4	-1.05	-61.9	-0.35	-20.90	-0.57	-33.52
	5	-1.20	-68.0	-0.39	-22.31	-0.63	-35.90
	6	-1.41	-76.4	-0.51	-27.75	-0.79	-42.95
	7	-1.44	-67.9	-0.46	-21.87	-0.83	-39.27
	8-11	-1.63	-78.8	-0.55	-26.48	-0.98	-47.38
	>=12	-2.32	-36.9	-0.97	-15.41	-1.63	-25.88
Proportion of children <18 years (Ref. =0)	0-50%	-0.06	-3.7	-0.06	-3.65	0.00	0.13
	50%-75%	-0.06	-4.4	-0.07	-4.69	0.10	7.48
	>75%	-0.07	-4.4	-0.08	-4.93	0.18	11.17

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Table 2.19 (continued)

		Per capita expenditure		Equivalent expenditure (square root)		Equivalent expenditure (modified–OECD)	
		Coef.	t	Coef.	t	Coef.	t
Employment of PA (Ref. None)	<i>Low Skilled</i>	0.03	2.2	0.03	2.23	0.03	2.18
	<i>Skilled</i>	0.01	1.1	0.01	1.05	0.01	1.02
	<i>High Skilled</i>	0.01	0.7	0.01	0.71	0.01	0.87
	<i>Professional</i>	0.06	4.4	0.06	4.43	0.06	4.37
Age of PA (Ref: <=34 years)	<i>35–54 years</i>	0.06	8.0	0.06	7.80	0.06	7.67
	<i>>=55 years</i>	0.05	4.3	0.05	4.12	0.04	3.53
Marital status of PA (Ref. Married or engaged)	<i>Divorced or separated.</i>	–0.10	–4.2	–0.10	–4.21	–0.10	–4.29
	<i>Single</i>	–0.10	–8.2	–0.10	–8.33	–0.10	–8.60
	<i>Widowed</i>	–0.06	–4.3	–0.06	–4.29	–0.06	–4.28
Highest education of PA (Ref. Below 6 years)	<i>6–8 years</i>	0.02	2.2	0.02	2.20	0.02	2.23
	<i>9–11 years</i>	0.05	4.6	0.05	4.64	0.05	4.65
	<i>12–14 years</i>	0.06	5.2	0.06	5.29	0.06	5.25
	<i>At least university</i>	0.16	9.9	0.16	9.92	0.16	9.97
Origin (Ref. Damascus)	<i>Al-hasakeh</i>	–0.03	–0.7	–0.03	–0.74	–0.03	–0.73
	<i>Aleppo</i>	–0.06	–4.0	–0.06	–3.95	–0.06	–3.90
	<i>Ar-raqqqa</i>	–0.04	–1.6	–0.04	–1.62	–0.04	–1.61
	<i>Dar'a</i>	–0.02	–1.7	–0.02	–1.72	–0.02	–1.61
	<i>Hama</i>	–0.02	–1.4	–0.03	–1.41	–0.03	–1.38
	<i>Homs</i>	–0.09	–7.3	–0.09	–7.32	–0.09	–7.26
	<i>Idleb</i>	–0.05	–1.7	–0.05	–1.61	–0.05	–1.65
	<i>Rural Damascus</i>	–0.02	–1.7	–0.02	–1.73	–0.02	–1.68
	<i>Tartous</i>	–0.13	–1.1	–0.14	–1.15	–0.14	–1.16
	<i>As-sweida</i>	0.06	0.8	0.06	0.79	0.06	0.81
	<i>Deir-ez-zor</i>	–0.14	–3.6	–0.14	–3.57	–0.14	–3.57
	<i>Lattakia</i>	0.06	1.1	0.06	1.10	0.06	1.09
	<i>Quneitra</i>	0.00	–0.1	0.00	–0.06	0.00	–0.02
		0.08	9.0	0.08	9.06	0.08	9.08
Formal arrival		0.08	9.0	0.08	9.06	0.08	9.08
Destination (Ref. Amman)	<i>Ajloun</i>	–0.16	–6.2	–0.16	–6.24	–0.16	–6.21
	<i>Aqabah</i>	0.02	0.4	0.02	0.39	0.02	0.27
	<i>Balqa</i>	–0.07	–4.3	–0.07	–4.31	–0.07	–4.34
	<i>Irbid</i>	–0.09	–9.7	–0.09	–9.66	–0.09	–9.71
	<i>Jarash</i>	–0.19	–8.0	–0.19	–8.05	–0.19	–8.02
	<i>Karak</i>	–0.15	–6.9	–0.15	–6.91	–0.15	–6.93
	<i>Maan</i>	–0.13	–4.2	–0.13	–4.18	–0.12	–4.11
	<i>Madaba</i>	–0.11	–5.1	–0.11	–5.12	–0.11	–5.16
	<i>Mafraq</i>	–0.08	–7.0	–0.08	–7.00	–0.08	–6.99
	<i>Tafilah</i>	–0.48	–11.8	–0.48	–11.70	–0.49	–11.92
	<i>Zarqa</i>	–0.20	–18.6	–0.20	–18.63	–0.20	–18.61
		0.06	3.6	0.06	3.58	0.06	3.56
Border crossing point (Ref. Airport)	<i>Ruwaished-Hadallat</i>	0.06	3.6	0.06	3.58	0.06	3.56
	<i>Tal Shihab</i>	–0.04	–2.8	–0.04	–2.77	–0.04	–2.76
	<i>Nasib-official or unofficial.</i>	–0.04	–4.0	–0.04	–4.00	–0.04	–4.02
	<i>other or no data.</i>	–0.02	–1.3	–0.01	–1.21	–0.01	–1.22
House: kitchen		0.11	11.5	0.11	11.64	0.11	11.70
House: electricity		0.04	3.5	0.04	3.52	0.04	3.48
House: ventilation		0.05	5.3	0.05	5.29	0.05	5.27
House: for rent or owned		0.60	39.9	0.60	39.92	0.60	39.88
House: concrete house		0.12	8.1	0.12	8.17	0.12	8.17
House area: square meters per capita (Ref. <10 sq meters)	<i>10–15 sq meters</i>	0.02	2.7	0.02	2.69	0.02	2.65
	<i>>15 sq meters</i>	0.09	11.5	0.09	11.44	0.09	11.31
Wash: water through piped AND piped sewerage		0.04	4.5	0.04	4.59	0.04	4.57
Receiving NFIs		–0.05	–5.9	–0.05	–5.88	–0.05	–5.88
Coping strategy: humanitarian assistance		–0.15	–16.0	–0.15	–15.95	–0.15	–15.93
Coping strategy: host family		–0.12	–17.5	–0.12	–17.49	–0.12	–17.56
Coping strategy: host community		–0.04	–6.0	–0.04	–5.97	–0.04	–5.85
Is certificate valid		0.06	7.1	0.06	7.17	0.06	7.16
UNHCR financial assistance		–0.34	–31.7	–0.34	–31.62	–0.34	–31.53
	<i>Constant</i>	4.05	142.5	4.05	142.67	4.05	142.49
	<i>F statistic</i>	651.11		221.34		273.49	
	<i>Adjusted R-squared</i>	0.53		0.2762		0.3206	
	<i>N</i>	38,694		38,694		38,694	

Source: Estimations based on JD-HV2 data.

Notes

1. As explained in the executive summary, this chapter and chapters 3 and 4 will focus on Jordan only. The extension to Lebanon and other data sets is carried out in chapter 5 and appendixes A, B, and C.
2. See: http://nces.ed.gov/nationsreportcard/tdw/analysis/2004_2005/infer_compare2_overlap.aspx and http://nces.ed.gov/nationsreportcard/NDEHelp/WebHelp/dependent_t-tests_nde_statistical_specification.htm.
3. It is important to note here that it is not possible to draw a sample of refugees which is perfectly representative of the refugee population. That is because the exact refugee population is not known and one does not have a master sample for sampling purposes.
4. In applied econometric work, this systematic procedure is usually unnecessary given that the important variables are largely known. But in the context of a refugee population this was deemed necessary because of the lack of literature on welfare modeling on refugee data and the exploratory nature of this work.
5. The forward stepwise method, at each step, enters the variable with the largest F-to-enter statistic, provided that this is greater than the threshold value for F-to-enter. When there are no variables left to enter for which F-to-enter statistics are above the threshold, the model checks to see whether the F-to-remove statistics of any variables added previously have fallen below the F-to-remove threshold. If so, it removes the less performing variable, and then continues with trials. It finally stops when no variables either in or out of the model have F-statistics on the wrong side of their respective thresholds.
6. We checked for the collinearity of the variables selected using the variance inflation factor (VIF).
7. The results of occupational employment have to be used with great care. Chapter 1 showed that large and unexplained discrepancies exist between the refugees' former occupational employment and the Syrian pre-crisis population.

Vulnerability

Introduction

Welfare and poverty analyses based on household data provide a snapshot of the level of deprivation of a certain population in a particular point in time. Longitudinal or panel data are generally required to better understand the evolution of welfare and poverty over time, but these data are harder to come by or may be difficult to compare over long spans of time.

An alternative and complementary approach to the study of poverty is the study of vulnerability to poverty. The term vulnerability is largely used by humanitarian and developmental organizations alike and the meaning attributed to this term can be very diverse. In strictly economic terms, the notion of vulnerability is associated with the concept of risk and the concept of risk, in turn, implies some time dimension. But the economic profession has also widely used the term vulnerability to identify, for example, people who are not poor but have an income that is close to the poverty line in a particular point in time. The term vulnerability in economics has also been applied beyond monetary dimensions. For example, economists talk of vulnerability to shocks, which can be economic but also climatic or environmental.

Humanitarian organizations also use the term vulnerability. There is no strict definition but the term is applied to various dimensions of deprivation. For example, a selected number of statuses of refugees such as being a widow or having many children can qualify refugees as “vulnerable” and entitle them to special assistance or services. The World Food Programme (WFP) may talk of food deprived or vulnerable people and humanitarian organizations working on health may use the term vulnerability to identify people at risk of certain diseases or violence. The chapter on concepts and definitions has provided several examples of how humanitarian organizations use the term vulnerability.

In this chapter, we follow a recent strand of the economic literature (Chaudhuri et al. 2002) that defines vulnerability to poverty as the risk of being poor in the near future, where the near future is usually intended in terms of one year. This literature is particularly useful for our purpose because it does not

require longitudinal or panel data, which we do not have for the refugee population under consideration. It uses instead a statistical procedure to estimate the risk of poverty in the near future using only cross-section data.

Moreover, the methodology can be applied to monetary and nonmonetary dimensions, which allows us also to see how monetary and nonmonetary dimensions relate in terms of vulnerability. For the monetary dimension, we will use expenditure per capita as the measure to estimate poverty. For the nonmonetary dimensions, we take two representative measures currently used by humanitarian organizations assisting refugees: the WFP Food Consumption Score (FCS) and the UNHCR Crowding Index (CI). For both monetary and nonmonetary indicators we will estimate the degree of vulnerability and the predictors of vulnerability. We will also assess the relation between monetary and nonmonetary vulnerability to gauge the policy implications of treating nonmonetary deprivations with cash assistance programs.

Therefore, the objective of this chapter is to measure monetary vulnerability for refugees in Jordan, see how monetary vulnerability overlaps with poverty, and how monetary vulnerability is related to nonmonetary vulnerability. If vulnerability largely overlaps with poverty, then measures designed to address poverty would be sufficient to address vulnerability issues. Similarly, if monetary vulnerability is closely associated with nonmonetary vulnerability, policies that address monetary vulnerability would be sufficient to address nonmonetary vulnerability.

Some interesting results emerge from the analysis. The chapter clearly shows that poverty and vulnerability to poverty are two related but quite different concepts. Good predictors of poverty may not be good predictors of vulnerability and vice versa. Poverty may be larger than vulnerability and the contrary can also be true depending on various factors, including the poverty line used. We also find nonmonetary indicators such as the FCS and the CI to behave very differently from each other and in relation to monetary vulnerability, with the former weakly associated and the latter strongly associated with monetary vulnerability.

The chapter is organized as follows. In the next section, we describe the concepts of vulnerability as recently proposed by the economic literature. The third section explains the vulnerability model used and its application, the fourth section discusses results, and the final section concludes.

Concepts

Poverty is an *ex post* measure of household welfare. However, the current poverty status may not necessarily be a good indicator of being poor tomorrow. Non-poor households at the present time may have a high probability of becoming poor tomorrow, while some poor households today may be only transiting poverty because of an unexpected temporary shock. As mentioned by Ceriani (2015), if the aim of studying poverty is not only alleviating the economic condition of those who are poor today, but also preventing people from becoming poor in the future, a forward-looking perspective should be adopted.

The economic literature has recently introduced the concept of *vulnerability to poverty*, referring to the uncertainty of being poor in the future. The World Development Report 2000/2001, for instance, underlines that: “poverty is more than inadequate income or human development, it is also vulnerability and a lack of voice, power, and representation [...] Reducing vulnerability—to economic shocks, natural disasters, ill health, disability, and personal violence—is an intrinsic part of enhancing well-being” (World Bank 2001: 12).

The concept of economic vulnerability is more complicated to grasp than poverty, as it introduces the complex notion of uncertainty: future distributions of outcomes are indeed unknown and the vulnerability of households is unobservable to the policy maker. Due to this complexity, there is still no consensus about the definition of economic vulnerability to poverty. There are three main concepts of economic vulnerability conceived in the literature: (i) vulnerability as exposure to risk (VER), (ii) vulnerability as expected poverty (VEP), and (iii) vulnerability as low expected utility (VEU). These three concepts are briefly described below:¹

- 1. Vulnerability as exposure to risk (VER):** Vulnerability is defined as lack of insurance against shocks. Individuals in low-income countries do not have access to effective insurance mechanisms, and are therefore exposed to income fluctuations due to erratic weather, price variability, crop failures, or human illnesses. If insurance mechanisms were effective, individuals could smooth consumption over time, by pooling risks or by borrowing against adverse shocks, independently of income fluctuations. In this framework, an individual is defined as vulnerable if current consumption falls below the poverty line although permanent income stays above it.
- 2. Vulnerability as expected poverty (VEP):** Vulnerability is defined as the ex ante risk that an individual will be poor in the future. In contrast with poverty, which is an ex post measure of household welfare, vulnerability is a forward-looking measure of household welfare. As suggested by Chaudhuri et al. (2002), whereas the status of poor is observable, the status of being vulnerable can only be estimated or inferred. Within this framework, some authors define vulnerability as the risk that a household, if currently non-poor, will fall below the poverty line in the future (Dang and Lanjouw 2014; Kuhl 2003; Pritchett et al. 2000; Suryahadi and Sumarto 2003). Others also include among the vulnerable households that are currently poor and have a high probability of remaining poor in the future (Calvo and Dercon 2013; Chaudhuri et al. 2002; Christiaensen and Boisvert 2000; Christiaensen and Subbarao 2005).
- 3. Vulnerability as low expected utility (VEU):** Vulnerability is the difference between a household utility derived from certainty-equivalent consumption and its expected utility derived from actual consumption. The certainty-equivalent consumption is defined in such a way that if the household had certain consumption greater than or equal to this number, the household would not be regarded as vulnerable. Thus, the certainty-equivalent consumption is similar to the concept of poverty line in the poverty measurement. See, for example, Ligon and Schechter (2003).

In this paper, we will use the VEP definition: vulnerability is the *ex ante* risk that an individual or a household will be poor in the future. This is the definition that corresponds to the only model we can use given the available cross-section data. Moreover, we include among the vulnerable both households that are currently non-poor and have a high probability of falling below the poverty line in the future, and households that are currently poor and have a high probability of remaining poor in the future.

The chapter will also apply the VEP concept and tools to study nonmonetary poverty. Humanitarian organizations use the term vulnerability extensively, attributing to this term various meanings and applying it to various dimensions of deprivation. In this chapter, we pick two nonmonetary measures of deprivation in use among humanitarian organizations and use them to estimate vulnerability with the same VEP method we use to estimate monetary vulnerability. These measures are the WFP's FCS and the UNHCR's CI. The FCS and CI measures are two of the most popular indicators among humanitarian organizations and they cover basic needs such as food and housing. They are used in this chapter as two representative examples of nonmonetary measures used by humanitarian organizations.

Models

As mentioned above, we focus on the VEP model. The natural steps to apply the VEP model are the following: (i) choose a vulnerability indicator; (ii) forecast future outcomes and variability of the vulnerability indicator in order to estimate the *ex ante* probability distribution of *ex post* welfare; and (iii) determine a vulnerability threshold to assign observations to the vulnerable and non-vulnerable status. These choices are mainly driven by data availability and by the type of society targeted in the study—for instance, whether there are panel data or cross-country data, or whether the society is rural, developed, or undeveloped.

As a vulnerability indicator we consider household expenditure per capita. The main reasons for selecting this indicator is that expenditure has the advantage of incorporating information about a household's ability to smooth income shocks. Income in poor countries is generally a less reliable indicator than expenditure because it is often under-reported and because it is subject to sharp variations during the year, especially in rural areas. This is particularly the case for a refugee population which, by circumstances, has no income or low income generated occasionally and primarily in the informal sector. Indeed, in the data set used for this study, the Home Visits database for Jordan, second round (JD-HV2), the expenditure measure has been proven to be higher and much more reliable than the income measure (see chapter 2, section on welfare aggregates).

Within the VEP framework, there are different models designed to estimate and predict future expenditure and its variability in order to estimate the *ex ante* probability of future expenditure, and these models depend on the type of data available. The probability that a household will be poor in the future depends not

only on its expected future expenditure, but also on the volatility of its expenditure pattern. We quote an interesting example in Chauduri et al. (2002): “A salaried low-level government employee with an expected level of consumption roughly similar to that of a self-employed proprietor of a small business may nevertheless be much less vulnerable to poverty because of the relative stability of the former’s consumption stream.” Therefore, estimating vulnerability to poverty requires estimating both the expected expenditure (forward looking) and its intertemporal variance.

Ideally, rich and long panel data or repeated cross-section data would be preferable for vulnerability estimation, since with such data one could directly estimate the intertemporal variance of expenditure. However, such data are rare, particularly in developing countries, and alternative methodologies have been developed to produce estimates with single cross-section data. In this paper we follow the methodology proposed by Chauduri et al. (2002), which requires the following assumptions: (i) most of the variability in the observed expenditure is due to variability in observed covariates; (ii) the distribution of expenditure is log-normal; and (iii) the distribution of expenditure is heteroscedastic. The variance of each household’s expenditure depends on the respective household characteristics. Or, in other words, the idiosyncratic shocks may vary across households. The model is based on the following equations:

$$(3.1) \quad \ln c_h = X_h \beta + \epsilon_h$$

$$(3.2) \quad \sigma_{\epsilon,h}^2 = X_h \theta$$

where the expenditure of the h -th case c_h is assumed to have a log-normal distribution; X_h represents a bundle of observable case characteristics, such as case size, dependency ratio, location (such as region), demographic characteristic of the principal applicant (gender, education, occupation, sector of activity), possession of land or livestock (and also the land size, or/and the value of livestock), and community characteristics (like access to clean water, credit institutions, industries, transport facilities). β is the vector of parameters, while ϵ_h is the zero-mean disturbance representing the unexplained case expenditure (idiosyncratic shocks that contribute to different per capita consumption levels, as explained in Chaudhuri et al. 2002). In equation 3.2, $\sigma_{\epsilon,h}^2$ refers to the variance of the unexplained expenditure ϵ_h , while X_h corresponds to the same set of covariates as in equation 3.1 and θ is the vector of the corresponding parameters.

Implicit in equation 3.1 is the assumption that the idiosyncratic shocks to expenditure are independent and identically distributed over time *within* each case. As a consequence, we cannot observe persistence in expenditure level over time for each case. The model also assumes that the economy (captured by β) is relatively stable over time (since β are fixed over time), ruling out the possibility of capturing aggregate shocks. As a consequence, the uncertainty about future expenditure cannot arise from uncertainty about the future structure of the economy, but it stems only from the uncertainty about idiosyncratic shocks (ϵ_h).

Equation 3.2 shows that we do not assume that the idiosyncratic shocks are identically distributed *across* cases, but we allow them to depend upon observable case characteristics (heteroscedasticity).

This model therefore assumes that the intertemporal variance of the case expenditure can be measured using its cross-sectional variance. This is a strong assumption of course and one that cannot be tested for the population at hand. Testing the assumption would require having intertemporal data and comparing results between the intertemporal model and the cross-sectional model. Given that we do not have intertemporal data on refugees, this assumption cannot be tested. It is also important for the model to have significant variability in covariates. We would expect our sample of refugees to have a reduced variance in covariates as compared to the Indonesia sample used by Chaudhuri. However, it would be incorrect to assume that refugees are a very homogeneous sample and that we don't have sufficient variance in covariates to use a model of this kind. The analyses in chapters 2 and 4 show that we have significant variance on most covariates and also in the dependent variable.

The previous assumptions are due to the fact that we are estimating vulnerability from a single cross-section data set. Equations 3.1 and 3.2 are estimated using a three-step feasible generalized least square (FGLS) method (originally proposed by Amemiya 1977). First, we estimate equation 3.1 using an ordinary least squares (OLS) procedure. Second, we estimate equation 3.2 by using the log of the square of the residuals estimated from equation 3.1 (denoted with $\hat{e}_{OLS,h}^2$) and regressing them on the same covariates using OLS estimation, in order to estimate the effects of case characteristics on the expenditure variance:

$$(3.3) \quad \hat{e}_{OLS,h}^2 = X_h \theta + \eta_h.$$

The predictions from equation 3.3, $X_h \widehat{\theta}_{OLS}$, are then used to transform the same equation as follows (equation 3.4):

$$(3.4) \quad \frac{\hat{e}_{OLS,h}^2}{X_h \widehat{\theta}_{OLS}} = \frac{X_h}{X_h \widehat{\theta}_{OLS}} \theta + \frac{\eta_h}{X_h \widehat{\theta}_{OLS}}.$$

This transformed equation 3.4 is estimated using OLS to obtain an asymptotically efficient FGLS estimate $\widehat{\theta}_{FGLS}$. And $\hat{\sigma}_{\epsilon,h}^2 = X_h \widehat{\theta}_{FGLS}$ is a consistent estimate of the variance of the idiosyncratic component of case consumption, $\sigma_{\epsilon,h}^2$. The inefficiencies of the first OLS estimates obtained from equation 3.1 are then corrected by weighting them with the square root of predicted values obtained from equation 3.4, to give equation 3.5:

$$(3.5) \quad \frac{\ln c_h}{\hat{\sigma}_{\epsilon,h}} = \frac{X_h}{\hat{\sigma}_{\epsilon,h}} \beta + \frac{\epsilon_h}{\hat{\sigma}_{\epsilon,h}}.$$

As a third step, the OLS estimates of equation 3.5 provide a consistent and asymptotically efficient estimate of β , $\widehat{\beta}_{FGLS}$. Summing up, we have obtained $\hat{\theta} = \widehat{\theta}_{FGLS}$ and $\hat{\beta} = \widehat{\beta}_{FGLS}$ and we can therefore estimate the expected log-expenditure of the each case h , as follows (equation 3.6):

$$(3.6) \quad \hat{E}(\ln c_h | X_h) = X_h \hat{\beta}$$

and the variance of its log-expenditure (equation 3.7):

$$(3.7) \quad \hat{V}(\ln c_h | X_h) = \hat{\sigma}_{\varepsilon, h}^2 = X_h \hat{\theta}.$$

By assuming that expenditure is log-normally distributed, we can now estimate each case's *vulnerability level*, that is, the probability that, given a set of covariates, the future case expenditure will fall below the poverty line z (equation 3.8):

$$(3.8) \quad \hat{v}_h = \hat{P}_h(\ln c_h < \ln z) = \Phi\left(\frac{\ln z - X_h \hat{\beta}}{\sqrt{X_h \hat{\theta}}}\right).$$

The last step of the methodology consists in choosing the vulnerability threshold, which is defined as follows: cases whose probability of falling below the poverty line in the future is above the vulnerability threshold are defined as vulnerable. In this study, we consider the most common choice for the vulnerability threshold, corresponding to $p = 0.5$. The intuition is the following: we say that a case is vulnerable if its estimated probability of falling into poverty in the future is higher than its estimated probability of not falling into poverty.

It is important to stress the difference between the vulnerability model that we have just described and a welfare model. In welfare and poverty assessments, the disturbance term e_h in equation 3.1 is usually interpreted as measurement error or some unobservable factor that is not of interest, and it is assumed that its variance is the same for all cases. On the contrary, in the vulnerability model that we consider here the variance of the disturbance term has a relevant economic interpretation, being the intertemporal variance of the log-expenditure. In fact, assuming a different variance for all cases allows us the possibility to observe that a case with a lower mean expenditure may face greater volatility than a case with a higher average level of expenditure. In this study, we will apply the methodology described above to measure both monetary and nonmonetary vulnerability.

The paper uses two data sets generated by the UNHCR: the Profile Global Registration System (ProGres, hereafter referred to as PG) and data from Home Visits in Jordan, round II (JD-HV2). These data sets are used and described in detail in chapter 2, section on data. The vulnerability model discussed in the results section is based on the welfare model described in chapter 2. Therefore, for the choice and description of the covariates to include in the three-step FGLS method and for all other details concerning data and welfare aggregates, we refer to chapter 2, section on poverty predictors.

Results

We divide the discussion of the results into monetary and nonmonetary vulnerability. In the second part on nonmonetary vulnerability, we also discuss the relation between monetary and nonmonetary vulnerability with the objective of

better understanding whether financial assistance can be an appropriate mean to address nonmonetary vulnerabilities. Recall that the concept of vulnerability refers to the near future. Therefore, from a policy perspective, we are trying to assess the types of policies that organizations working with refugees may adopt to prevent cases from staying poor or falling into poverty in the near future.

Monetary vulnerability

Table 3.1 shows the estimated coefficients of the vulnerability model for three different sets of covariates: (i) covariates available in PG data (model 1); (ii) covariates in model 1 plus information on dwelling (house) and water, sanitation, and hygiene (WASH) (model 2); and (iii) covariates in model 2 plus all other significant variables of HV or PG data (model 3). For each model, we report the estimates of each of the three regression models of the three-step FGLS method: the dependent variable in the first column is the *ex ante mean*, referring to expenditure today (and this coincides with the welfare model discussed in chapter 2), the dependent variable in the second column is the *ex ante variance*, corresponding to the log of the square of the estimated residuals (which is an estimate of the expenditure variation), while the dependent variable in the third column is the *corrected ex ante mean*, referring to interpreted as the expenditure tomorrow.

The model on expenditure today (columns 1, 4, and 7) has been amply discussed in chapter 2 on welfare and poverty and we will not repeat the discussion here. The second column of each model illustrates the role of the variance of the residuals in adding or detracting information used to predict vulnerability in the future (the third column of each model). Looking at the variance model (columns 2, 5, and 8), we notice that the variables having a significant effect on the expenditure variation are: case size, employment of the principal applicant (PA) (if low-skilled or skilled), age of the PA (if older than 55 years), house size, rent, and the coping strategies. On the other hand, number of children, marital status, education, border crossing point, formal arrival, and governorate of destination do not affect the consumption variability. Also, most of the house conditions are not significant for explaining the variance (with the only exception of rent and square meters per capita greater than 15).

Note that the signs in columns 2, 5, and 8 can be negative or positive. If a covariate has a significantly negative sign in the variance equation, it means that this covariate has a risk-decreasing effect. Data show that case size, employment, and education can be considered as a buffer against expenditure fluctuations. On the other hand, a positive sign in the variance model means that the corresponding covariate increases the cases' economic insecurity and hence the vulnerability. These signs and significance levels then determine the difference between poverty today and the vulnerability to poverty tomorrow (the difference between the first and the third columns in each of the three models).

For example, focusing on case size, we notice that larger cases are characterized by a lower average of today expenditure (column 1), but at the same time by a lower variance of future expenditure (column 2). This may be due to the fact that more family members may contribute to greater flexibility in labor

Table 3.1 Monetary Vulnerability Model

	Model 1: Only PG variables						Model 2: PG + house + WASH						Model 3: All variables					
	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Case size (Ref. =1)																		
2	-0.47	-34.9	-0.46	-9.83	-0.45	-32.18	-0.47	-36.5	-0.55	-11.25	-0.45	-34.50	-0.47	-35.8	-0.52	-10.47	-0.45	-34.41
3	-0.83	-48.5	-0.46	-7.61	-0.81	-45.63	-0.83	-50.0	-0.54	-8.77	-0.80	-47.71	-0.83	-49.0	-0.51	-8.06	-0.80	-47.8
4	-1.04	-61.3	-0.53	-8.91	-1.02	-58.62	-1.04	-62.9	-0.64	-10.42	-1.01	-61.44	-1.05	-61.9	-0.58	-9.16	-1.02	-61.99
5	-1.19	-67.6	-0.70	-11.26	-1.18	-66.37	-1.19	-68.9	-0.80	-12.51	-1.16	-68.80	-1.20	-68.0	-0.72	-10.86	-1.18	-69.66
6	-1.42	-77.2	-0.46	-7.13	-1.39	-74.41	-1.40	-77.9	-0.61	-9.07	-1.36	-76.05	-1.41	-76.4	-0.54	-7.77	-1.37	-76.81
7	-1.45	-68.4	-0.69	-9.27	-1.42	-69.05	-1.43	-68.8	-0.89	-11.43	-1.39	-70.53	-1.44	-67.9	-0.78	-9.81	-1.41	-71.91
8-11	-1.66	-80.4	-0.57	-7.79	-1.62	-79.27	-1.62	-79.9	-0.76	-10.08	-1.57	-79.65	-1.63	-78.8	-0.66	-8.48	-1.59	-81.14
>=12	-2.36	-36.6	-0.87	-3.84	-2.34	-43.29	-2.32	-37.3	-1.13	-4.87	-2.29	-44.69	-2.32	-36.9	-0.69	-2.93	-2.30	-39.89
Proportion of children <18 years (Ref. 0%)	-0.05	-2.9	0.10	1.78	-0.05	-2.92	-0.06	-4.0	0.20	3.52	-0.06	-4.22	-0.06	-3.7	0.15	2.47	-0.06	-3.94
50%-75%	-0.06	-4.2	0.01	0.14	-0.06	-4.48	-0.07	-4.9	0.11	2.13	-0.06	-4.85	-0.06	-4.4	0.09	1.66	-0.06	-4.39
>75%	-0.09	-5.4	0.05	0.94	-0.09	-5.74	-0.08	-5.1	0.11	1.93	-0.07	-4.90	-0.07	-4.4	0.05	0.89	-0.06	-3.92
Employment of PA (Ref. None)																		
Low Skilled	0.00	0.1	-0.26	-5.24	-0.01	-0.87	0.03	2.4	-0.34	-6.54	0.03	1.96	0.03	2.2	-0.26	-4.90	0.02	1.79
Skilled	0.01	1.0	-0.26	-5.97	0.00	0.22	0.02	1.6	-0.24	-5.25	0.02	1.36	0.01	1.1	-0.16	-3.49	0.01	0.59
High Skilled	0.02	1.6	-0.03	-0.77	0.02	1.57	0.01	0.9	-0.03	-0.56	0.02	1.32	0.01	0.7	0.03	0.57	0.01	1.22
Professional	0.07	5.1	-0.18	-3.64	0.07	5.07	0.06	4.4	-0.13	-2.61	0.07	5.24	0.06	4.4	-0.07	-1.37	0.07	5.47
Age of PA (Ref. <=34 years)	0.07	8.7	-0.06	-2.08	0.06	8.27	0.06	7.8	-0.03	-1.06	0.05	7.09	0.06	8.0	-0.03	-0.95	0.04	6.61
>=55 years	0.07	5.8	0.17	3.96	0.08	6.18	0.04	3.7	0.27	6.11	0.05	3.91	0.05	4.3	0.25	5.53	0.05	4.28
Marital status of PA (Ref. Married/engaged)	-0.13	-5.5	0.25	2.93	-0.11	-3.99	-0.10	-4.3	0.21	2.46	-0.08	-2.91	-0.10	-4.2	0.23	2.57	-0.08	-2.93
Single	-0.12	-9.7	-0.05	-1.11	-0.10	-8.00	-0.10	-8.6	0.01	0.31	-0.07	-6.46	-0.10	-8.2	0.02	0.48	-0.08	-7.05
Widowed	-0.10	-7.0	0.25	4.99	-0.08	-4.86	-0.07	-5.3	0.19	3.68	-0.05	-3.52	-0.06	-4.3	0.15	2.83	-0.04	-2.73
Highest education of PA (Ref. <6 years)	0.06	7.1	-0.10	-3.12	0.06	6.76	0.02	2.2	-0.03	-0.88	0.02	2.26	0.02	2.2	-0.04	-1.18	0.02	2.44
6-8 years	0.11	10.1	-0.13	-3.39	0.10	10.15	0.05	5.0	-0.04	-0.93	0.05	5.19	0.05	4.6	-0.04	-1.12	0.05	4.78
9-11 years	0.13	10.6	-0.14	-3.30	0.12	10.08	0.07	5.8	-0.12	-2.59	0.07	6.14	0.06	5.2	-0.10	-2.27	0.06	5.54
12-14 years	0.25	14.9	-0.21	-3.56	0.24	15.63	0.18	10.9	-0.07	-1.17	0.18	11.79	0.16	9.9	-0.14	-2.24	0.16	11.22
At least university																		

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Table 3.1 (continued)

	Model 1: Only PG variables						Model 2: PG + house + WASH						Model 3: All variables					
	ex ante mean		ex ante variance		corrected ex ante mean		ex ante mean		ex ante variance		corrected ex ante mean		ex ante mean		ex ante variance		corrected ex ante mean	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Origin (Ref. Damascus)																		
Al-hasakah	-0.11	-2.8	-0.25	-1.80	-0.11	-3.28	-0.01	-0.2	-0.58	-4.03	0.00	-0.18	-0.03	-0.7	-0.31	-2.07	-0.02	-0.82
Aleppo	-0.03	-2.2	-0.31	-5.87	-0.02	-1.83	-0.05	-3.2	-0.19	-3.47	-0.04	-2.83	-0.06	-4.0	-0.19	-3.46	-0.04	-3.55
Al-raqa	-0.04	-1.6	-0.41	-4.66	-0.03	-1.29	-0.02	-0.9	-0.34	-3.82	-0.01	-0.27	-0.04	-1.6	-0.36	-3.86	-0.02	-0.95
Dara	0.00	0.2	-0.02	-0.49	-0.01	-0.74	-0.03	-2.2	0.06	1.23	-0.04	-3.23	-0.02	-1.7	0.04	0.79	-0.03	-2.9
Hama	-0.33	-19.3	0.07	1.11	-0.33	-19.99	-0.02	-1.2	-0.01	-0.08	-0.05	-2.89	-0.02	-1.4	-0.06	-0.82	-0.06	-3.56
Homs	-0.06	-4.7	0.01	0.31	-0.07	-5.92	-0.11	-8.5	0.10	2.14	-0.11	-9.18	-0.09	-7.3	0.09	1.82	-0.09	-7.84
Idlib	-0.32	-11.8	0.12	1.22	-0.33	-11.92	-0.04	-1.3	-0.12	-1.19	-0.07	-2.80	-0.05	-1.7	-0.10	-0.95	-0.08	-3.07
Rural Damascus	-0.03	-2.2	0.02	0.34	-0.03	-2.41	-0.03	-1.9	0.04	0.85	-0.03	-2.09	-0.02	-1.7	-0.01	-0.15	-0.03	-2.07
Tartous	-0.10	-0.9	-0.28	-0.64	-0.12	-1.09	-0.13	-1.1	0.07	0.15	-0.13	-1.14	-0.13	-1.1	-0.61	-1.38	-0.11	-1.39
As-sweida	-0.05	-0.6	0.08	0.29	0.01	0.09	0.04	0.5	-0.60	-2.07	0.09	1.55	0.06	0.8	-0.71	-2.43	0.11	1.95
Deir-ez-zor	-0.17	-4.3	0.42	2.99	-0.16	-3.33	-0.14	-3.6	0.25	1.76	-0.12	-2.95	-0.14	-3.6	0.24	1.65	-0.11	-2.69
Latakia	0.07	1.2	-0.40	-2.01	0.06	1.39	0.05	1.0	-0.13	-0.64	0.04	0.80	0.06	1.1	-0.12	-0.58	0.04	0.94
Quneitra	0.05	1.1	-0.07	-0.43	0.07	1.44	-0.01	-0.2	-0.02	-0.11	0.00	0.10	0.00	-0.1	0.09	0.50	0.02	0.35
Formal arrival	0.12	13.3	-0.09	-2.89	0.12	13.83	0.09	9.9	-0.04	-1.23	0.09	10.28	0.08	9.0	-0.06	-1.74	0.08	9.96
Destination (Ref. Amman)																		
Aljoun	-0.12	-4.6	-0.08	-0.84	-0.14	-5.84	-0.14	-5.6	-0.09	-0.92	-0.18	-7.91	-0.16	-6.2	0.12	1.20	-0.20	-8.27
Aqabah	0.06	1.0	-0.86	-4.40	0.07	2.22	0.04	0.7	-0.79	-3.84	0.05	1.53	0.02	0.4	-0.90	-4.21	0.03	1.06
Balqa	-0.08	-4.9	-0.16	-2.87	-0.09	-6.37	-0.07	-4.2	-0.14	-2.42	-0.08	-6.09	-0.07	-4.3	-0.14	-2.30	-0.08	-6.32
Irbid	-0.08	-8.7	-0.02	-0.59	-0.10	-10.76	-0.08	-9.0	0.00	0.07	-0.11	-12.18	-0.09	-9.7	0.08	2.08	-0.11	-13.02
Jarash	-0.13	-5.6	-0.38	-4.51	-0.15	-7.82	-0.15	-6.5	-0.37	-4.27	-0.17	-9.54	-0.19	-8.0	-0.23	-2.66	-0.20	-11.12
Karak	-0.14	-6.3	-0.31	-4.00	-0.15	-8.54	-0.15	-7.2	-0.34	-4.24	-0.17	-10.40	-0.15	-6.9	-0.24	-2.90	-0.17	-10.19
Maan	-0.14	-4.5	-0.20	-1.87	-0.14	-5.67	-0.14	-4.7	-0.08	-0.75	-0.15	-5.83	-0.13	-4.2	-0.15	-1.28	-0.15	-6.17
Madaba	-0.16	-7.2	-0.11	-1.38	-0.18	-9.19	-0.12	-5.4	-0.16	-2.08	-0.14	-7.40	-0.11	-5.1	-0.07	-0.82	-0.15	-7.62
Mafraq	-0.21	-19.8	0.31	8.21	-0.19	-16.66	-0.10	-9.3	0.10	2.51	-0.08	-7.83	-0.08	-7.0	0.06	1.42	-0.06	-5.11
Tafilah	-0.40	-9.5	0.48	3.30	-0.44	-9.12	-0.45	-11.1	0.63	4.19	-0.52	-10.73	-0.48	-11.8	0.86	5.58	-0.56	-10.93
Zarga	-0.25	-22.6	0.12	3.26	-0.25	-23.01	-0.21	-20.0	0.08	1.89	-0.21	-20.75	-0.20	-18.6	0.06	1.44	-0.20	-19.65

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Table 3.1 (continued)

	Model 1: Only PG variables						Model 2: PG + house + WASH						Model 3: All variables					
	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean	ex ante mean	ex ante variance	corrected ex ante mean
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Border crossing point (Ref. Airport)	-0.01	-0.6	-0.12	-2.17	0.00	-0.01	0.06	4.1	-0.23	-3.94	0.06	4.15	0.06	3.6	-0.17	-2.82	0.05	3.43
Ruwaished-Haddilat	-0.06	-3.7	0.06	1.09	-0.05	-3.80	-0.05	-3.2	0.12	2.21	-0.05	-3.49	-0.04	-2.8	0.07	1.18	-0.04	-3.11
Tal Shihab	-0.07	-6.2	0.10	2.48	-0.06	-6.36	-0.05	-5.1	0.06	1.53	-0.05	-5.56	-0.04	-4.0	0.04	1.04	-0.04	-4.36
Nasib	-0.04	-3.0	0.05	1.13	-0.04	-3.60	-0.02	-1.8	0.05	1.08	-0.02	-2.27	-0.02	-1.3	0.05	1.08	-0.01	-1.29
other or no data.																		
House: kitchen							0.10	11.6	0.05	1.61	0.08	9.89	0.11	11.5	0.06	1.71	0.09	10.51
House: electricity							0.04	3.3	-0.06	-1.49	0.04	3.61	0.04	3.5	-0.06	-1.41	0.04	3.73
House: ventilation							0.05	5.5	-0.02	-0.63	0.06	6.53	0.05	5.3	-0.07	-1.91	0.06	6.48
House for rent or owned							0.59	39.8	-0.33	-5.89	0.55	35.85	0.60	39.9	-0.41	-7.28	0.56	36.25
House: concrete_house							0.10	6.8	0.12	2.17	0.12	8.85	0.12	8.1	0.02	0.27	0.15	10.51
House: square meter/cap							0.02	3.0	-0.07	-2.22	0.04	4.70	0.02	2.7	-0.04	-1.40	0.04	4.77
House: square meter/cap (Ref. <10 sq m)							0.11	14.4	-0.39	-14.07	0.12	17.31	0.09	11.5	-0.29	-10.00	0.10	14.37
WASH: water through piped AND piped sewerage							0.04	5.3	0.01	0.33	0.04	5.19	0.04	4.5	0.01	0.25	0.04	5.17
Receiving NFIs													-0.05	-5.9	0.07	2.48	-0.03	-4.05
Coping strategy: humanitarian assistance													-0.15	-16.0	0.38	10.68	-0.15	-15.92
Coping strategy: host family													-0.12	-17.5	0.47	18.38	-0.12	-17.63
Coping strategy: host community													-0.04	-6.0	0.00	0.07	-0.05	-7.63
Is certificate valid													0.06	7.1	-0.14	-4.05	0.07	8.27
UNHCR financial assistance	-0.35	-34.4	0.19	5.18	-0.36	-35.06	-0.40	-40.2	0.30	8.14	-0.41	-39.76	-0.34	-31.7	0.22	5.34	-0.38	-34.85
constant	4.88	212.5	-1.81	-22.39	4.88	211.17	4.05	152.4	-1.70	-17.11	4.06	153.20	4.05	142.5	-1.73	-16.23	4.05	146.91
F statistic	721.2		22.3		685.1		727.9		21.3		714.4		651.1		26.1		682.0	
Adjusted R-squared	0.48		0.03		0.47		0.53		0.03		0.52		0.53		0.04		0.54	
N	42,217		42,217		42,217		40,541		40,541		40,541		38,694		38,694		38,694	

Source: Estimations based on JD-HV2 data.

activities (including children). As a consequence, the estimates of the third column (future expenditure) are slightly smaller than the ones in the first column: the risk-decreasing effect of case size mitigates its negative effects on future expenditure (and hence on vulnerability). Similarly for education, higher levels of education enhance today's expenditure but lower the variance of future expenditure, revealing a strong effect in mitigating vulnerability. On the contrary, cases whose PA is widowed experience both lower expenditure today on average and higher variance, being less secure of their expenditure level tomorrow (and being more vulnerable).

Table 3.2 (left panel) reports frequencies and shares of poverty and vulnerability using a poverty line of JD 50/capita/month, which is the poverty line that the UNHCR adopted when the data we use were collected. As a sensitivity test, we also use a poverty line of half the amount (right panel) and compare results. Using a poverty line of JD 50, the table shows that, while 69.2 percent of the population is poor, around 55 percent is estimated as economically vulnerable, according to all three models. Note that some of the people who are poor today may not be poor tomorrow and, vice versa, some of the people who are expected to be poor tomorrow may not be poor today. Hence, the share of vulnerable people may be higher or lower than the share of poor people depending on the relative importance of how many are expected to enter poverty and how many are expected to exit poverty. This, in turn, also depends on the poverty line. In table 3.2 (left panel), the share of vulnerable people in the three models is consistently lower than the share of poor people and this is partly due to the fact that the poverty line used is quite high. The difference in vulnerability across models is very small and this can also be due to the different number of observations used by each model.²

Table 3.2 Incidence of Poverty and Economic Vulnerability

<i>Model</i>	<i>PL= JD 50</i>		<i>PL= JD 25</i>	
	<i>Freq.</i>	<i>Percent</i>	<i>Freq.</i>	<i>Percent</i>
<i>Poor</i>				
0	56,826	30.8	129,109	70.0
1	127,570	69.2	55,287	30.0
Total	184,396	100.0	184,396	100.0
<i>Vulnerable—Model 1</i>				
0	75,976	44.7	92,885	54.6
1	94,201	55.4	77,292	45.4
Total	170,177	100.0	170,177	100.0
<i>Vulnerable—Model 2</i>				
0	73,665	45.1	87,975	53.9
1	89,667	54.9	75,357	46.1
Total	163,332	100.0	163,332	100.0
<i>Vulnerable—Model 3</i>				
0	70,710	45.3	81,931	52.5
1	85,415	54.7	74,194	47.5
Total	156,125	100.0	156,125	100.0

Source: Estimations based on JD-HV2 data.

Note: PL = poverty line.

Using a poverty line of JD 25/capita/month (table 3.2, right panel) reduces the poverty level by more than half. It also reduces the vulnerability level according to all three models by about 10 percentage points. These changes result in vulnerability shares that are much higher than the poverty share, the opposite of what we found using a high poverty line. Hence, the lower the poverty line the lower the vulnerability, but the change, as compared to poverty, is more modest so that the poverty line can determine whether poverty or vulnerability is higher. Therefore, poverty and vulnerability are two clearly distinct phenomena and their relationship can be affected by the level of the poverty line.

We can also assess mobility between poverty and vulnerability by cross-tabulating these different dimensions. We find that mobility is quite strong. Table 3.3 cross-tabulates poverty and vulnerability to see the groups that are mobile moving from poverty to non-poverty and vice versa, and of the groups that are not mobile, those who stay poor or non-poor. The top panel in the table puts the total number of poor or non-poor today equal to 100. The bottom panel puts the four groups of people from the matrix equal to 100. In both panels, we test the sensitivity of results using the three adopted models and two poverty lines (PL), JD 50 and JD 25/capita/month.

If we look at model 2 and the top panel (PL = JD 50), the table reveals that more than 61 percent of the non-poor today are vulnerable, while more than 51 percent of those who are poor today are vulnerable. In other words, only about half of those who are poor today are expected to be poor the following year while less than 40 percent of the non-poor today are expected to remain non-poor. These results change relatively little across models while, as expected, they

Table 3.3 Mobility from Poverty to Economic Vulnerability

	<i>Model 1</i>			<i>Model 2</i>			<i>Model 3</i>		
	<i>Non-vulnerable</i>	<i>Vulnerable</i>	<i>Total</i>	<i>Non-vulnerable</i>	<i>Vulnerable</i>	<i>Total</i>	<i>Non-vulnerable</i>	<i>Vulnerable</i>	<i>Total</i>
Share of today's poor and non-poor									
<i>PL=JD 50/person/month</i>									
Non-poor	36.2	63.8	100.0	38.7	61.3	100.0	38.6	61.4	100.0
Poor	48.5	51.5	100.0	48.0	52.0	100.0	48.3	51.7	100.0
<i>PL=JD 25/person/month</i>									
Non-poor	61.3	38.7	100.0	60.7	39.3	100.0	58.7	41.3	100.0
Poor	37.8	62.2	100.0	36.5	63.5	100.0	36.9	63.1	100.0
Share of population									
<i>PL=JD 50/person/month</i>									
Non-poor	11.3	19.9	31.2	12.2	19.3	31.4	12.1	19.2	31.3
Poor	33.0	35.0	69.0	33.0	35.6	68.6	33.0	36.0	69.0
Total	44.7	55.4	100.0	45.1	54.9	100.0	45.3	54.7	100.0
<i>PL=JD 25/person/month</i>									
Non-poor	43.8	27.6	71.4	43.5	28.1	71.6	42.0	29.5	71.5
Poor	10.8	17.8	28.6	10.4	18.0	28.4	10.5	18.0	28.5
Total	54.6	45.4	100.0	53.9	46.1	100.0	52.5	47.5	100.0

Source: Estimations based on JD-HV2 data.

change significantly if we use a much lower poverty line (PL = JD 25). In this case, we find (in model 2) that 39.3 percent of the non-poor are expected to become poor tomorrow while 63.5 percent of the poor today are expected to stay poor tomorrow. As compared with the higher poverty line, the share of vulnerable non-poor is much lower but the share of vulnerable poor is higher. Hence, the set level for the poverty line is also critical to understand mobility.

Referring again to model 2, if we look at mobility in terms of shares of the total population (the four groups defined by poverty and mobility are put equal to 100), we gain additional insights. An estimated 47.8 percent of the population persists in the same status: 12.2 percent is poor neither today nor tomorrow and 35.6 percent is poor both today and tomorrow. The remaining 52.2 percent of the population is mobile: 19.3 percent will enter poverty tomorrow, while 33.0 percent will exit poverty tomorrow. Again, there are no remarkable differences across models but there is a big difference if we adopt a much lower poverty line (PL = JD 25).

We now move to analyze how vulnerable cases are distributed across groups defined by different characteristics to provide a general profile of the vulnerable. Table 3.4 focuses on groups defined by socio-demographic characteristics of the PA (education, occupation, gender, age, marital status), while table 3.5 focuses on the characteristics of the case (size, number of children, housing, migration patterns, and UNHCR assistance). We have first performed a chi-square test for the independence between being vulnerable and each of the covariates listed in table 3.4 and table 3.5. The chi-square test affirms that being vulnerable depends significantly on each of these features with the only exception of the gender of the PA.

Table 3.4 compares vulnerable and poor individuals. It reveals that the incidence of vulnerability decreases as the educational level attained by the PA increases. This is expected and also similar to how poverty behaves. Having a professional occupation also decreases vulnerability. The incidence of vulnerable cases is equally distributed between cases whose PA is female and those with a

Table 3.4 Incidence of Economic Vulnerability and Poverty by PA Characteristics (Poverty Threshold = JD 50)

<i>Characteristic</i>	<i>Vulnerable</i>	<i>Poor</i>	<i>Characteristic</i>	<i>Vulnerable</i>	<i>Poor</i>
<i>PA highest education</i>			<i>PA gender</i>		
Below 6 years	0.57	0.71	Male	0.54	0.7
6–8 years	0.55	0.72	Female	0.56	0.66
9–11 years	0.55	0.68	<i>PA age</i>		
12–14 years	0.53	0.63	<=34	0.53	0.6
At least university	0.5	0.5	35–54	0.56	0.77
<i>PA broad occupation</i>			>=55	0.51	0.51
None	0.52	0.53	<i>PA marital status</i>		
Low-skilled workers	0.56	0.76	Married or engaged	0.55	0.71
Skilled workers	0.55	0.73	Divorced or separated	0.49	0.52
High-skilled workers	0.56	0.67	Single	0.56	0.44
Professionals	0.51	0.61	Widowed	0.55	0.58

Source: Estimations based on JD-HV2 data.

male PA, while the poverty incidence is higher if the PA is male. Looking at the PA's age, the most vulnerable cases are the ones whose PA's age is between 35 and 54 years. This is similar to poverty but the gap with other age groups is much higher for poverty than for vulnerability. Cases whose PA is married/engaged, single, or widowed are much more vulnerable than with a divorced PA, while looking at poverty the singles are the group with smaller poverty incidence. Hence, we should not expect to find the same variables to behave in the same fashion for poverty and vulnerability. As already explained, these two groups of people overlap but they are not identical and poverty and vulnerability are rather different concepts.

Table 3.5 compares the incidence of vulnerability and poverty for different groups according to the characteristics of the case. As the case size increases or as the number of children increases, the incidence of vulnerability increases, though the gap in the proportion of vulnerable cases between minimum and maximum case size is smaller (from 46 percent to 57 percent) than the gap in the proportion of poor (from 10 percent to 94 percent). Hence, the number of people in the case is an exceptional predictor of poverty but not a good predictor of vulnerability. Focusing on the tenure status, the least vulnerable are cases that are owners of their house, while the most vulnerable are the ones that have free accommodation; differently, the least poor cases are the ones that pay rent. Again, predictors of poverty and vulnerability may behave quite differently.

Table 3.5 Incidence of Economic Vulnerability and Poverty by Case Characteristics (Poverty Threshold = JD 50)

<i>Characteristic</i>	<i>Vulnerable</i>	<i>Poor</i>	<i>Characteristic</i>	<i>Vulnerable</i>	<i>Poor</i>
<i>Case size</i>			<i>Reassessment</i>		
1	0.46	0.1	No	0.62	0.59
2	0.46	0.2	Yes	0.4	0.88
3	0.48	0.37	<i>UNHCR assistance</i>		
4	0.54	0.55	No	0.55	0.65
5	0.56	0.71	Yes	0.55	0.88
6	0.59	0.86	<i>Border crossing point PA</i>		
7+	0.57	0.94	Airport	0.51	0.48
<i>No. of children</i>			Ruwaished-Hadallat	0.58	0.77
0	0.46	0.22	Tal Shihab (Sud)	0.56	0.75
1	0.5	0.39	Nasib (official or unofficial)	0.54	0.69
2	0.54	0.56	Other or no data	0.55	0.69
3	0.53	0.74	Total		
4	0.57	0.86	<i>Time of arrival</i>		
5+	0.6	0.94	Before 15mar 2011	0.54	0.64
<i>Housing</i>			15mar2011–31dec2011	0.52	0.71
For free (donation)	0.6	0.91	1gen2012–31dec2012	0.53	0.73
For rent	0.54	0.67	1gen2013–1nov2013	0.55	0.67
Other (describe)	0.53	0.89	After 1nov2013	0.61	0.63
Owned	0.46	0.78			

Source: Estimations based on JD-HV2 data.

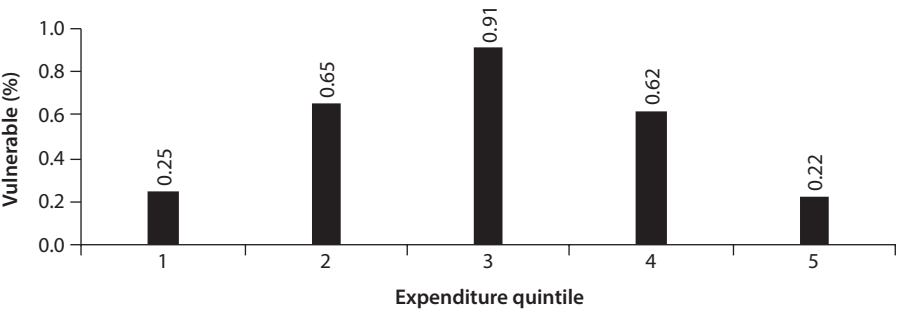
Interestingly, while the cases that receive UNHCR assistance are poorer than the cases that do not have this assistance (recall that our expenditure variable is net of UNHCR assistance), no differences appear in terms of vulnerability. Indeed, the proportion of vulnerable cases in the group of cases without UNHCR assistance is the same as among the cases receiving cash assistance. This reveals that the cash assistance is effective in reducing the risk of poverty but not the risk of vulnerability.

Another interesting result emerges when looking at the reassessment. Cases that have been subject to a reassessment are poorer than cases that received the first assessment, while the opposite is true for vulnerability. In the former cases, the incidence of vulnerability is smaller than in the latter cases. This suggests that cases reassessed are appropriately selected based on the present condition of poverty, but this choice may not help in identifying those who are vulnerable to poverty in the near future. Looking at the border crossing point, similar trends are shown in terms of poverty and vulnerability incidence: poverty and vulnerability are more concentrated in cases in which the PA crossed the border at Ruwaished-Hadallat or at Tal Shihab.

The last part of table 3.5 analyzes how vulnerability and poverty incidence have changed over time of arrival in Jordan. Figures clearly show that the incidence of vulnerability is higher for the cases that arrived more recently. In particular, the proportion of vulnerable population increases the shorter the time refugees have been in the country. The opposite is true for poverty. The cases that arrived just after the beginning of the crisis are poorer than the cases that arrived more recently. Once again, we observe that poverty and vulnerability capture two distinct phenomena. In particular, the phenomenon of high mobility with respect to vulnerability poses non-negligible problems from the perspective of poverty alleviation as the situation of refugees is clearly unstable.

Figure 3.1 reports the vulnerability rates by expenditure quintile. As expected, the highest vulnerability is found toward the center of the distribution where we find that about 91 percent of the cases in the third quintile are vulnerable. These

Figure 3.1 Vulnerability Rates by Expenditure Quintiles



Source: Estimations based on JD-HV2 data.

are evidently the people who are closer to the poverty line and who are more likely to cross the poverty line in the near future. Vulnerability declines as we move toward the tails of the distribution but it is still rather high for the second and fourth quintiles. Hence, the only quintiles with low vulnerability are the poorest quintile, which is made up of poor people by definition, and the richest quintile, where we still find that 22 percent of the cases are expected to be vulnerable. In essence, vulnerability is pervasive among refugees.

Nonmonetary vulnerability

In this section, we apply the same VEP approach we used for the work on monetary vulnerability to nonmonetary dimensions. As already mentioned, humanitarian organizations use a large number of composite indicators designed to measure various dimensions of vulnerability and some of these dimensions may or may not include monetary components. In what follows, we focus on two representative and popular indicators, which focus exclusively on nonmonetary dimensions. One is the WPF's FCS and the second one is the UNHCR's CI.

In the same fashion as we did for poverty, we can apply the VEP model to these two indexes and measure nonmonetary vulnerability. We then compare monetary and nonmonetary vulnerability to better understand the relation between the two concepts for policy purposes. If monetary and nonmonetary poverty and vulnerability are closely related, then monetary programs such as the UNHCR cash program are likely to address monetary and nonmonetary types of deprivation. If, vice versa, monetary and nonmonetary poverty and vulnerability are explained by very different factors, then cash programs will be inadequate to address nonmonetary issues and agencies would need to focus on devising non-monetary forms of assistance such as assistance in kind or services.

Food vulnerability model

The first indicator of noneconomic vulnerability that we consider is the FCS. We apply the same methodology used for monetary vulnerability, based on the three-step FGLS model. As for the welfare model, we followed a systematic approach to identify the variables that most matter for the FCS model. The estimates are illustrated in table 3.6. As before, column 1 refers to the OLS regression of the food consumption score on a set of significant covariates. Column 2 reports the estimates for the food consumption score variation across cases (that is, the log of the square of the estimated residuals) and the last model in column 3 is a corrected estimation of the future food consumption score. In order to explore the relation between the nonmonetary FCS index and expenditure, we also repeat the three equations adding the log of expenditure per capita (columns 4–6).

The first notable result is that the explanatory power of the model is rather weak, having an R squared of only 10 percent. The range of variables that have been retained by the best model we could find is also narrow. Origin and destination of refugees were found to be important but only for selected governorates, like Dar'a for the place of origin and Irbid for the place of destination. Overall,

Table 3.6 Food Vulnerability Model

		Without expenditure						With expenditure					
		1		2		3		4		5		6	
		Ex ante mean		Ex ante variance		Corrected ex ante mean		Ex ante mean		Ex ante variance		Corrected ex ante mean	
		Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Origin (Ref. Damascus)	<i>Al-hasakeh</i>	2.01	2.39	0.01	0.10	1.88	2.18	2.04	2.41	0.01	0.07	1.95	2.24
	<i>Aleppo</i>	-0.04	-0.12	-0.01	-0.28	-0.19	-0.63	-0.06	-0.21	-0.02	-0.45	-0.21	-0.70
	<i>Ar-raqqa</i>	0.43	0.81	-0.01	-0.14	0.28	0.53	0.41	0.77	-0.03	-0.38	0.23	0.43
	<i>Dar'a</i>	1.27	4.98	0.09	2.30	1.25	5.04	1.32	5.09	0.11	2.63	1.27	5.04
	<i>Hama</i>	-0.04	-0.12	0.04	0.76	-0.08	-0.22	0.12	0.32	0.08	1.29	0.07	0.19
	<i>Homs</i>	-0.40	-1.54	0.04	0.84	-0.49	-1.89	-0.35	-1.32	0.05	1.11	-0.47	-1.79
	<i>Idleb</i>	0.37	0.63	-0.10	-1.01	0.35	0.62	0.46	0.77	-0.08	-0.83	0.44	0.78
	<i>Rural Damascus</i>	0.71	2.46	0.05	1.00	0.58	2.04	0.78	2.67	0.05	1.09	0.65	2.23
	<i>Tartous</i>	-0.97	-0.39	0.27	0.68	-1.43	-0.50	-0.82	-0.32	0.18	0.45	-1.35	-0.48
	<i>As-sweida</i>	-4.06	-2.48	-0.17	-0.63	-3.73	-2.61	-4.08	-2.48	-0.19	-0.74	-3.81	-2.66
	<i>Deir-ez-zor</i>	-0.57	-0.70	-0.25	-1.90	-0.50	-0.71	-0.58	-0.71	-0.22	-1.68	-0.51	-0.71
	<i>Lattakia</i>	-0.44	-0.37	-0.16	-0.83	-0.56	-0.52	-0.41	-0.35	-0.18	-0.96	-0.49	-0.45
	<i>Quneitra</i>	0.50	0.47	-0.29	-1.69	0.10	0.11	0.72	0.67	-0.20	-1.18	0.35	0.36
Destination (Ref. Amman)	<i>Ajloun</i>	8.50	15.49	-0.96	-10.87	8.64	21.89	8.51	15.38	-0.92	-10.35	8.58	21.32
	<i>Aqabah</i>	0.77	0.64	-0.25	-1.31	0.89	0.80	0.88	0.74	-0.24	-1.24	0.93	0.83
	<i>Balqa</i>	2.48	7.09	0.04	0.67	2.51	6.79	2.44	6.90	0.04	0.77	2.52	6.78
	<i>Irbid</i>	5.49	26.91	-0.34	-10.26	5.66	28.41	5.53	26.67	-0.33	-9.84	5.72	28.30
	<i>Jarash</i>	3.11	6.22	-0.17	-2.15	3.35	6.75	3.16	6.26	-0.17	-2.15	3.43	6.88
	<i>Karak</i>	-2.25	-4.81	-0.36	-4.80	-2.30	-5.62	-2.16	-4.57	-0.34	-4.46	-2.18	-5.27
	<i>Maan</i>	3.35	4.95	0.09	0.87	3.42	4.78	3.41	4.99	0.14	1.25	3.46	4.77
	<i>Madaba</i>	-0.35	-0.72	0.29	3.83	-0.21	-0.38	-0.25	-0.52	0.31	4.03	-0.15	-0.25
	<i>Mafrq</i>	4.57	19.64	-0.01	-0.19	4.69	19.07	4.59	19.24	0.02	0.44	4.70	18.69
	<i>Tafilah</i>	9.08	10.09	-0.15	-1.05	9.36	11.02	9.27	10.22	-0.12	-0.80	9.26	10.84
	<i>Zarqa</i>	0.93	3.94	-0.47	-12.41	1.14	5.23	0.90	3.72	-0.45	-11.60	1.11	4.96
Have proper storage facilities (yes/no)		3.21	20.32	0.02	0.65	3.31	21.53	3.20	20.02	0.02	0.87	3.30	21.26
Coping strategy = borrowing money		-2.14	-15.60	-0.12	-5.67	-1.97	-14.70	-2.14	-15.38	-0.12	-5.52	-1.96	-14.42
Protection: knowing JHAS&IMC clinics		2.92	19.13	0.28	11.42	2.80	18.03	2.94	18.89	0.29	11.50	2.81	17.81
WASH use: toothpaste		2.35	16.57	0.13	5.55	2.25	16.28	2.34	16.23	0.12	5.23	2.23	15.98
WASH use: shampoo		2.41	14.17	-0.16	-5.72	2.52	14.58	2.40	13.92	-0.15	-5.57	2.49	14.27
Log expenditure per capita								0.13	1.61	0.07	5.67	0.14	1.81
<i>constant</i>		33.88	115.04	4.06	85.72	33.69	114.55	33.36	75.10	3.76	52.82	33.15	76.48
<i>F statistic</i>		155.03		18.96		166.96		146.80		18.81		157.48	
<i>Adjusted R-squared</i>		0.10		0.01		0.10		0.10		0.01		0.10	
<i>N</i>		42,275		42,275		42,275		41,205		41,205		41,205	

Source: Estimations based on JD-HV2 data.

the destination place seems more important to explain the food score. This makes sense given that the WFP food vouchers are distributed in Jordan at a fixed amount and the program may have different degrees of impact in the different governorates due to prices, program administration, and other local factors.

The final selection of variables also included two variables that understandably relate to food. The first is having proper storage facilities, which improves the food consumption score significantly. One lesson from this finding may be that the provision of such storage facilities like a fridge may prove effective in improving food consumption, even more so than providing food itself. Clearly food storage facilities allow households to shop when and where prices are better and stock up on food and this allows to smooth consumption over time. Borrowing money is the other variable that predicts the food consumption score well. This may mean that cases that are unable to feed themselves properly are the first in resorting to borrowing money. Such a finding may suggest that cases seek monetary aid when in need for food rather than searching for food aid, which is a variable that we considered but that did not emerge as significant.

The other significant variables that we found were knowledge about health facilities and the possession of basic toiletries such as toothpaste and shampoo. The first variable may be a proxy of knowledge about services in general, while the last two variables would suggest that extremely food deprived cases do not purchase such basic toiletries.

Adding log-expenditure per capita in the models does not change the importance of all the other indicators much. The overall explanatory power of the model remains the same and the coefficients and t-values of all other variables change very little. This means that the expenditure variable is not correlated to the combination of the other explanatory factors included in the model so as to alter the model considerably. In fact, the expenditure variable is not significant. This suggests that the nonmonetary food score indicator is not correlated with the monetary indicator. The FCS cannot be improved significantly by simply using cash assistance and may require a separate and tailored assistance program. Perhaps one alternative option would be to offer storage facilities such as a fridge in place of financial assistance as this is one of the variables that was found to be important whether we included expenditure into the equations or not.

Another indication of how close the FCS and expenditure are can be sought by cross-tabulating the groups of monetary- and food-deprived refugees. For this exercise, we use median values of the predicted probabilities of being food and monetary vulnerable as cut-off points to define the four groups. Table 3.7 shows the results. The largest of the four groups depicted by the cross-tabulation are those on the diagonal, meaning those for which food and monetary vulnerability concord. These two groups together account for almost 53 percent of observations. If there was no relation between food and monetary vulnerability, we should expect a random allocation of observations in the four cells, which means values of 25 percent in each of the cells. Table 3.7 is not far from that random allocation, confirming that food and monetary vulnerability are not closely associated. If we assume that targeting the monetary vulnerable was enough to

Table 3.7 Joint Incidence of Food Vulnerability and Economic Vulnerability

Food vulnerable	Monetary vulnerable		Total
	0	1	
0	26.1	23.5	49.6
1	23.7	26.7	50.4
Total	49.8	50.2	100

Source: Estimations based on JD-HV2 data.

capture the food vulnerable, we would be wrong about 47 percent of the time. Combining results from table 3.6 and table 3.7, we conclude with a certain degree of accuracy that food and monetary vulnerability are not closely associated.

Crowding vulnerability model

We now repeat the exercise on nonmonetary vulnerability using the CI. The CI measures the number of people in a case per room. We will use the logarithm transformation of the index in order to have a bell-shaped distribution and comply with OLS requirements. As for the FCS, we consider a model with and without expenditure as an explanatory variable. We also repeat the variables selection process for each of the two models with and without expenditure.

Table 3.8 presents the results (columns 1–3). As a first observation and in contrast to the FCS, the set of explanatory variables retained by the best model is very large. It includes some of the recurrent variables, such as place of origin and destination, and adds several other variables related to the migration path (border crossing), characteristics of the PA of the case (employment, age, marital status, and gender), and other characteristics of the case (housing, food, type of income, coping strategies). Interestingly, while it is expected to find variables related to housing, other variables such as coping strategies are less obvious but still very important. The proportion of children and the age of the PA are positively correlated to crowding as expected, while female PAs are associated with lower crowding. PAs with higher skills are instead associated with higher crowding, a result that is probably associated with larger case sizes. Most of the retained variables have a high significance level and the overall explanatory power of the model is high (65 percent).

Adding the log of expenditure as explanatory variable (columns 4–6) improves on the explanatory power of the model by 2 percent. The expenditure variable is significant and with a negative sign as expected. Therefore, we find a relationship between the nonmonetary crowding indicator and the monetary expenditure indicator when controlling for all the other explanatory factors present in the model. Interestingly and unlike the FCS model, the set of variables retained by the CI model with and without expenditure is slightly different. The model without expenditure does not retain electricity and volume of bulk water storage, whereas the model with expenditure does not retain three of the wash variables and one of the coping variables. These differences are probably explained by the correlation between expenditure and the variables that are different in the two models.

Table 3.8 Crowding Vulnerability Model

		Without expenditure						With expenditure					
		1		2		3		4		5		6	
		ex ante mean		ex ante variance		corrected ex ante mean		ex ante mean		ex ante variance		corrected ex ante mean	
		Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Proportion of children <18 years (Ref. 0%)	0–50%	0.79	89.57	0.21	5.27	0.79	84.53	0.57	61.66	–0.23	–4.88	0.54	58.42
	50%–75%	0.80	109.11	–0.18	–5.39	0.81	111.67	0.60	73.75	–0.39	–9.60	0.59	71.86
	>75%	1.01	112.58	–0.07	–1.65	1.04	116.70	0.77	77.77	–0.41	–8.30	0.76	76.92
Employment of PA (Ref. None)	Low Skilled	0.08	7.85	–0.02	–0.45	0.09	8.15	0.07	6.08	0.06	1.11	0.06	5.79
	Skilled	0.07	8.36	–0.02	–0.61	0.08	8.58	0.05	5.17	0.02	0.48	0.04	4.47
	High Skilled	0.06	6.79	–0.01	–0.35	0.06	6.79	0.06	6.02	0.00	0.02	0.05	5.20
	Professional	0.06	5.71	–0.05	–1.08	0.05	5.45	0.05	4.88	0.05	1.03	0.04	4.26
Age of PA (Ref. <=34 years)	35–54 years	0.15	26.28	–0.03	–1.32	0.14	25.11	0.10	17.95	–0.05	–1.83	0.09	17.11
	>=55 years	0.12	14.17	0.07	1.90	0.11	13.44	0.08	9.08	0.10	2.22	0.07	7.78
Marital status of PA (Ref. Married/engaged)	Divorced/separated	–0.23	–14.54	0.13	1.74	–0.24	–14.52	–0.19	–10.53	0.25	2.79	–0.19	–9.45
	Single	–0.20	–24.13	0.20	5.08	–0.22	–24.44	–0.15	–17.29	0.34	7.54	–0.17	–17.12
	Widowed	–0.14	–14.55	0.08	1.70	–0.14	–13.60	–0.10	–9.24	0.14	2.51	–0.09	–7.91
Female PA		–0.17	–22.24	0.11	3.08	–0.20	–25.29	–0.14	–16.57	0.20	4.72	–0.14	–17.25
More than 50% of children attending school		0.17	26.08	–0.26	–8.67	0.16	26.98	0.10	14.74	–0.20	–5.89	0.09	15.15
Origin (Ref. Damascus)	Al-hasakeh	0.14	4.41	0.19	1.35	0.14	3.99	0.11	3.65	0.08	0.51	0.11	3.47
	Aleppo	0.05	4.25	0.06	1.15	0.05	5.01	0.03	3.02	0.02	0.30	0.03	2.64
	Ar-raqqa	0.06	3.33	0.13	1.48	0.07	3.70	0.08	4.11	0.03	0.31	0.07	3.58
	Dar'a	–0.01	–1.48	0.01	0.14	0.00	–0.42	–0.02	–2.12	–0.02	–0.43	–0.02	–2.03
	Hama	0.09	6.29	–0.06	–0.89	0.09	6.30	0.04	3.07	–0.12	–1.63	0.04	2.77
	Homs	0.00	0.33	–0.07	–1.51	0.01	1.16	–0.03	–2.72	–0.08	–1.74	–0.03	–2.82
	Idlib	0.07	2.82	–0.03	–0.25	0.07	3.00	0.03	1.45	–0.05	–0.39	0.04	1.63
	Rural Damascus	0.00	0.01	–0.05	–1.19	0.00	0.33	–0.01	–0.84	–0.08	–1.52	–0.01	–0.75
	Tartous	–0.01	–0.12	0.11	0.27	–0.03	–0.33	–0.04	–0.42	0.48	1.05	–0.07	–0.60
	As-sweida	–0.03	–0.49	0.21	0.76	–0.05	–0.76	0.02	0.27	0.25	0.84	–0.02	–0.27
	Deir-ez-zor	0.04	1.23	0.08	0.61	0.03	1.00	0.02	0.56	0.26	1.81	0.01	0.40
	Lattakia	0.01	0.34	0.22	1.16	0.01	0.24	0.03	0.77	0.11	0.54	0.01	0.30
	Quneitra	0.02	0.68	–0.11	–0.66	0.04	1.16	0.01	0.20	–0.03	–0.16	0.03	0.86
Legal arrival		–0.09	–13.18	–0.01	–0.47	–0.09	–13.37	–0.05	–6.89	0.04	1.08	–0.04	–6.63
Destination (Ref. Amman)	Ajloun	0.00	0.23	0.17	1.92	0.01	0.32	–0.05	–2.62	0.05	0.56	–0.06	–3.19
	Aqabah	0.05	1.24	–0.08	–0.43	0.02	0.63	0.05	1.27	–0.10	–0.47	0.02	0.56
	Balqa	–0.06	–4.65	–0.05	–0.79	–0.06	–4.66	–0.09	–6.70	–0.02	–0.38	–0.08	–6.91
	Irbid	–0.02	–2.08	0.00	0.01	–0.01	–1.47	–0.02	–2.12	–0.07	–1.83	–0.02	–2.80
	Jarash	0.00	0.04	0.03	0.38	0.01	0.56	–0.05	–3.00	–0.22	–2.44	–0.06	–3.53
	Karak	–0.11	–6.34	–0.18	–2.36	–0.11	–7.19	–0.14	–8.39	–0.03	–0.32	–0.14	–9.12
	Maan	–0.12	–5.19	0.08	0.72	–0.13	–5.62	–0.16	–6.68	–0.12	–1.01	–0.18	–8.58
	Madaba	0.00	0.26	–0.04	–0.45	0.00	0.03	–0.05	–2.87	–0.12	–1.37	–0.07	–4.08
	Mafrq	–0.01	–1.58	0.03	0.76	–0.01	–1.50	–0.02	–2.55	0.07	1.55	–0.02	–1.95
	Tafilah	0.11	3.2	0.37	2.47	0.07	1.81	–0.06	–1.93	–0.17	–1.07	–0.11	–3.81
	Zarqa	–0.13	–14.8	–0.10	–2.65	–0.12	–15.59	–0.18	–20.78	–0.12	–2.87	–0.18	–22.96
Border crossing point (Ref. Airport)	Ruwaished-Hadallat	0.04	3.48	–0.04	–0.64	0.04	3.48	0.06	4.92	–0.02	–0.32	0.05	4.42
	Tal Shihab	0.02	1.39	0.01	0.24	0.02	1.85	0.02	1.68	0.04	0.66	0.02	1.78
	Nasib	0.02	2	0.06	1.56	0.02	2.45	0.01	1.10	0.07	1.79	0.01	0.83
	other or no data	0.01	0.62	0.04	1.07	0.01	0.65	0.01	1.15	0.08	1.81	0.01	0.70
House: sanitary		–0.06	–6.44	–0.07	–1.73	–0.06	–6.36	–0.06	–5.93	–0.07	–1.53	–0.05	–5.25
House: kitchen		–0.05	–5.79	0.07	1.73	–0.06	–6.25	–0.05	–4.87	0.03	0.70	–0.05	–5.54
House: electricity								0.03	2.89	0.02	0.39	0.03	2.90
House: ventilation		–0.08	–11.1	–0.03	–0.84	–0.08	–10.89	–0.07	–8.91	–0.09	–2.35	–0.07	–8.73
House: furniture		–0.04	–6.12	–0.04	–1.60	–0.03	–5.67	–0.03	–5.60	0.01	0.19	–0.03	–5.42

(Continued next page)

Table 3.8 (continued)

	Without expenditure						With expenditure					
	1		2		3		4		5		6	
	<i>ex ante</i> mean		<i>ex ante</i> variance		<i>corrected</i> <i>ex ante</i> mean		<i>ex ante</i> mean		<i>ex ante</i> variance		<i>corrected</i> <i>ex ante</i> mean	
	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t	Coef.	t
House: Completed structured house	-0.14	-12.34	0.07	1.32	-0.15	-13.11	-0.11	-9.62	0.06	1.02	-0.11	-10.15
House: Concrete house	-0.33	-26.19	-0.05	-0.83	-0.33	-25.25	-0.24	-19.71	0.07	1.20	-0.24	-19.51
WASH: water through piped AND piped sewerage	-0.02	-3.88	-0.02	-0.61	-0.03	-4.32						
WASH: volume of bulk water storage	0.00	-17.03	0.00	1.70	0.00	-19.83	0.00	-12.64	0.00	2.48	0.00	-14.29
WASH: Adequate latrine	-0.02	-2.95	-0.09	-2.92	-0.02	-3.63						
Food: no need of coping	-0.03	-4.4	0.06	1.81	-0.03	-4.54	-0.02	-3.14	0.10	2.79	-0.03	-3.71
Food: have proper storage facilities	-0.14	-22.66	-0.05	-1.92	-0.13	-21.56	-0.12	-19.60	-0.07	-2.30	-0.11	-18.20
UNHCR financial assistance	0.07	8.01	0.02	0.57	0.06	7.75	-0.05	-5.60	-0.13	-2.98	-0.06	-8.17
Kind of income: daily of irregular work	0.08	13.33	0.01	0.38	0.07	12.54	0.04	6.32	-0.05	-1.75	0.02	4.67
Kind of income: other	-0.02	-3.9	-0.02	-0.91	-0.02	-3.50	-0.02	-3.27	-0.03	-0.89	-0.02	-3.43
Coping strategy: humanitarian assistance	0.03	4.08	0.02	0.62	0.03	3.91	-0.03	-3.93	0.00	0.03	-0.04	-5.15
Coping strategy: sharing cost with host family	-0.13	-20.43	-0.08	-2.79	-0.14	-21.77	-0.29	-42.60	-0.10	-2.86	-0.28	-42.18
Coping strategy: borrowing money	0.05	9.44	0.02	0.68	0.04	8.55	0.03	5.71	-0.03	-1.30	0.02	4.49
Coping strategy: host family	-0.18	-32.83	0.01	0.31	-0.17	-30.97	-0.13	-21.98	0.09	3.19	-0.11	-19.65
Coping strategy: support from host community	0.06	11.71	0.01	0.44	0.06	11.39	0.02	3.70	-0.04	-1.35	0.02	3.28
Coping strategy: saving	0.05	9.16	0.04	1.88	0.04	8.03	0.02	2.90	-0.05	-1.92	0.01	1.45
Coping strategy: other	-0.04	-8.19	0.02	0.79	-0.04	-7.94	-0.04	-8.22	0.00	0.04	-0.04	-8.34
Coping strategy: selling jewelry	0.03	5.2	0.01	0.30	0.03	4.68						
Coping strategy: dropping children from school	0.09	10.37	0.08	2.00	0.09	9.85	0.04	4.86	0.02	0.56	0.03	3.77
Protection: knowing school service							0.02	2.87	-0.06	-2.20	0.01	2.86
Separation of nuclear family members	0.06	10.94	-0.09	-3.56	0.06	11.24	0.05	8.22	-0.11	-3.82	0.04	7.34
Receiving NFIs	0.05	8.79	0.01	0.24	0.05	7.99	0.03	4.91	0.02	0.61	0.02	4.39
Log expenditure per capita							-0.27	-76.59	-0.25	-14.27	-0.31	-82.83
<i>constant</i>	0.40	18.44	-2.68	-27.15	0.43	19.86	1.57	59.73	-1.74	-13.15	1.77	65.60
<i>F statistic</i>	1,217.72		9.06		1,202.88		1,083.10		11.97		1,056.54	
<i>Adjusted R-squared</i>	0.65		0.01		0.65		0.67		0.02		0.67	
<i>N</i>	44,538		44,538		44,538		35,858		35,858		35,858	

Source: Estimations based on JD-HV2 data.

Table 3.9 Incidence of Crowding Vulnerability and Economic Vulnerability

<i>Crowding vulnerability</i>	<i>Economic vulnerability</i>		<i>Total</i>
	<i>0</i>	<i>1</i>	
<i>0</i>	42.4	15.5	57.9
<i>1</i>	6.8	35.4	42.1
<i>Total</i>	49.1	50.9	100

Source: Estimations based on JD-HV2 data.

To test in more detail the relationship between monetary and nonmonetary vulnerability, we show the cross-tabulation of monetary and crowding vulnerability, as we did for food, in table 3.9. The table shows that 77.8 percent of observations are equally classified vulnerable or non-vulnerable by the crowding and monetary dimensions. This is a much greater share of the 53 percent we found for food and monetary vulnerability and indicates quite clearly that the relationship between crowding and monetary vulnerability is quite far from a random process. Hence, addressing crowding using financial means is not a bad policy. It is not perfect, of course, as 32.3 percent of the time we may miss the target, but it is close enough to consider treating crowding with cash rather than using alternative nonfinancial means such as providing shelter or accommodation.

Conclusions

The chapter exploited a recent strand of the economic literature to study vulnerability to poverty of refugees from the Syrian Arab Republic using monetary and nonmonetary dimensions. In particular, we used a model proposed by Chaudhuri et al. (2002) that allows us, under certain assumptions, to estimate vulnerability using a single cross-section survey, which is the type of data we have.

The estimations provided for monetary vulnerability clearly indicated that poverty and vulnerability are two related but quite different concepts. The same predictors may behave quite differently for poverty and vulnerability, sometimes with opposite signs. For example, we found that higher education is characterized by higher expenditure today and that this factor contributes to decreased vulnerability in the future. On the contrary, cases whose PA is widowed experience both lower expenditure today and higher vulnerability tomorrow. We also found that poverty can be higher than vulnerability and the contrary can also be true. This ranking is explained by the share of observations that are expected to enter and exit poverty but also by the set level of the poverty line. Hence, results are very sensitive to the choice of poverty line.

The application of the methodology to estimate vulnerability to nonmonetary dimensions provided some important insights. We selected two rather popular indicators of nonmonetary deprivation: the WFP's FCS and the UNHCR's CI and the estimations of vulnerability in these two dimensions provided quite different results. The work on the FCS showed that it is difficult to find predictors for the food score. The full analysis of all possible predictors resulted in a rather narrow set of variables retained by the final model. The explanatory power of the

FCS model was also very low, only 10 percent. By contrast, the final model used for the CI retained many more variables, most of which were found to be significant, with the result that the overall explanatory power of the model was found to be high at 65 percent.

Moreover, when expenditure is added to the model, it behaves differently between the FCS and CI models. With the FCS model, the effect is not significant and expenditure does not add anything to the explanatory power of the model. With the CI model, the effect of including expenditure is significant and the explanatory power of the model increased to 67 percent.

We then cross-tabulated vulnerability in the food and crowding dimensions with monetary vulnerability and found the distribution of food and monetary vulnerabilities to be almost random across the four cells defined by the two variables and their two modalities. This confirmed that food and monetary vulnerability are not closely related. Policies that address monetary vulnerability such as a cash transfer may not help in addressing food vulnerability, an important lesson for policy makers. Conversely, the cross-tabulations between crowding and monetary vulnerability showed a high association between these two phenomena. For 77.8 percent of observations, the two criteria provided the same outcome in terms of vulnerability. Hence, addressing crowding with a cash transfer is not a bad approach to address the question of crowding.

Notes

1. See Ceriani (2015) for a more in depth discussion of these concepts.
2. The difference in number of observations is due to the fact that the models use different sets of variables and not all variables are observed for all cases.

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Policies

Introduction

The United Nations High Commissioner for Refugees (UNHCR) was established by the General Assembly in 1950 to provide protection and assistance to persons fleeing war, persecution, and violence, and to coordinate solutions for them. For more than six decades, UNHCR has been a front-line responder to refugee emergencies. In the first instance, assistance and protection delivered to refugees by UNHCR and other humanitarian organizations takes predominantly the form of essential, life-saving, and life-preserving interventions—shelter, food, water and sanitation, health, and physical security. Once refugee circumstances stabilize, the challenge becomes one of enabling them to live as normal a life as possible. The key objective is to encourage a transition out of dependency on humanitarian assistance toward greater resilience and self-reliance.

Emergency assistance interventions find their rationale in the need to meet immediate humanitarian imperatives. The initial expectation for any refugee situation is that it is temporary and will eventually be resolved. But this rationale breaks down when the humanitarian crisis persists, as in the crisis of refugees fleeing the Syrian Arab Republic. Over time, it becomes more difficult to raise funds to sustain aid to refugees. Humanitarian agencies are therefore required to increase program efficiency with less money and hosting countries understandably seek support to address the additional economic and social costs they bear. New issues related to the longer-term impact and consequences of the refugee presence at local and national levels emerge. They affect both refugee and local populations and cannot easily or effectively be addressed by humanitarian interventions.

Notwithstanding the expectations of an early resolution to refugee situations, experience indicates that in the majority of cases they last for long periods. Over 70 percent of current refugee situations globally have evolved into complex protracted exile. As refugee communities start to stabilize, tents and temporary shelter give way to more permanent housing arrangements; service provision

becomes more routine; and informal employment, trade, and the establishment of small enterprises increase. Forms of social capital and organization emerge and provide a sense of quasi-normality, whether in camps or in refugee communities in urban contexts. After the initial emergency period, assistance for immediate humanitarian requirements recedes but is generally not replaced by programs with a longer-term vision. This is attributable to many factors, including donor and government policies that do not normally provide for the engagement of development funding for refugee situations.

Refugees remain outsiders who are confined largely to the socioeconomic margins of their place of exile, unable to enjoy the full rights of citizens of a country. All too often, they remain aid dependent with limited opportunities for social and economic development. Four years into the Syrian refugee crisis, it is not difficult to anticipate that Syrians run the same risk of protracted displacement as many other refugee situations. The conflict in Syria shows few signs of abating; the prospects for safe and early repatriation on any significant scale look distant. Signs of growing impoverishment within the Syria refugee communities are already visible in the forms of high levels of indebtedness, asset selling, child labor, and early marriage. These trends do not bode well for the immediate welfare of the refugee population or for reducing dependence on humanitarian assistance. In addition, they raise questions about the capacity of refugees to rebuild the assets and acquire the skills to achieve greater self-reliance and to enable the pursuit of solutions.

If the international response to the Syrian refugee crisis has generated historically high and generous levels of humanitarian funding, there is nonetheless clear evidence of deepening poverty and growing destitution. This is of particular concern in light of the anticipated decline in immediate funding. It seems timely to review the likely trajectory of the present situation. How effective are existing policies toward Syrian refugees? And what are the alternatives to humanitarian assistance if, as seems likely, the Syrian refugee crisis persists for many years to come? These are the questions that we try to address in this chapter. The objective is to assess the scope for the early introduction of developmental policies and programs that could help to shape different, more positive outcomes for refugees that might reduce aid dependency and assist refugees with attaining a more “normal” life.

These questions are addressed using two simple analytical approaches. The first approach is a conventional targeting and welfare assessment of the current assistance programs. This approach tries to assess (i) how effective are targeting and the poverty reduction capacity of humanitarian assistance, and (ii) whether these programs can be improved by refining the targeting. This analysis is a response to donor demands for more efficient use of resources. The second approach is a policy simulation exercise based on microsimulation tools, wherein we ask what would happen to poverty and welfare if policies could change some of the current conditions of refugees such as education and work status. This analysis helps to respond to the question of whether, and how, alternative development policies might work in the context of a refugee population.

The chapter is organized as follows. In the next section we briefly discuss current programs and potential alternative policies. The third section explains the methodology employed and the fourth section outlines the results. The final section concludes.

Programs and Policies for Refugees

The current assistance interventions for refugees are essentially structured around two types of programs: the UNHCR cash assistance program and the World Food Programme (WFP) food voucher program. These two programs are implemented in both Lebanon and Jordan. They have seen changes over time, partly as a result of diminished funding and partly as a result of improved administrative capacity.

At the time of data collection, the UNHCR cash assistance program in Jordan provided JD 50 per month to cases including one or two members, JD 100 to cases with 3 to 5 members, and JD 120 to cases with more than five members. The program was initially designed to be universal but, due to budget constraints, it became targeted and administered only to eligible households. Eligibility included a monetary income threshold of JD 50 per capita per month as well as nonmonetary inclusion and exclusion criteria.¹ This is the main program that we will evaluate in this chapter (UNHCR 2014).

Using both welfare and vulnerability criteria for targeting cash assistance is justified from a UNHCR perspective due to the very nature of the refugee population. Displacement due to armed conflict affects all parts of society. But it often has a greater impact upon vulnerable groups of people and their equitable access to assistance and protection, both in terms of immediate effects and upon their ability to cope and remain resilient over the longer term. Individuals or groups can be vulnerable due to their age, gender, religion, ethnicity, social, family or legal status, marginalization from society, or from disabilities.

Due to difficulties in accessing protection and assistance, vulnerable refugees are more likely to revert to negative or harmful coping strategies such as removing children from school, engaging in child labor, selling off family assets, working in dangerous conditions, survival sex, early marriage, and other practices that impact family and individual welfare. One of the primary purposes of humanitarian assistance should therefore be to prevent vulnerable refugees from engaging in negative coping mechanisms. This justifies prioritizing categories of vulnerable refugees when it comes to targeting cash assistance.

The UNHCR and WFP have also introduced other cash and vouchers programs. The UNHCR in Lebanon introduced a winter cash program with the objective of keeping people warm during the cold season. The program provided eligible households with the equivalent of US\$147 in November 2013 and US\$107/month for the period December 2013 through March 2014 for a total of US\$575 over the winter period. An evaluation of the program (IRC 2014) showed that the cash value of the program was insufficient to meet its objective of keeping households warm. However, it helped families to cope with other

living expenses as income from other sources was found to be largely insufficient to cover basic needs, and it helped to increase school access and reduce child labor. The program also had a significant multiplier effect on the local economy. For each dollar spent, the program generated about US\$2.13 in gross domestic product (GDP) for the Lebanese economy and had no significant impact on inflation. Interestingly, the study found that most beneficiaries prefer cash assistance to in-kind assistance and that cash assistance is usually spent responsibly.

The WFP administers a food voucher program in both Jordan and Lebanon. At the time of data collection, the WFP program in Jordan included two bi-weekly vouchers for a total value of JD 24 per person per month. These vouchers were provided to the principal applicant (PA) and could be redeemed in 652 designated stores covering all 12 governorates in the country. By January 2014, the program covered all the 440,000 refugees living in host communities (WFP 2014a: 6). In its own evaluation, the WFP found that

The program has also led to some US\$2.5 million investment in physical infrastructure by the participating retailers; created over 350 jobs in the food retail sector; and generated about US\$6 million in additional tax receipts for the Jordanian government. In terms of indirect effects, this study finds a predictive multiplier ranging from 1.019 to 1.234. In other words, WFP's plan to distribute US\$250 million in vouchers during 2014 would lead to some US\$255–US\$308 million of indirect benefits for the Jordanian economy (WFP 2014a: 1).

Due to financing pressures, the WFP was obliged to reduce their cash voucher value to US\$17 per person per month and are rumored to be considering a further reduction. These changes demonstrate that humanitarian aid is by its very nature short term and not sustainable in the long run.

The WFP food voucher program is also administered in Lebanon through e-cards. Families receive one e-card that is automatically charged every month with US\$30 per person and these cards can be redeemed in any of the 300 selected stores available across the country. The number of beneficiaries reached 732,318 in May 2014 (about 70 percent of Syrian refugees). The WFP's own evaluation found that the program had a large direct impact on participating stores, where revenue has doubled on average and created 1,300 jobs. The program has also led to US\$3 million investments in capital expenditure, as larger stores have increased floor space and storage. The program has an estimated multiplier value of 1.51 in the food products sector (WFP 2014b).

Hence, cash assistance and food voucher programs have an important effect on living standards and also an important multiplier effect on the local economy. These programs rely entirely on donors so typically their sustainability declines over time as donor support recedes. While initially designed as universal programs, due to uncertain funding both the UNHCR cash assistance program and the WFP food voucher program are now using monetary and nonmonetary criteria to target refugees in both Jordan and Lebanon. Targeted programs can be

seen as an intermediary step toward discontinuation of the programs and the reestablishment of normal living conditions. It is thus an important objective of this chapter to evaluate their targeting capacity.

Equally important is to simulate the potential impact on the welfare of refugees of alternative policies for humanitarian assistance. The search for alternative policies is compelling, given the funding status and prospects of current programs. It is also necessary if short-term humanitarian operations are to be supplemented or replaced by medium- and long-term development support.

Humanitarian and developmental policies should also be cognizant of the country context and, in this respect, comparing Jordan and Lebanon is instructive. The first difference between the two countries is that Jordan opted early on to let refugees settle in urban areas and only later decided to establish camps when the number of refugee arrivals grew sharply. Lebanon in contrast adopted a policy of opposition to the establishment of camps from the very beginning. This results in a difference in costs in hosting refugees. Work permits are another policy area where we find differences across countries. Hosting countries are typically reluctant to permit refugees to work due to domestic political sensitivities. When governments do permit refugees to work, the latter can be confronted by many legal and administrative restrictions on employment, including the limit of the number of work permits issued. For example, in Jordan, it is necessary to have a valid passport, which many refugees do not have. Only selected professions are eligible and the work permit has a significant cost that varies between JD 170 and JD 320 per year. It is employers rather than workers that apply for work permits. A valid employment contract is required, which discourages both employers and refugees from applying. For certain professions, the approval of the unions is required to submit an application. Employers are allowed to hire up to 60 percent of Syrians only in industrial areas. Although the process of obtaining work permits is more streamlined in Jordan than in Lebanon, only about 6,000 work permits have been issued to refugees as of March 2015, despite the fact that Syrian refugees do not need a residency permit to obtain a work permit unlike other nationalities. To start a business activity as self-employed, refugees need an investor card, which is also difficult to obtain. In contrast, formal employment regulations in Lebanon are less complex and the enforcement of these regulations very weak, which makes access to existing job opportunities less problematic.

In terms of access to public services, the Ministry of Interior in Jordan issues a service access card to refugees. This card provides refugees with free education and health services, but there are also some restrictions. Only about half of Syrian children attend public schools. This is partly explained by some costs that parents have had to incur (such as uniforms and books) and by the limited number of schools, particularly in areas of high concentrations of refugees. Understandably, Jordan was neither prepared nor equipped to accommodate such a massive increase in its population, particularly one that is rather different from its own as shown in chapter 1. In Lebanon, the situation is even more complicated as the provision of education is split equally between the public and the private sector.

Few Syrian refugee families can afford the cost of private education. To partially address these supply-side problems, both countries use double shifts. However, Syrian children tend to occupy the late shifts, with consequences on the level of attendance and a corresponding incidence of absenteeism and dropping out. Syrian-run schools are not encouraged and remain constrained to informal activities behind closed doors.

In an effort to contain demand, Jordan has now introduced an insurance system that applies to refugees. This system is relatively cheap and drugs and consultations remain heavily subsidized, but it is an additional cost for refugees. Despite this change, access to health care for refugees remains easier in Jordan than in Lebanon, where much of the health system is in the hands of the private sector. It is also evident that the demand for services is not limited to health care and education. Because of the very nature of their status, refugees need to contact a range of public and civil entities—courts, juvenile police, nurseries, civil registry, banking, car registry, and so forth. Access to all these services may be problematic and the sum of these difficulties becomes *de facto* an obstacle to seeking or keeping work.

The opportunity to relocate and resettle to third countries also varies among different hosting countries and does not relate only to the final receiving country. For example, in Jordan a valid document and an exit permit to expatriate are required and once refugees have it is not possible to return to Jordan. In 2014, only about 6,000 people were selected for resettlement to third countries.

In essence, the status of refugee brings about a variety of difficulties and constraints in accessing work and services. Opportunities may vary depending on the host country but it is obvious that what would normally be simple and routine activities for a regular population turn into complex and costly endeavors for a refugee population. This prevents refugees from making the most of their skills, abilities, and assets.

Methodology

Targeting evaluation

The first objective of this chapter is to assess the targeting capacity of the existing UNHCR cash assistance program in Jordan. UNHCR provides cash assistance to refugees based on a combination of monetary and nonmonetary criteria. As anticipated, the monetary criterion is a monetary threshold of JD 50/capita/month and the nonmonetary criteria include 11 conditions that the UNHCR considers for qualifying households as vulnerable. Note that, in this case, “vulnerable” does not refer to the monetary or nonmonetary vulnerability of cases as discussed in chapter 3 of the study; rather, it relates to specific conditions of the case, such as having a single mother as the PA or having a disabled person in the case. Cases must have at least one nonmonetary vulnerability criterion *in addition* to the monetary criterion to be eligible for cash assistance.

We first simulate the UNHCR’s targeting process using the data at hand and the UNHCR eligibility criteria. This provides a sense of whether our data can

correctly estimate those who receive cash assistance in the data and thereby test whether our data are suitable for assessing the targeting of the program. Next, we compare targeting by using income or expenditure welfare measures. The UNHCR uses income but chapter 2 of this study showed that expenditure is a better measure of monetary deprivation than income. It is important therefore to test what difference using one measure over the other makes. We then use standard targeting indexes to evaluate the targeting capacity of the program. These include the coverage rate (the percentage of eligible cases who are targeted) and the leakage rate (the percentage of cases targeted that are not eligible).

Following the basic targeting analysis, we ask the question of how targeting can be refined and whether it could be implemented at reduced costs. The current purpose of the Home Visit (HV) is to measure income and expenditure and determine who is and who is not eligible for cash assistance. This is an important exercise but HVs are a time-consuming and costly process. For example, even with the very efficient rate of 5,000 cases interviewed each month (the current interview rate), it would require more than 2.5 years for UNHCR to interview all 170,000 cases in Jordan. With a very reasonable cost of US\$20 per HV, the annual cost of this exercise is US\$3.4 million. By the time the exercise has finished, it would need to begin reassessing the first cases. Hence there are important questions over the sustainability of the HV system itself in its current form.

One alternative is to estimate poverty and welfare using data from UNHCR's Profile Global Registration System (ProGres) (we refer to this data set as PG) and a welfare model originally constructed on the Home Visits database, round II (JD-HV2) (also referred to in this chapter as HV). For example, the welfare model we constructed in chapter 2 of this study can be used to estimate welfare for those cases that have not yet been visited and consequently reduce costs and effort on the part of the UNHCR. The shortcoming of this approach is its ability to predict (rather than directly measure) poverty and welfare. For example, when we estimate poverty we estimate a probability of being poor, which varies between 0 and 1, and not a poverty status, which can take only the values of 0 or 1. This leads to the problem of choosing which threshold to use to separate the estimated poor from the estimated non-poor. This threshold is usually set at 50 percent, given that values above 50 percent indicate that the case has a higher probability of being poor than not. However, it is evident that a case with 51 percent probability of being poor is not that different from a case with a probability of 49 percent. It is also evident that this choice affects the estimation of both the leakage and the coverage rate. As a consequence, one may want to study the optimal choice of probability threshold that would maximize coverage while minimizing leakage. This threshold may be different from 50 percent but preferable to 50 percent because of these max/min properties.

Several methods have been proposed in the literature for choosing the optimal threshold based on the receiver operating characteristic (ROC) curve. We use two of the most common measures as shown below. The first measure is the

Youden index:

$$YI = \max(\text{Coverage} - \text{Leakage})$$

where the optimal cut-off point is the one that maximizes YI , that is, the difference between coverage and leakage. The second measure is the

Distance index:

$$d = \sqrt{(\text{Undercoverage})^2 + (\text{Leakage})^2}$$

where the optimal cut-off point is the one that minimizes the distance d from the scenario of perfect discrimination (that is the point $(0, 1)$), and where *undercoverage* is the proportion of poor classified as non-poor. We will use both indexes to test what is the optimal threshold to use to separate the poor from the non-poor and in order to maximize coverage while minimizing leakage. This allows us to statistically determine the best possible targeting outcome.

As a final exercise in the targeting part, we will turn the targeting question around. Instead of counting the eligible cases and asking “what is the budget necessary to achieve optimal targeting?” we ask how to achieve optimal targeting given an available budget. This final exercise provides a sense of the cost of achieving different levels of coverage and leakage.

Policy simulations

Following the targeting analysis, we provide simple simulations of the effects of different policy outcomes. The policy simulation model we use is derived from the welfare model illustrated in chapter 2. The general welfare model is described in equation 4.1:

$$(4.1) \quad W_i = \alpha + \beta_1 P_i + \beta_2 X_i + \varepsilon_i$$

where W = welfare measure (expenditure or poverty); P = vector of case and PA characteristics that can be affected by policies such as education or occupation, and X = vector of case and PA characteristics that cannot be affected by policy such as age or gender of the PA; ε = normally distributed error term with zero mean; and i = household number (case number in UNHCR data). The model described in equation 4.1 contains the final variables selected for the welfare and poverty models in chapter 2 of the study, which we saw are slightly different for the two models. The welfare model is estimated with an ordinary least squares (OLS) estimator and the poverty model with a logit estimator.

To simulate a policy change, we will adopt cross-survey imputation methods. The basic idea is the following. First, we create a data set of all HV cases, including the original data set and its identical replication (we duplicate the data set) so as to create two identical subsamples. We code the original data set “0” and its duplicate “1”. Second, we take subsample “1” and substitute all welfare observations (W —welfare and poverty) with missing values. Third, we introduce the

policy change for one variable at the time and for all observations in subsample “1”. For example, we increase the education level of the PA for all or a fraction of these cases in subsample “1”. Fourth, we estimate equation 4.1 with subsample “0” and use the estimated coefficients $(\alpha, \beta_1, \beta_2)$ to estimate welfare (\widehat{W}) for subsample “1”. Fifth, we compare mean welfare across subsamples “0” and “1” and derive in this way the impact of the policy change on welfare. Formally we estimate (equation 4.2):

$$(4.2) \quad \widehat{W}_i = \hat{\alpha} + \hat{\beta}_1 P'_i + \hat{\beta}_2 X_i,$$

where the “hats” represent estimated values and P' represents the policy variable containing the change.²

As a second policy exercise we will also estimate margins for all modalities of all policy variables considered. A margin is a predicted statistic based on a fixed model where one or more of the modalities of a predictor are assumed to change. For example, consider a policy variable that measures whether refugees work or not. After the estimation of the poverty model we can estimate what would be the probability of poverty if all refugees, rather than only a share of refugees, would work. This predicted probability is called a margin. This exercise can be repeated for all policy variables considered and can be thought of as a robustness test of the multiple imputation exercise proposed above.

Not all variables present in the HV questionnaire can be used for policy modeling. As we said, some variables like age and gender cannot be affected by policy and used for policy modeling. Other variables, such as place of origin or border crossing, can no longer be affected with policies given that these events occurred in the past. Other variables are excluded because they are not retained by the final welfare model because of lack of significance. Evidently, only the final variables retained in the welfare model are those that have some effect on welfare. And finally, not all variables are expected to have a large effect on welfare. As we saw for the welfare model, the variables that significantly affect welfare and with large coefficients are very few. This restricts policy simulations to a few variables, and even within this restricted number of variables the simulated policies that we propose may not be realistic or feasible. Therefore, we should consider these simulations as rough benchmarks to understand whether or not intervening in certain policy areas has the potential to really improve the welfare of refugees.

The chosen variables for the policy simulations are the following:

Case size. This is the best predictor of welfare. The idea behind modeling this variable is that cases do not necessarily correspond to families or households and aid organizations may consider policies that encourage aggregation or disaggregation of cases. For example, families that wish to reunite may be given incentives to do so, whereas cases that wish to split into further cases may be given incentives to do so, depending on what we learn about the impact of these changes on individual welfare.

House rented or owned. The rationale for modeling this variable is that aid organizations may consider assisting refugees with shelter rather than cash assistance, either by providing shelter free of charge as in refugee camps or by covering expenses for rent. Simulating changes in the share of refugees who pay rent may provide some indications on the impact of these policies on welfare.

Governorate of destination. The governorate of destination of refugees is determined by the location of the available opportunities and by the opportunities for mobility within the country and other local factors. However, certain governorates offer better conditions than others and one may want to simulate what welfare would be like if refugees lived in different governorates. Of course, this is not the real welfare effect because refugees also self-select governorates based on their characteristics and means and we can only control for some of these factors. This is nevertheless a counterfactual to see if there is any potential in voluntary relocation policies agreed with the hosting government.

Highest education of the PA. We know that educational attainment for Syrian refugees is bunched in the lower segments of education and that only about 50 percent of the Syrian refugee children are in school today (see details in chapter 1, section on educational attainment). This fact will evidently have an effect on the future head of households. Hence, it may be instructive to simulate how changes in the education of the head of the household (in better or worse) may affect the welfare of the case. Naturally, educational outcomes occur over generations and education of the PA may have various effects on other variables. This particular simulation cannot take these factors into account; it is simply an instantaneous counterfactual showing changes in welfare if the PA had a different educational level.

A binary variable for people who work or do not work. Using the income variable available in the HV data set, we could derive whether a case has at least one person working. We can use this variable to model what would happen to welfare if more people would work. This is evidently related to the refugee policies adopted by hosting countries and to the opportunities provided by local informal markets. But aid organizations can help to foster labor market inclusion and advocate to hosting nations to amend rules and regulations regarding work permits of refugees. Note that the HV data set had one variable indicating whether the case had a work permit. However, this variable was never significant in the welfare models and it was not retained in the final model.

Former occupation. The data contain a variable on the former occupation of the PA, meaning the occupation the PA held before fleeing from Syria. This variable does not tell us much about current occupations, if any, but tells us whether PAs with various degrees of skills are more or less successful in improving the welfare of their cases. Policies cannot affect former occupations of course but they can help to improve on former occupations with retraining schemes, for example, which can improve the likelihood of being occupied or improving on current income.

A binary variable for the validity of the protection certificate. HV data include a variable on the validity of the protection certificate. This is the key registration document for the UNHCR and the one that gives access to UNHCR services. It is therefore an important variable for welfare as also found in the welfare and poverty equations. Here the policy is one of improving on the maintenance of validity of the certificate and on its coverage. The corresponding simulation is to simply attribute to a larger share of refugees a valid protection certificate.

Marital status. This is not really a policy variable as such. But we will be modeling this variable because prolonged socioeconomic distress can lead to divorce and separation, and we may want to test what is the negative effect on welfare that such changes may imply. Policies in this case would be family counselling and prevention policies for families at risk of division.

Formal arrival. In the welfare and poverty models we also used a variable that captures whether refugees entered the country formally or informally. This variable turned out to be significant in the models and it can be used for simulations. The policy in this case would be those measures that can encourage refugees to formally enter the country, even in the absence of essential documents.

The simulations proposed control for the other independent variables retained by the final welfare models, but they do not control for the structure of correlations between the policy variables and all other variables retained by the model. For example, changing the level of education of the PA may change other factors in the case such as the level of education of the PA's spouse and children, occupation, and other factors. The usual assumptions in regression models is that independent variables are "independent" of each other and this is something we tested in the preparation of the final welfare model so that this problem should not make a very large difference for our results. However, it is also unreasonable to assume that correlations between independent variables would not affect our results. This is a limitation of the simple simulation model proposed.

Results

Targeting evaluation

As already discussed, the UNHCR in Jordan provides cash assistance to selected households using welfare and vulnerability criteria for eligibility. As a first test, we reproduced the UNHCR's decision for assistance from the data, which is based on income rather than expenditure. Using HV data, we are able to reproduce the UNHCR decision for cash assistance rather accurately, despite the fact that not all inclusion and exclusion variables are present in the HV data. Table 4.1 shows our estimation of those who should receive cash assistance according to our simulation of the UNHCR criteria against the actual decision taken by the UNHCR. It can be seen that in only about 3.1 percent of cases we are not able to reproduce the UNHCR decision, which may be explained by the fact that not all inclusion and exclusion indicators are available. This also implies that the UNHCR applies its cash decision rules rather accurately.

Table 4.1 Reproduction of UNHCR Cash Assistance Decision Based on HV Income Data (%)

<i>UNHCR decision (income)</i>	<i>Simulated decision (income)</i>		
	<i>No</i>	<i>Yes</i>	<i>Total</i>
<i>No</i>	55.1	0.4	55.5
<i>Yes</i>	2.7	41.7	44.5
<i>Total</i>	57.8	42.2	100

Source: Estimations based on JD-HV2 data.

Table 4.2 Poor According to UNHCR Income and Expenditure Criteria (%)

<i>Expenditure</i>	<i>Income</i>		
	<i>Non-poor</i>	<i>Poor</i>	<i>Total</i>
<i>Non-poor</i>	9.6	21.2	30.8
<i>Poor</i>	5.4	63.7	69.2
<i>Total</i>	15.1	84.9	100

Source: Estimations based on JD-HV2 data.

Next, we test how income and expenditure compare for targeting. As a measure of welfare, the UNHCR uses income instead of expenditure, which is a shortcoming in the light of the analysis presented in chapter 2 of this work. It is therefore instructive to test how the targeting capacity of the UNHCR would change if expenditure instead of income were to be used. As a first observation, it is clear that selecting the poor using income or expenditure results in a different welfare assessment. Table 4.2 crosses the poor and non-poor using income or expenditure criteria and it shows that the income criteria finds 21.2 percent of poor cases that result as non-poor according to expenditure criteria. There are also 5.4 percent of cases that are poor according to expenditure but not to income. Therefore, income and expenditure provide two different snapshots of who is poor. This is partly explained by the fact that many cases have a reported income of zero and these cases fall under the income poverty line whether this zero income accurately reflects the income situation or not.

If we further test the cash assistance decision against the targeting that would have resulted if our expenditure welfare aggregate was used in place of income, we will find that those who should have been but were not targeted are a very small share (0.4 percent), slightly smaller than those excluded using income (table 4.3). Instead, we find that the cash assistance decision based on income includes 10 percent more cases than it should have included if expenditure was used as a welfare criterion. This can be explained by the fact that—income being lower than expenditure on average—targeting based on income is more

Table 4.3 Reproduction of UNHCR Cash Assistance Decision Based on HV Expenditure Data (%)

<i>UNHCR decision (income)</i>	<i>Simulated decision (expenditure)</i>		
	<i>No</i>	<i>Yes</i>	<i>Total</i>
<i>No</i>	55.2	0.4	55.5
<i>Yes</i>	10	34.4	44.5
<i>Total</i>	65.2	34.8	100

Source: Estimations based on JD-HV2 data.

Table 4.4 Coverage and Leakage of UNHCR Cash Decisions According to Income and Expenditure Criteria (%)

<i>UNHCR decision</i>	<i>Coverage (%)</i>	<i>Leakage (%)</i>
UNHCR decision (income) if true welfare is income	51.33	5.92
UNHCR decision (income) if true welfare is expenditure	52.06	27.40

Source: Estimations based on JD-HV2 data.

“inclusive” than targeting based on expenditure. Therefore, while expenditure is a better measure of welfare for welfare modeling and for targeting purposes, it can result in a higher percentage of cases excluded because of non-eligibility.

We now measure the coverage and leakage rates of the UNHCR cash assistance decision based on income and expenditure criteria. The coverage rate is defined as the percentage of poor cases that are targeted. The leakage rate is defined as the percentage of beneficiaries who are non-poor. Of course, one should consider that these rates take into account two factors. One is the “error” made by using income instead of expenditure. This can be assessed by comparing coverage and leakage rates between income and expenditure criteria. The leakage rate is the “error” made due to the fact that vulnerability inclusion and exclusion criteria are used in addition to poverty criteria. This can be checked by looking at the coverage and leakage criteria of the income decision if true welfare is income in table 4.4.

Technically, none of these are “errors”; these simply reflect decisions taken by the UNHCR in the targeting methodology. If the UNHCR wished to change the methodology and used only poverty criteria and expenditure in place of income, then these errors would be largely reduced. As can be seen from table 4.4, if expenditure was the real measure of household welfare but income was used for targeting, then the leakage rate would be quite high (27.4 percent) while coverage would be 52 percent. If, vice versa, income was the real measure of welfare and also the measure used for targeting, then leakage would be much lower and coverage marginally lower. However, chapter 2 of this study has shown that expenditure is the best option to measure welfare with available data. This means that, as it stands, the UNHCR decision based on income leads to a rather large leakage. If the UNHCR shifted to expenditure for the purpose of targeting, this would create some savings that could be used to expand coverage of beneficiaries.

Finally, we can measure the impact of UNHCR cash assistance and WFP food voucher programs on poverty. This is reported in table 4.5 where we can see that the pre-transfer poverty rate of 69.2 percent is reduced to 61 percent with UNHCR cash transfers alone; to 32.3 percent with the WFP food voucher alone;

Table 4.5 Poverty Rates Before and After UNHCR and WFP Transfers (%)

<i>Expenditure</i>	<i>With actual existing coverage (%)</i>	<i>Assuming full coverage (%)</i>
Before transfers	69.2	69.2
With UNHCR cash assistance	61.0	39.3
With WFP food voucher	32.3	32.3
With UNHCR cash and WFP voucher	16.6	6.9

Source: Estimations based on JD-HV2 data.

and to 16.6 percent with both UNHCR cash assistance and WFP food voucher programs. These rates derive from the difference in coverage of the UNHCR and WFP programs. If we assume full coverage of both programs, the UNHCR and WFP programs have a very similar and very large impact on poverty. Moreover, this table does not include other forms of assistance that refugees may receive from other organizations. Taking other assistance into consideration, we can conclude that aid to refugees has the potential to eliminate poverty altogether if we consider as poor those cases with expenditure per capita less than JD 50 per person per month.

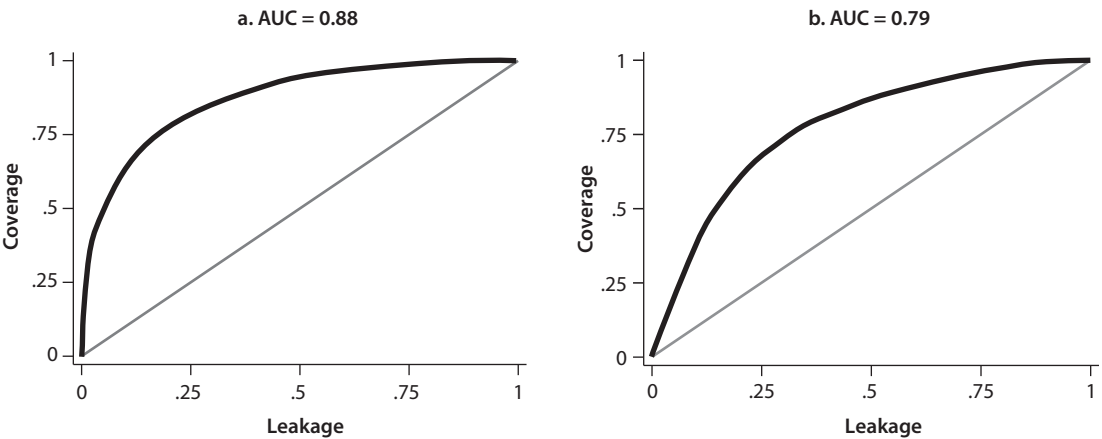
In conclusion, there is little doubt that the UNHCR cash assistance and the WFP food voucher programs have a strong poverty reduction capacity in their current form and that there are some margins to further improve targeting. The question on how to improve on targeting while containing costs is assessed next.

Optimal targeting

As described in the methodological section, the objective of this part is to determine the optimal probability threshold to maximize coverage and minimize leakage. We do this using the available HV data but the same idea can be applied if only PG data were available. The coverage-leakage graph already shown in chapter 2 of the study is replicated in figure 4.1 in the case of using only the monetary threshold (figure 4.1, panel a) and in the case of adding to the monetary threshold the nonmonetary vulnerability criteria used by the UNHCR (figure 4.1, panel b).

Using only the monetary criteria, we obtain a high value of the area under the ROC curve (AUC) index of performance (0.88), showing that the poverty model proposed in the previous chapter is able to predict the true poverty status very well. By adding the nonmonetary vulnerability criteria, we find an AUC

Figure 4.1 Coverage and Leakage for Different Probability Thresholds and AUC, Without and With Vulnerability Criteria (JD 50 Poverty Line)



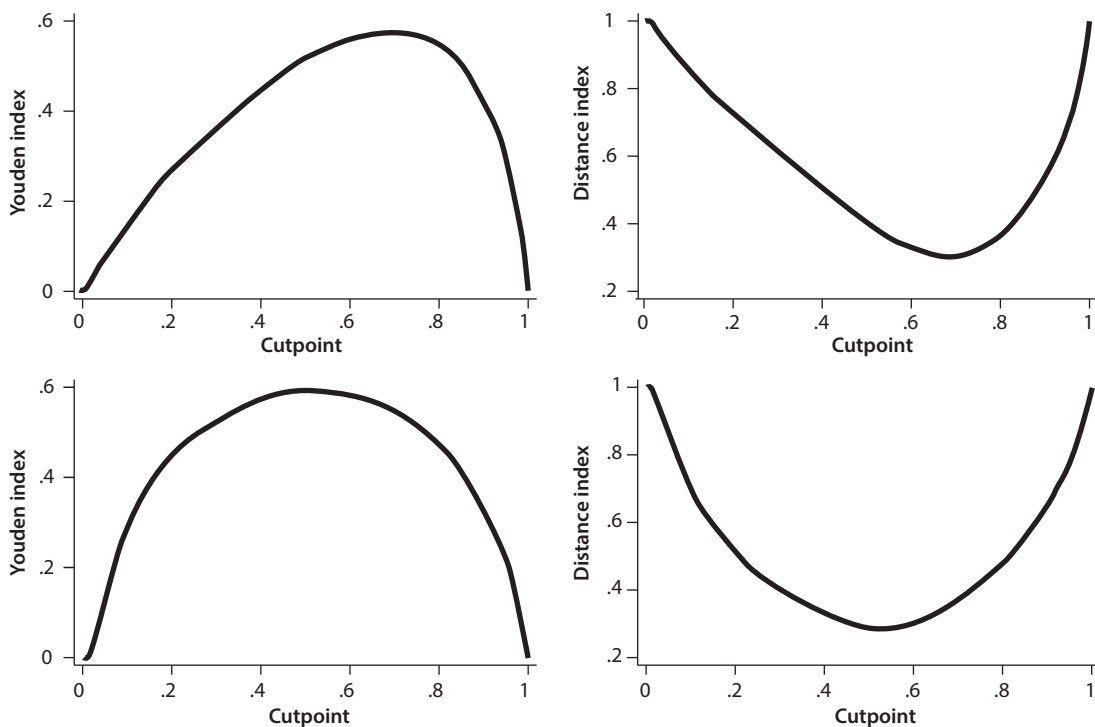
Source: Estimations based on JD-HV2 data.

measure of performance equal to 0.79, which is smaller than the previous scenario. Therefore, adding the vulnerability criteria on top of the welfare criteria does not improve on the coverage/leakage optimization. Indeed, some of the vulnerability criteria used by the UNHCR were already part of the welfare model used to construct predictions or, if they were not, it means that these variables were not associated with welfare. This indicates that, if the purpose of targeting is primarily monetary, it is not advisable to mix monetary and nonmonetary criteria because this will decrease rather than increase the targeting capacity of the model.

Next, we compute the Youden index and the distance index illustrated in the methodological section (figure 4.2). In general, the two indicators (Youden and distance index) may suggest different optimal thresholds. In our case, we find the two values rather close, 0.706 for the Youden index (corresponding coverage, 0.758; corresponding leakage, 0.182) and 0.693 for the distance index (corresponding coverage, 0.77; corresponding leakage, 0.195).

The analysis thus far has focused on the poverty rate for individuals (the population). We can also repeat the exercise estimating the poverty rate for cases, meaning the share of cases (rather than individuals) who are poor. The bottom two panels in figure 4.2 show the results. In this case, the Youden and distance indexes provide exactly the same values. Since the ROC curve is symmetric

Figure 4.2 Youden and Distance Indexes for Different Cut-Off Points (Individuals and Cases)

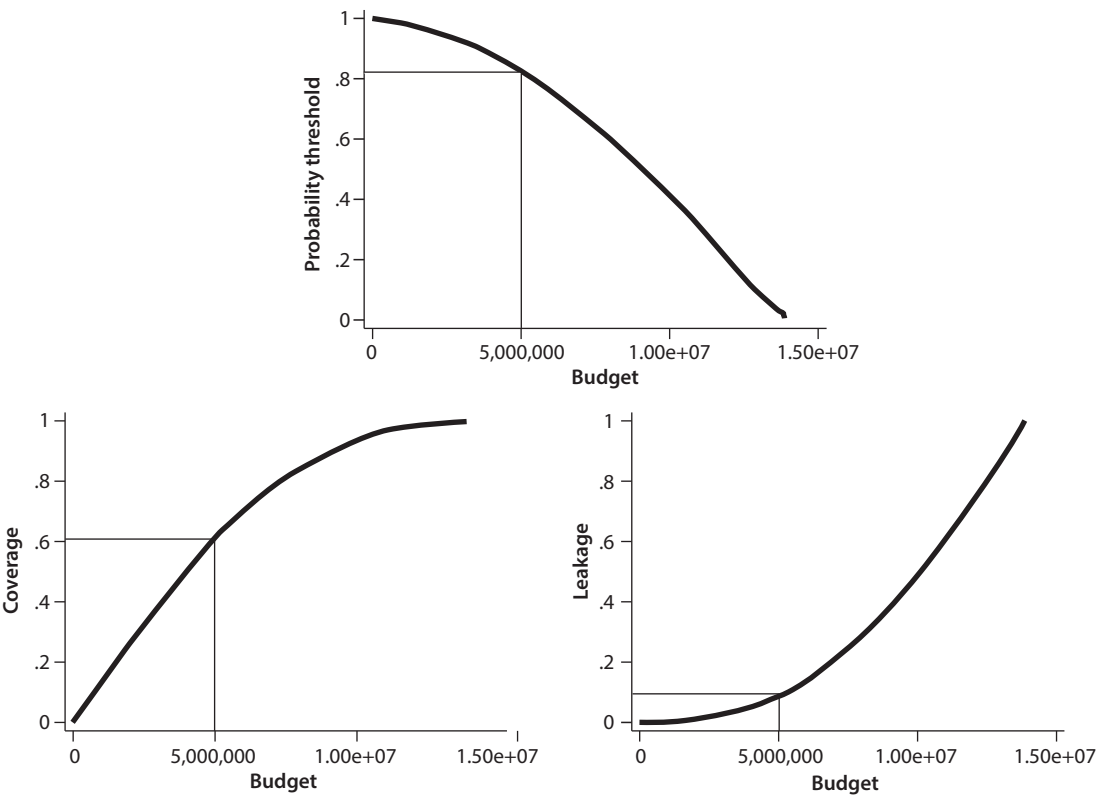


Source: Estimations based on JD-HV2 data.

around the negative diagonal of the unit square, the two decision rules point to the same optimal threshold of 0.513. Therefore, if we consider as poor the cases whose predicted probability (obtained from the poverty model previously proposed) is greater than 0.513 and as non-poor the cases below this optimal cut-off point, then we are minimizing both the distance from the perfect discrimination scenario and maximizing the trade-off between coverage and leakage. Using this optimal cut-off point, the coverage is 80.5 percent and the leakage 21.2 percent.

As an alternative, it is possible to select the optimal probability threshold using the available budget for the cash program as a baseline. The UNHCR would normally know the budget available for targeting. This budget can be used to select the probability threshold that provides the optimal trade-off between coverage and leakage. For example, imagine that the UNHCR had only JD 5 million per month to run a cash assistance program that provides JD 100 per month to each case. Figure 4.3 plots probability threshold, coverage rate, and leakage rate for various budget constraints. By drawing the line in correspondence of the JD 5 million budget we can derive the probability threshold for selection of the eligible cases and the corresponding coverage rate and leakage rate. In this

Figure 4.3 Probability Threshold, Coverage Rate, and Leakage Rate for Different Budget Scenarios



Source: Estimations based on JD-HV2 data.

particular case, the threshold would be around 82 percent, coverage just above 60 percent, and leakage around 10 percent. These instruments can be used, for example, to provide an indication to donors of the success rate of the cash program for each level of financing.

Policy simulations

We now turn to the simulations of alternative policies to humanitarian assistance. To be clear, what we mean by policy simulations is to simulate the outcome in terms of poverty and welfare of changes in the attributes of individuals and cases. These are therefore indirect simulations in the sense that we do not simulate, for example, a change in labor legislation and measure the impact of this change on welfare. Rather, we simulate the impact of a change in attributes such as work status on poverty and welfare on the assumption that a change in labor legislation can lead to more people working and, through this effect, improve people's welfare. By simulating changes in attributes, we are implicitly simulating the impact of any policy on welfare that works through the changes in these attributes.

Table 4.6 summarizes the results of selected policy simulations on the variables that we discussed in the methodology part. We simulate gross and rather unrealistic changes to amplify the effect and see whether such policies have any impact on welfare. Table 4A.1 in annex 4A provides poverty and welfare statistics for all policy variables and their modalities to better understand how changes in modalities in policy variables may affect policy outcomes. Table 4A.2 in annex 4A provides the margins—which we said are the probabilities of poverty if all individuals moved to a particular category—and function as robustness tests to the multiple imputation simulations.

In the first simulation, we reduce the case size to a maximum of five members by turning all cases with six members and above to five members. Recall that household size is the best predictor we found for both welfare and poverty. This

Table 4.6 Impact of Policies on the Poverty and Welfare of Syrian Refugees

<i>Policy</i>	<i>Poverty (%) population)</i>	<i>Poverty change (%) population)</i>	<i>Welfare (JD/capita)</i>	<i>Welfare change (JD/ capita)</i>
No policy	69.23	0.00	34.83	0.00
Case size reduced to 5 for size 6 and above	62.92	−6.31	39.67	4.84
All cases non-renting turned to renting	68.19	−1.03	36.13	1.30
All cases in Mafrq and Zarqa reclassified in Aqaba	67.55	−1.67	36.45	1.62
Highest education of PA reduced by one level	69.75	0.52	34.11	−0.72
Highest education of PA increased by one level	68.25	−0.98	35.88	1.05
All those who declared not working turned to work	69.26	0.03	35.34	0.51
Occupation of PA increased by one level	67.82	−1.41	35.36	0.53
All cases with invalid protection certificates turned to valid	68.68	−0.55	35.19	0.36
All married turned to divorced or separated	73.81	4.58	31.20	−3.63
All informal arrivals turned into formal	66.81	−2.42	36.54	1.71

Source: Estimations based on JD-HV2 data.

policy would reduce the poverty headcount by over six percentage points and improve expenditure per capita by about JD 4.84/person/month. This is a large effect. If we look at the poverty and welfare statistics of the case size variable in table 4A.1, we see that poverty is a monotonic increasing function of case size and a monotonic decreasing function of welfare. The same can be said for the margins, which are all significant in table 4A.2.

Evidently, changes in the size of the case can only occur on a voluntary basis and these changes may have implications for other indicators that relate to welfare. For example, the splitting of a case into two parts results in the multiplication of cases and number of shelters needed. Recall that these simple simulations consider “everything else being equal” and therefore assume that the splitting of a case results in identical conditions on all other variables. Hence, the policy here could be that, for cases who wish to split and have some but not all the means to do that, aid organizations may encourage this process by providing financial assistance.

The second simulation consists in turning all cases who are not renting into cases who are renting. Note that renting here signals cases that are better off and can afford to rent houses or apartments, so that the policy here would be to provide cases who are in temporary or makeshift accommodation with free accommodation or subsidized rent. The effect is small and estimated in a poverty reduction of 1.03 percentage points and an improvement in expenditure per capita per month of JD 1.3. Table 4A.1 shows that there is a big difference between renting/owning a property or not, about 24 percentage points higher in the poverty rate and about JD 159/person/month in welfare in favor of renting/owning. The poverty margins in table 4A.2 also show that, if all cases were renting or owning the property they live in, then the poverty rate would be lower at 68 percent as compared to 87 percent if all cases were not renting or owning. Hence, this is a case where statistics would initially suggest that supporting cases with shelter and free rent for those in makeshift accommodations would have a great impact on welfare; but once we control for other factors as we do in our model, this effect is smaller.

The third simulation foresees a hypothetical change in governorate of destination by “moving” all refugees currently in Mafraq and Zarqa to Aqaba. This is not a policy that we would suggest but simply a counterfactual exercise that answers the question of “what if” refugees went to the south of the country rather than relocating to the north. The policy is massive, given that most refugees are in Mafraq and Zarqa, but the effect is small, only a 1.67 percentage points reduction in the poverty headcount. The effect on welfare is also small with only a JD 1.62/person/month improvement. The difference in poverty between Mafraq and Zarqa on the one hand and Aqaba on the other hand is about 17 percentage points (table 4A.1). This is a case where the statistics are not really in line with the margins in table 4A.2. Here we find that if all refugees were located in Mafraq, then the probability of poverty would be 68 percent, one of the lowest values across governorates. Hence, results are not clear-cut and this is explained by the fact that multiple imputations and margins estimates control for all the factors used in the equations while simple statistics do not.

The fourth set of simulations is on the education level of the PA. The policy simulation here is to increase or decrease all cases by one level of education. The effect is small on poverty and very small on welfare. Statistics on poverty and welfare according to the various degrees of the PA education (table 4A.1) show that poverty decreases and welfare increases with education. But the changes, especially at low levels of education, are not very large, as also shown by the margins (table 4A.2) and these effects disappear once we control for other factors. Hence, improving education in an environment with little return to education does not improve welfare. This is an important finding. There is a high concern about the fact that only half of refugee children are not in education and the possible future implications for human development of the Syrian populations. These are legitimate concerns; but there seems to be less concern about returns from education and more concern about the possibility that educating people with no obvious use for education can become socially explosive. It is of course essential to keep a focus on education for short-, medium-, and long-term development goals, but it is equally important to address the factors that make returns to education so low.

The fifth set of simulations is about work and former occupations. We first turn all those cases who declared having no income from work into working cases. Surprisingly, we can see that this has no effect on poverty or welfare. Indeed, table 4A.1 shows no difference in poverty and mean expenditure between working and non-working cases and table 4A.2 shows that margins are very close. This would suggest that those who work do so in very precarious, informal, and low-income jobs, as expected for refugees who are not entitled to work. Hence, work is not what we would expect in a normal working environment and returns from work are very close or even inferior to what the cash and voucher programs may provide. In other words, the reservation wage represented by the cash assistance program is high. However, the fact that the program is close to the poverty line and the fact that working individuals are not automatically excluded from the program would suggest that the program is unlikely to discourage refugees from work, whereas it may prevent refugees from taking up illegal or dangerous occupations.

The second labor market policy we simulate is to increase the former occupation level for all cases by one level in the set of four skill levels we created. This has a small effect on poverty (minus 1.4 percentage points) and a very marginal effect on welfare (plus JD 0.5/capita/month). Recall that occupational skills here refer to those before the flight to Jordan and this may explain in part the small effect of improving these skills on poverty. Also note from table 4A.1 that those with the lowest poverty and highest welfare are either those with no skills or those with professional skills. These seem to be the two groups that do better in the Jordanian labor market and it may explain why increasing skills for everyone will not improve welfare on average. Table 4A.2 also shows that the difference in margins are very small across the skills categories, indicating that acquiring different skills would not make much of a difference although professionals stand out as those with the lowest probability of poverty. Here the central question is not

how to provide refugees with the right level of skills—which sometimes would counterintuitively imply reducing skills—but how aid agencies can help hosting governments to create the conditions to improve returns on skills for refugees. Again, as for education, the problem is that increasing skills does not equate to more work as would be the case for a regular population in a regular labor market.

We then simulate the impact of turning all those with an invalid protection certificate into a valid one. The implied policy is to improve the coverage and validity of the certificate. The impact on poverty and welfare is very small (minus 0.6 percent and plus JD 0.4, respectively). This result is explained by the low effect of this variable on welfare. The difference in welfare between cases with valid and invalid certificates is significant and estimated at almost 10 percentage points as shown in table 4A.1, although the difference is reduced if we look at margins (a difference of 4 percentage points). Hence, this policy is not very promising, particularly considering the fact that the UNHCR already works hard to keep protection certificates valid and to increase their coverage.

Policies that help refugees to enter the hosting country formally are more promising. Here we simulate that all informal entrants are turned to formal entrants. This policy reduces poverty by 2.4 percentage points and would increase welfare by JD 1.7/person/month. We can see a significant difference in statistics between the two statuses (table 4A.1 shows a difference of 17.6 percent), although the difference in margins is much smaller (table 4A.2 shows a difference of 4 percent).

Finally, we simulate changes in marital status. Here we simulate a negative “policy” by turning all married or engaged people into divorced or separated. That enables us to see the effect of deteriorating conditions on families, which would lead to social tensions within the family. Surprisingly, the effect is large, the largest after the simulations on case size. The poverty rate increases by 4.6 percentage points and the welfare decreases by JD 3.6/capita/month. This is in line with the margins in table 4A.2, which show the probability of poverty is lower if one is married or engaged as compared to divorced and separated. However, statistics in table 4A.1 show instead that poverty is much higher for married and engaged people (19 percentage points difference). This is explained by the fact that once we control for other characteristics of the case (case size in particular), the probability of being poor is reversed, with married people being at reduced risk of poverty as compared to divorced or separated ones.

How different would these simulations be if we were working with data on Syrians before the crisis? We focus, in particular, on an education-related policy simulation, which increases by one level the education attained by the PA (see table 4.7). We simulate this policy on both the Syrian refugees in Jordan (referring to the JD-HV2 data) and the Syrian population before the crisis (referring to the Syrian Household Budget Survey 2007). In order to be able to compare this policy on both populations, we consider a reduced welfare model based on covariates that are included in both datasets: case size; age, marital status, and education of the PA; having a house made of concrete; having a house with kitchen; and renting or owning the house. As a result of the reduced welfare

Table 4.7 Impact of Education Policies on the Welfare of Syrian Refugees: A Comparison with Syrians before the Crisis, 2007

<i>Policy</i>	<i>Syria 2007</i>		<i>Syrian refugees in Jordan (JD-HV2 data)</i>	
	<i>Welfare</i>	<i>% variation</i>	<i>Welfare</i>	<i>% variation</i>
No policy	3,749.0	0.0	35.1	0.0
Highest education of PA increased by one level	4,113.5	9.7	37.0	5.2

Source: Estimations based on Syrian Household Budget Survey 2007 and JD-HV2 data.

model, the results referring to the Syrian refugees in table 4.7 are different from the ones in table 4.6. From table 4.7 we note that the policy simulation under consideration increases welfare in both populations. However, the effect is almost double for the Syrian population before the crisis as compared to the Syrian refugee population (9.7 percent versus 5.2 percent, respectively). As expected, refugee status reduces significantly returns to education.

Conclusions

The chapter has evaluated the targeting performance of the existing UNHCR cash transfer and the poverty reduction capacity of the UNHCR cash program and the WFP food voucher. It then developed a methodology to fine-tune targeting whether the cash assistance system is driven by demand or by the available budget. Finally, the chapter looked into the potential for alternative policies to humanitarian assistance that would affect various attributes of refugees.

Targeting cash assistance programs is now a common practice for the UNHCR, as dictated by reduced funds for the Syrian refugee crisis. The targeting methodology practices at the time of data collection relied on income and on a set of nonmonetary inclusion and exclusion criteria. This targeting resulted in very good coverage but excessive leakage. One way to reduce leakage with contained negative effects on coverage is to use expenditure rather than income for targeting purposes. That is due to the fact that income is underestimated as compared to expenditure and a large share of cases report zero income even when expenditure is sizeable.

We then proposed a methodology to fine-tune targeting using two common indexes, the Youden index and the distance index. The indexes are designed to provide a rule on how to maximize coverage while minimizing leakage. We showed that both indexes provide similar results, whether applied to individuals or cases. We also showed that these methods can be applied starting from the demand side, by counting first the number of beneficiaries to cover, or starting from the supply side, by counting the budget available for the cash assistance program. These can be useful instruments for the UNHCR for planning purposes and for donors to see the potential impact of specific amounts of aid in terms of coverage and leakage.

Next, we simulated the impact on poverty and welfare of changing the attributes of the refugee population, and in this way simulating the indirect effects of

policies that affect these attributes. We found important poverty and welfare effects of policies that can affect the case size and, to a minor extent, policies that relate to family stability such as marriage and divorce. We found weak effects or null effects for policies that affect the level of education, skills, or work status of the PA. The reasons are simply explained. Due to their status, refugees live in an environment where returns to education and skills are almost nil. Returns to work are so low that we do not observe any difference between those who work and those who do not.

The reservation wage represented by the cash assistance program is high. However, the fact that the program is close to the poverty line and the fact that working individuals are not automatically excluded from the program suggests that the program is unlikely to discourage refugees from working, whereas it may prevent refugees from taking up illegal or dangerous occupations. More formal work through work permits is hard to obtain as witnessed by the small number of refugees who obtained this status. But more formal work would provide greater revenue for the government besides offering greater opportunities for improved working conditions for refugees. Nevertheless, the simulation suggests that income from work of these refugees does not stand out as a poverty-reducing mechanism, given that presently the work permit variable is almost invariably non-significant in the welfare and poverty models.

When we compare the results of these simulations with the results of the targeting analysis, we can derive a few additional lessons for policy. The most effective policies for reducing poverty and increasing welfare are presently represented by humanitarian assistance, cash transfers, or food vouchers, which are the current policies adopted by the UNHCR and WFP, respectively. That is because these programs provide a significant percentage of total expenditure of the cases. Substituting this policy with alternative policies related to education, skills, or location is not expected to be as effective as cash transfers for the reasons explained above.

The environment in which refugees live with few labor market opportunities reduces returns to education and skills significantly. In fact, it changes returns in ways that we would not expect in a regular labor market, for example by making high-skilled refugees less successful than the skilled ones. The policies that appear to offer more potential impact in terms of welfare are also those more complex to apply, such as changes in case size or renting/ownership status. The results suggest that a more promising policy to consider relates to housing policies for refugees outside camps, with perhaps a controlled system of rents agreed with local owners as a substitute for cash assistance. This would allow cases in make-shift accommodation to move into rented accommodation.

What are the main implications of these simulations and what are the real alternatives to the current assistance programs? The results highlight the long-standing dilemma faced by humanitarian agencies in seeking to transition from emergency to longer-term programs. They suggest that there are no simple pathways at the policy level to address the challenge of improving refugee welfare

and reducing poverty. They appear to confirm that the maintenance of current humanitarian aid transfers offers the most effective way of supporting welfare and reducing poverty among refugee populations. Yet the problems of aid dependency and the sustainability of current programs remain. There are few, if any, examples of large-scale humanitarian aid transfers being sustained beyond the initial emergency phase.

In the case of Lebanon and Jordan, the magnitude of the refugee population presents policy dilemmas that are unusually sharp. The overall costs borne by the respective governments continue to be very high. While support for continuing humanitarian assistance has been generous, it is clearly insufficient to mitigate the overall economic and social consequences. To date, no major policy shift has occurred that would permit larger financing from multilateral and bilateral sources to flow to governments hosting significant numbers of refugees. Such financing might ease, if not necessarily overcome, domestic concerns related to refugees being permitted greater access to the labor market, or refugees securing access to private-sector financing to support resilience and self-reliance. With respect to the return on supporting education and skills training, a more comprehensive analysis over a longer period might be required to reach firmer conclusions about the contribution of education and skills to reducing poverty.

Humanitarian crises persist over long periods of time, and rebuilding asset bases, acquiring new skills, and developing social capital face many obstacles while refugees are in exile. As a result, opportunities for refugees to reach their pre-conflict status quo in their asylum country are necessarily limited. The lessons of this chapter suggest that further reflection is required on the policy implications of refugee status for longer-term development programs. We recognize the legal importance of refugee status and official documentation for the purpose of protection and access to certain assistance services. However, the analysis in this chapter points to the practical consequences of exclusion from the full range of rights, obligations, and opportunities enjoyed by normal citizens of a state. Moreover, the effectiveness and impact of longer-term development investments on the specific character of refugee welfare and poverty is uncertain without a policy and institutional environment that would enable refugees to enjoy improved rights and opportunities.

The dilemmas for asylum country governments and for donors are self-evident. The prospects for transitioning out of humanitarian aid programs to longer-term development support will likely remain constrained. Without a reexamination of how a more equitable social contract can be developed between donors and the governments of countries affected by major refugee emergencies, the status quo will likely persist. Such a contract will need to recognize and reward the global public good and services rendered by asylum countries in hosting refugee populations. It may also offer the possibility for policy adjustments that encourage greater inclusion of refugee populations within mainstream economic and social development processes, as well as longer-term interventions that enable refugees to lessen their dependency on humanitarian assistance transfers.

Annex 4A. Statistics and Variables

Table 4A.1 Poverty and Welfare Statistics of Policy Variables

<i>Variable</i>	<i>Modality</i>	<i>Poverty (% Population)</i>	<i>Welfare (exp/ capita/month)</i>	<i>Share of observations (%)</i>
Case size	1	12.5	154.8	5.1
	2	22.4	91.7	5.6
	3	39.2	62.2	9.6
	4	55.5	48.6	15.7
	5	71.5	41.0	18.2
	6	86.2	32.6	17.7
	7	90.6	30.0	11.4
	8	96.8	23.6	15.7
	13+	100.0	10.8	1.0
House rented or owned	No	91.2	23.4	7.5
	Yes	67.2	49.2	92.5
Governorate of destination	Ajloun	76.6	45.6	1.6
	Amman	58.7	57.6	29.6
	Aqabah	61.5	47.6	0.4
	Balqa	69.8	45.6	4.5
	Irbid	68.7	47.3	27.0
	Jarash	73.2	44.7	2.0
	Karak	76.0	40.9	2.3
	Maan	75.0	40.1	1.2
	Madaba	77.3	40.1	2.3
	Mafrq	78.4	37.3	15.7
	Tafilah	85.7	31.1	0.7
	Zarqa	77.1	39.5	12.8
Highest education of PA	Below 6 years	72.3	43.9	19.2
	6-8 years	72.7	43.2	42.5
	9-11 years	68.2	46.9	21.7
	12-14 years	64.1	52.6	11.6
	At least university	50.3	71.6	4.9
With income from work	No	69.2	47.2	63.8
	Yes	69.2	46.8	36.2
Employment and skills level	None	55.6	67.9	7.7
	Low-skilled workers	76.8	40.1	13.6
	Skilled workers	73.3	42.4	34.3
	High-skilled workers	68.1	47.2	30.3
	Professionals	61.7	53.6	14.0
A valid protection certificate	No	77.1	38.8	16.7
	Yes	67.7	48.6	83.3
Marital status	Married or engaged	71.6	43.5	87.8
	Divorced or separated	52.7	70.1	1.1
	Single	46.0	83.1	6.2
	Widowed	60.1	56.6	4.9
Formal entry	No	76.6	39.5	58.2
	Yes	59.0	57.2	41.8

Source: Estimations based on JD-HV2 data. *Note:* Welfare expenditures are given in JD. PA = principal applicant.

Table 4A.2 Margins by Policy Variable

<i>Variable</i>	<i>Modality</i>	<i>Margin</i>	<i>Std. err.</i>	<i>z</i>
Case size	1	0.19	0.01	23.04
	2	0.27	0.01	32.43
	3	0.46	0.01	56.9
	4	0.57	0.01	95.31
	5	0.72	0.01	126.91
	6	0.85	0.01	157.13
	7	0.88	0.01	126.13
	8-12	0.95	0.00	194.38
	13+	1.00	0.00	214.59
House rented or owned	No	0.87	0.01	174.6
	Yes	0.68	0.00	334.92
Governorate of destination	Ajloun	0.75	0.01	59.67
	Amman	0.67	0.00	180.22
	Aqabah	0.64	0.03	19.8
	Balqa	0.68	0.01	76.39
	Irbid	0.69	0.00	176.71
	Jarash	0.74	0.01	63.45
	Karak	0.74	0.01	68.61
	Maan	0.73	0.02	45.36
	Madaba	0.74	0.01	66.76
	Mafraq	0.68	0.01	121.74
	Tafilah	0.81	0.02	40.8
	Zarqa	0.74	0.00	156.34
Highest education of PA	Below 6 years	0.71	0.00	162.35
	6–8 years	0.70	0.00	242.67
	9–11 years	0.68	0.00	172.28
	12–14 years	0.68	0.01	129.74
	At least university	0.64	0.01	73.87
With income from work	No	0.70	0.00	292.73
	Yes	0.68	0.00	205.49
Employment and skills level	None	0.72	0.01	120.64
	Low-skilled workers	0.70	0.01	130.31
	Skilled workers	0.69	0.00	207.82
	High-skilled workers	0.70	0.00	202.68
	Professionals	0.67	0.01	121.93
A valid protection certificate	No	0.73	0.00	168.4
	Yes	0.69	0.00	323.89
Marital status	Married or engaged	0.69	0.00	337.91
	Divorced or separated	0.73	0.01	62.23
	Single	0.71	0.01	103.68
	Widowed	0.73	0.01	106.79
Formal entry	No	0.71	0.00	240.84
	Yes	0.67	0.00	189.78

Source: Estimations based on JD-HV2 data. PA = principal applicant.

Notes

1. See UNHCR Cash Assistance Standard Operating Procedures (2013) for details.
2. To implement this routine, we use the STATA multiple imputation command “MI” with five repetitions.

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A Comparative Analysis across Countries and Data Sets

Introduction

The previous chapters of this report analyzed the welfare, poverty, and vulnerability of refugees from the Syrian Arab Republic using the second round of the Home Visits data in Jordan (JD-HV2). This data set is the most comprehensive data set we had at our disposal and for this reason it was used to carry out most of the core analysis in the report.

The welfare and poverty analysis of chapter 2 of the report was replicated for three other data sets: the third round of the Home Visits data in Jordan (JD-HV3); the second round of the Lebanon Vulnerability Assessment of Syrian Refugees (LB-VASyR); and the Lebanon Verification data set (LB-Verif), a recent data set compiled using information collected during the appeal process for the World Food Programme (WFP) food voucher distribution system. The welfare assessments using these three data sets are provided in separate appendixes available online (<https://openknowledge.worldbank.org/bitstream/handle/10986/23228/210770Appendix.pdf>). In what follows, we will refer to these appendixes as A, B, and C, representing, respectively, the analyses conducted on data JD-HV3, LB-VASyR, and LB-Verif.

The purpose of this chapter is to compare results on welfare and poverty across these different countries and data sets. The comparative analysis is carried out in two parallel processes. We first make an effort to compile the four data sets into one harmonized data set. We harmonized the variables that could be harmonized, transformed the welfare aggregates into comparable U.S. dollars at purchasing power parity (PPP), and constructed a single poverty line. This allowed us to compare countries and data sets using comparable indicators to the best of our knowledge. The shortcoming of this exercise is that the harmonization process restricted the number of indicators that could be compared and, even among the indicators that we could compare, we had to address various types of comparability issues. The second exercise is to compare the welfare assessments that focused on the four different data sets (chapter 2 and online appendixes A, B, and C) and try to extract lessons from this raw comparison. The advantage of this exercise is that we can expand the comparisons to a much wider set of variables and avoid

conversions into US\$-PPP values. The disadvantage is that models built on individual data sets are less likely to be adaptable to different country contexts.

Despite the shortcomings described, the chapter finds a set of core variables to be consistent across countries and data sets in their capacity to predict poverty and welfare. This is an important finding, because the four data sets considered are very heterogeneous in terms of samples, questionnaires, data collection methods, and degree of representation of the underlying population of refugees. Such findings provide the UNHCR with a strong case for targeting the refugee population based on a rather restricted number of indicators and irrespective of how the samples, questionnaires, and data sets are constructed.

The chapter is organized as follows. The next section summarizes the data and the third section presents a comparative analysis of the expenditure distributions. The fourth section presents results on inequality, followed by the fifth section on poverty. The sixth section illustrates results on welfare and poverty predictors, and the final section concludes.

Data

Data sets

In this chapter we consider four data sets: The Jordan Home Visits II and III data sets (JD-HV2 and JD-HV3) as well as the Lebanon Vulnerability Assessment of Syrian Refugees (LB-VASyR) and the Lebanon Verification data sets (LB-Verif). These last three data sets are described in detail in online appendixes A, B, and C. The JD-HV2 and JD-HV3 data sets derive from the same Home Visits questionnaire with the only difference that the JD-HV3 questionnaire has been improved and expanded in certain sections.

The LB-VASyR data are a random sample of the refugee population in Lebanon and are expected to be representative of this population, although the sample is small. The LB-Verif data were collected by administering a short version of the same questionnaire used for the first round of the VASyR survey, which means that variables are similar for both data sets. However, the LB-Verif questionnaire was administered to cases that were excluded from the WFP food voucher program based on expenditure proxies. This last sample is large but is expected to include wealthier households than the refugee population in Lebanon as a whole as these cases appealed against exclusion from the food voucher program.

In addition, data sets differed in the period of data collection, the unit of observation, the number of observations, the share of refugees covered, and the average household size. Table 5.1 provides basic information for the four data sets. We can see that the share of individual refugees observed varies from 1 percent with the LB-VASyR data to 30.5 percent with the JD-HV2 data. The two Jordan and the two Lebanon data sets were collected in subsequent periods. The Jordan data sets used cases as the unit of observation while the Lebanon data sets used households, some of which combined different cases, particularly in the LB-Verif data. Also, the overall number of registered refugees was very different

Table 5.1 Basic Information on Data Sets

<i>Information</i>	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
Total registered refugees (June 2014)	605,157	605,157	1,070,802	1,070,802
Unit of observation	Case	Case	Household	Household
Number of observations (cases/households)	46,236	26,289	1,597	28,267
Number of observations (individuals)	184,396	108,660	10,632	119,379
Individual observations as % of refugee population	30.5	18.0	1.0	11.1
Average case/household size	3.7	4.1	6.7	4.2
Data collection period	Nov. 2013–Oct. 2014	July–Dec. 2014	May–June 2014	Oct.–Dec. 2013

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

in the two countries considered. Note that due to treatment of outliers and other changes made for comparability purposes, the number of final observations used in this chapter and corresponding means of all variables are not identical to the appendixes that focused on the individual data sets.

Welfare aggregate

The four data sets have different expenditure questions that were used to construct the expenditure aggregates (see annex 5A). The expenditure aggregate constructed from the JD-HV2 data derives from a combination of two questions on expenditure, one containing 6 items and a second question containing 10 items, while the expenditure aggregate constructed from the JD-HV3 data contains 11 items. For Lebanon, the LB-VASyR aggregate includes 9 items while the LB-Verif data aggregate contains 3 items. Differences in the number of items are small and they are not expected to make a great difference in results. It is known that welfare aggregates tend to be more precise if the number of reported items is higher. This is the case when we consider, say, 10 items against 100 items, but not if the difference relates to a few items as is the case in our sample. If the expenditure data were collected with full expenditure questionnaires or diaries, we would expect expenditure to be higher on average. However, our interest is not so much on absolute levels of poverty, which are not very comparable across countries, but on the relative importance of poverty across different socioeconomic characteristics of the population and on the capacity of different variables to predict welfare and poverty. In this respect, mean values of expenditure are less important while what really matters is the distribution of expenditure. Nevertheless, it is important to provide first an overview of mean expenditure to see the scale of the differences across data sets.

Table 5.2 compares mean expenditures per month per capita of the four data sets. The welfare aggregate was transformed into US\$-PPP. In addition, for comparability purposes with online appendixes A, B, and C, we also report expenditure per capita in the local currency unit (LCU). Once we transform data in US\$-PPP values, mean expenditure per capita varies between US\$136 and US\$183/capita/month, which is not surprising given the differences in data sets. It is also noticeable that in both countries the data collected at later periods of

Table 5.2 Mean Expenditure per Month per Capita

	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
Expenditure per capita (LCU)	47.1	42.7	131,625.5	159,810.9
Expenditure per capita (PPP)	150.3	136.3	151.0	183.4

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: LCU= Local Currency Unit; PPP=Purchasing Power Parity (2011 PPP survey).

time (JD-HV3 in Jordan and LB-VASyR in Lebanon) show lower means as compared with data collected in earlier periods.

Predictors of welfare and poverty

We also made an effort to harmonize key variables that are used as independent variables in the welfare and poverty models. Table 5.3 reports the means for these variables with “pa” indicating variables related to the principal applicant (PA) or household head and “hh” variables related to the case or the household. It is clear that these means are significantly different across data sets. For example, the share of PAs with nine and plus years of education or the share of PAs who are females are very different between the Jordanian and Lebanese data sets and this is partly due to the use of cases (Jordan) as opposed to households (Lebanon) as unit of observations. In general, the differences are due to questionnaire or sample design. Differences in questionnaire design are indicated in the note of table 5.3. Differences in sample design were already outlined. In essence, none of the sample is strictly representative of the underlying populations of refugees and the underlying populations are different in Jordan and Lebanon as could be observed in chapter 1.

Table 5.3 Means Comparisons across Data Sets

<i>Variables</i>	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
pa_age	38.5	40.0	38.7	35.9
pa_education (9 years and plus) (1)	39.1	36.7	13.1	11.2
pa_female (2)	27.3	42.1	17.0	13.8
pa_married (3)	77.6	75.1	84.7	88.5
hh_size (4)	4.0	4.1	6.7	4.2
hh_children (5)	2.1	2.5	3.5	1.7
hh_rent or own	92.4	94.3	81.0	85.2
hh_area per person	15.8	22.9	10.2	17.1
hh_apartment/house made of cement (6)	90.7	96.6	74.6	78.1
hh_piped water (7)	88.9	92.4	36.7	79.2
hh_kitchen (8)	97.4	95.8	66.2	85.7
hh_toilet or latrine (9)	79.7	97.3	98.9	45.8

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

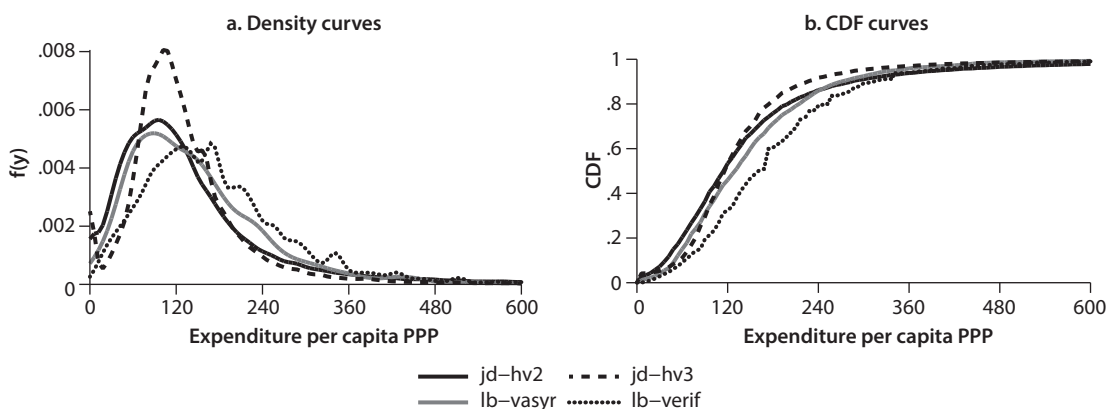
Note: (1) PG data used for Jordan, household survey data used for Lebanon. Secondary and plus education for LB-Verif data; (2) PG data used for Jordan, household survey data used for Lebanon. (3) Not single for LB-Verif data. (4) Cases in Jordan samples and households in Lebanon samples. (5) PG data used for Jordan, household survey data used for Lebanon. (6) Permanent shelter for JD-HV3 data. (7) Have sufficient water for LB-Verif data, have tap water for cooking for at least 2 hrs/day for LB-VASyR data. (8) Kitchen status for JD-HV2, access to kitchen inside household for JD-HV3, have stove for LB-VASyR and LB-Verif. (9) Have functioning latrine in JD-HV2, exclusive use of latrine in JD-HV3, able to use latrine by household (exclusive or shared) in LB-VASyR and have improved latrine or flush toilet in LB-Verif.

We consider the differences observed between data sets as an asset in our study for two important reasons. The first relates to the comparison of absolute levels of mean welfare, poverty, or inequality. These statistics are not strictly comparable because of the differences discussed in terms of questionnaire design, sampling, and welfare aggregates. However, if these statistics tend to converge to similar levels and provide a similar snapshot of welfare, this is rather strong evidence that results cannot be simply explained in terms of data collection methodology or measurement errors. The second reason relates to the comparisons of the predictors of welfare and poverty. If these predictors are consistent across data sets, this would be a rather strong indication that such predictors are robust to different data collection methods and measurement errors. In what follows, we start by comparing absolute values of welfare, poverty, and inequality and we then follow by comparing predictors across data sets.

Welfare Distributions

We can start by comparing the distribution of the expenditure aggregates across the four data sets. For this purpose, we will use data weighted by household size so that we are comparing distributions of individuals rather than distributions of cases. Information about the entire expenditure distribution is provided in figure 5.1, which shows the probability density function curves (panel a) and the cumulative distribution function curves (panel b), respectively. We clearly observe that the distribution of expenditure per capita in Lebanon estimated through the LB-Verif data is shifted to the right in comparison to the other distributions (panel a). This reveals that the proportion of poor individuals is much smaller in the former than in the latter cases. On the contrary, the group of refugees interviewed in JD-HV2 is more compressed around smaller expenditure levels, which is shown by the fact that the distribution is shifted to the left as compared to the others. We should expect, therefore, this last population to be poorer on average.

Figure 5.1 Density and Cumulative Distribution Functions of Expenditure per Capita (US\$ PPP)



Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Figure 5.1 (panel b) also reveals that the expenditure distribution of the LB-Verif data dominates the other distributions according to the criterion of first-order stochastic dominance. This means that the welfare of refugees in this data set is unequivocally higher along all the distribution as compared to the welfare of the other groups of refugees. This is the case because the LB-Verif questionnaire captures refugees who were already excluded from the WFP voucher program because of socioeconomic characteristics associated with welfare and are, therefore, better off. Instead, if we compare the two Jordanian distributions or these two distributions with the LB-VASyR data, we see that the cumulative distribution function (CDF) curves cross at different levels of expenditure. This indicates that the difference in expenditure is not unequivocally higher in one distribution or the other. Rather, certain distributions dominate the others in only parts of the distributions, while they are dominated by other distributions in other parts.

For example, it is possible to see from figure 5.1 (panel b) that the CDF curves for the JD-HV2, JD-HV3, and LB-VASyR data sets cross around values of US\$100-US\$120 PPP values. This indicates that below these values (indicating poorer people), there is one ranking of the three distributions (JD-HV2 is the poorest) while above these values the ranking is reversed (JD-HV3 is the poorest). It is also evident that the CDF curves cross multiple times, making the ranking between distributions change at each crossing point. This also implies that, if we change the poverty line, we may find that the highest poverty rate changes across the four data sets.

Inequality

Having a good sense of the distributions of expenditure, we can now measure and compare inequality. The average level of inequality (Gini coefficient) for all data sets considered is 0.39 (table 5.4) and this is using a top-coded distribution at US\$3,000 PPP. This average level of inequality is high when compared to the Syrian population before the crisis (0.32 in 2007), to hosting countries (Jordan = 0.34 in 2010 and Lebanon = 0.36 in 2005), and to other countries in the region such as the Arab Republic of Egypt (0.32 in 2009). It only compares to one of the highest Gini coefficients in the region, which is the one of Morocco (0.4 in

Table 5.4 Gini Index of Expenditure Concentration

<i>Data set</i>	<i>Full sample top coded at US\$3,000 PPP</i>		<i>No zeroes</i>		<i>No zeroes and capped at US\$1,158 PPP</i>	
	<i>Gini</i>	<i>Std. err.</i>	<i>Gini</i>	<i>Std. err.</i>	<i>Gini</i>	<i>Std. err.</i>
JD-HV2	0.429	0.002	0.416	0.002	0.403	0.001
JD-HV3	0.336	0.002	0.307	0.002	0.301	0.002
LB-VASyR	0.356	0.007	0.351	0.007	0.349	0.007
LB-Verif	0.342	0.003	0.342	0.003	0.325	0.002
Total	0.386	0.001	0.373	0.001	0.361	0.001

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: Std. err. = standard error.

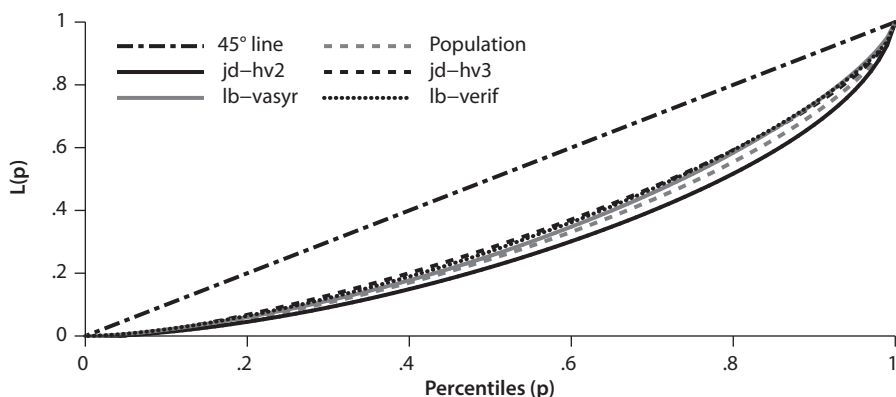
2007). However, the high inequality in Morocco is explained by the urban-rural divide, which the Syrian refugees do not have because the population we consider is almost exclusively hosted in urban areas. Indeed, we would have expected inequality to be low because refugees rely on a reduced set of assets and income opportunities and they tend to be a self-selected group of poorer people as compared to the Syrian pre-crisis population. If we break down results by country and data set, inequality among refugees in Jordan is higher than the inequality measured for the hosting population, whereas in Lebanon inequality levels for refugees are comparable to those of hosting populations. We can also see a remarkable difference in inequality between the two data sets in Jordan.

We have also tested whether these high levels of inequality are driven by the tails of the distributions, particularly by the share of zero values for the bottom of the distribution and by outliers for the top of the distribution. Table 5.4 shows that, by removing the zeroes, inequality is still high for all countries with only the Gini for JD-HV3 declining significantly. If we further remove outliers by capping data to the lowest of the largest values across the four data sets (US\$1,158 PPP), we observe a further reduction in inequality although it is rather small for all data sets. Therefore, inequality is high irrespective of the behavior of the expenditure distributions on the tails.

The levels of inequality are very different across data sets with the highest value found in Jordan (JD-HV2). We can also observe that inequality declined in Jordan and increased in Lebanon (if these samples were comparable). This can be derived from the fact that the JD-HV3 data were collected subsequently to the JD-HV2 data in Jordan (Nov. 2013–Oct. 2014 for JD-HV2 and July–Dec. 2014 for JD-HV3) while the LB-VASyR data were collected subsequently to the LB-Verif data (Oct.–Dec. 2013 for LB-Verif and May 26–June 13, 2014 for LB-VASyR). Therefore, expenditure inequality for Syrian refugees is high but changes significantly across data sets and time.

This is also confirmed by the Lorenz curves plotted in figure 5.2. The Lorenz curve for JD-HV3 is the closest to the 45-degree line of equality, and, consequently,

Figure 5.2 Lorenz Curves of Expenditure per Capita PPP



Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

its Gini index is the smallest. On the contrary, the Jordan-HV2 Lorenz curve is the furthest from the case of equality, and its Gini index takes the highest value. Hence, the most unequal group of refugees is found with JD-HV2 data. However, the difference among the other three data sets is not as obvious. This can be seen in the lower part of the Lorenz curves, which cross for some of the curves, and also from table 5.4, from which we observe that the lower-bound and upper-bound estimates can overlap across data sets. Distinctions between these three data sets are more apparent in upper parts of the distributions but less in lower parts of the distributions. This confirms what we found with the CDF curves and the changes in ranking as we move along different parts of the distributions.

One may wonder what drives such high inequality. We tried to have an insight into this question by decomposing the Gini index of both countries by type of expenditure. In particular, we split expenditure into (i) food expenditure and (ii) expenditure on non-food items, and compute the corresponding inequality. Table 5.5 shows that in Jordan the greater contribution to the overall inequality is due to expenditure on non-food items (more than 80 percent both for JD-HV2 and for JD-HV3), while in Lebanon the inequality in non-food expenditure shows a much lower relative importance (65 percent for LB-VASyR data).

Poverty

Poverty rates

We now turn to the comparative analysis of poverty. The same poverty line is used to compare the welfare aggregates across the four data sets. Table 5.6 reports the values of the poverty line in LCU as well as in U.S. dollars and

Table 5.5 Gini Index Decomposition by Expenditure Sources

<i>Data</i>	<i>Sources</i>	<i>Expenditure share</i>	<i>Gini index</i>	<i>Absolute contribution</i>	<i>Relative contribution</i>
JD-HV2	Food expenditure	0.19 (0.00)	0.47 (0.00)	0.06 (0.00)	0.14 (0.00)
	Non-food expenditure	0.81 (0.00)	0.47 (0.00)	0.37 (0.00)	0.86 (0.00)
	Total expenditure	1.00 (0.00)	n.a. n.a.	0.43 (0.00)	1.00 (0.00)
JD-HV3	Food expenditure	0.20 (0.00)	0.43 (0.00)	0.06 (0.00)	0.18 (0.00)
	Non-food expenditure	0.80 (0.00)	0.36 (0.00)	0.28 (0.00)	0.82 (0.00)
	Total expenditure	1.00 (0.00)	n.a. n.a.	0.34 (0.00)	1.00 (0.00)
LB-VASyR	Food expenditure	0.42 (0.00)	0.35 (0.01)	0.12 (0.00)	0.35 (0.01)
	Non-food expenditure	0.58 (0.00)	0.43 (0.01)	0.23 (0.01)	0.65 (0.01)
	Total expenditure	1.00 (0.00)	n.a. n.a.	0.36 (0.01)	1.00 (0.00)

Source: Estimations based on JD-HV2, JD-HV3, and LB-VASyR data. The decomposition could not be carried out on the LB-Verif data.

Note: Numbers in parentheses indicate standard errors. n.a. = Not applicable.

Table 5.6 Poverty Lines in Jordan and Lebanon

<i>Poverty line</i>	<i>Per capita per month</i>		<i>Per capita per day</i>	
	<i>Jordan</i>	<i>Lebanon</i>	<i>Jordan</i>	<i>Lebanon</i>
UNHCR poverty line (LCU)	50.0	171,000.0	1.6	5,621.9
UNHCR poverty line (US\$)	70.8	114.9	2.3	3.8
UNHCR poverty Line (US\$ PPP)	159.6	196.2	5.2	6.5
Equalized poverty line for report (LCU)	50.0	139,053.8	1.6	4,571.6
Equalized poverty line for report (US\$ PPP) ^a	159.6	159.6	5.2	5.2
National poverty line (LCU)	78.3	271,763.0	2.6	8,934.7

Source: Estimations based on official 2011 PPP conversion factors.

a. This is the equivalent of JD 50 per month per person in US\$ PPP values.

US\$-PPP values. As a reference poverty line for the report we use US\$159.7 PPP/capita/month (US\$5.25 PPP/capita/day), which is the equivalent of JD 50/capita/month (the cutoff point the UNHCR uses for targeting the cash assistance program in Jordan). This line is lower than the national poverty line used in Jordan (JD 78.3) and it is also lower than the equivalent line used in Lebanon (LBP 271,763).¹ However, this line is substantially higher than the international poverty line per capita per day of US\$1.25 PPP values.

Table 5.7 compares the poverty rates (headcount, poverty gap, and severity of poverty) across the four data sets. According to the analyzed data, we observe that refugees in Jordan appear to be poorer than in Lebanon based on a JD 50 poverty line and that the JD-HV3 data show the highest poverty rate overall (73.2 percent). Recall that the JD-HV2 had a distribution that was shifted to the left compared to other distributions and that we expected poverty to be higher for this data set. However, we also found that the CDFs crossed and that the worse-off distribution was JD-HV3 if we considered the upper part of the distribution. This is what we see here. The poverty line considered here is high, which implies that we consider most of the expenditure distribution, resulting in upper

Table 5.7 Poverty Rates across Different Data Sets

<i>Poverty</i>	<i>Data set</i>	<i>Estimate</i>	<i>Std. err.</i>
<i>Poverty rate (P0)</i>	JD-HV2	0.692	0.002
	JD-HV3	0.732	0.003
	LB-VASyR	0.640	0.013
	LB-Verif	0.500	0.003
<i>Poverty gap (P1)</i>	JD-HV2	0.324	0.002
	JD-HV3	0.297	0.002
	LB-VASyR	0.272	0.009
	LB-Verif	0.191	0.002
<i>Severity of poverty (P2)</i>	JD-HV2	0.197	0.001
	JD-HV3	0.162	0.002
	LB-VASyR	0.155	0.007
	LB-Verif	0.102	0.002

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: Std. err. = standard error.

parts of the distributions playing a role in determining poverty. If we had used a lower poverty line, JD-HV2 would have appeared as the poorest distribution. This is an important result which confirms the results of chapter 2 of this study, that poverty rates for refugees are very sensitive to the choice of poverty line.

The poverty rates registered in Jordan, both in JD-HV2 and in JD-HV3, are higher than the ones estimated for Lebanon. The poverty gaps are also higher in Jordan as compared to Lebanon but this time the poverty gap for JD-HV2 is higher than for JD-HV3. The same is true for the severity of poverty. This indicates that, overall, poverty increased between the two rounds of the Jordan HV data but it declined among the poorest individuals. Looking at Lebanon, we observe that the poverty rates for the LB-VASyR data are always significantly higher than the poverty rates for the LB-Verif data. This is due to the different samples considered between the two surveys. The LB-Verif includes those refugees who appealed as they were excluded from the WFP food vouchers, and who are therefore expected to be better off on average.

Poverty Profile

Harmonized data

We first create a profile of the poor based on the variables that we were able to harmonize across data sets, keeping in mind the differences reported in the note to table 5.3. Splitting the population of refugees in groups according to different characteristics of the case/household² and of the PA/household head allows us to better understand similarities and differences in the poverty profiles of Syrian refugees across the different sources of data considered.

We replicate the comparison distinguishing between individual poverty rates (table 5.8) and case/household poverty rates (table 5.9). Both tables clearly show that individual and case poverty rates increase as the case or household size (depending on the data set) increases and as the number of children increases, both in Jordan and in Lebanon. Focusing on some relevant housing features, we notice that poverty rates are much lower for individuals and cases that rent or own their house and also for those living in bigger houses; this phenomenon is analogous in Jordan and in Lebanon. Moreover, the cases living in a proper apartment or house are less poor than the ones living in makeshift homes or tents; this finding is similar in the two countries of destination.

Other important housing characteristics, which can be considered useful for detecting the poorest cases or individuals, are constituted by the “access to a kitchen” and “having a functioning latrine.” Accessibility to these facilities strongly reduces poverty both in Jordan and in Lebanon. Having access to piped water, instead, represents an important signal for identifying the worst-off cases only in Jordan and not in Lebanon; in the latter country, the proportion of poor is similar between the group of cases having piped water and those that do not have piped water.

The second panels of tables 5.8 and table 5.9 analyze the effect of some characteristics of the PA (or household head for the Lebanon data) on poverty rates.

Table 5.8 Individual Poverty Rates by Characteristics of the Case and PA (Harmonized Data)

<i>Characteristics</i>	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
Case/household size				
1	0.13	0.26	0.11	0.08
2	0.22	0.43	0.23	0.15
3	0.39	0.41	0.20	0.29
4	0.56	0.54	0.32	0.41
5+	0.86	0.86	0.70	0.66
Number of children				
0	0.24	0.33	0.22	0.31
1	0.40	0.38	0.30	0.38
2	0.57	0.51	0.34	0.47
3	0.74	0.69	0.54	0.58
4	0.86	0.83	0.65	0.72
5+	0.94	0.95	0.83	0.89
Housing: rent/owned				
No	0.91	0.95	0.79	0.75
Yes	0.67	0.72	0.61	0.45
Housing area (sq. m per person)				
1 tertile	0.80	0.85	0.73	0.67
2 tertile	0.70	0.66	0.66	0.45
3 tertile	0.50	0.46	0.47	0.26
Housing: apartment or house				
No	0.89	0.95	0.77	0.71
Yes	0.67	0.72	0.60	0.43
Piped water				
No	0.83	0.85	0.64	0.47
Yes	0.67	0.72	0.65	0.50
Having a kitchen				
No	0.74	0.88	0.62	0.55
Yes	0.69	0.73	0.65	0.49
Having a latrine				
No	0.83	0.96	0.69	0.59
Yes	0.65	0.72	0.64	0.38
Female PA				
No	0.70	0.73	0.63	0.49
Yes	0.67	0.73	0.71	0.51
Married PA				
No	0.52	0.57	0.63	0.38
Yes	0.72	0.76	0.64	0.50
PA age				
0–18	0.59	0.71	0.79	0.49
19–34	0.61	0.67	0.57	0.42
35–49	0.79	0.82	0.70	0.55
50+	0.59	0.59	0.63	0.56
PA highest education				
0–9 years	0.73	0.74	0.65	0.51
10+ years	0.65	0.71	0.57	0.40

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Table 5.9 Case Poverty Rates by Characteristics of the Case and PA (Harmonized Data)

<i>Characteristics</i>	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
Case/household size				
1	0.13	0.26	0.11	0.08
2	0.22	0.43	0.23	0.15
3	0.39	0.41	0.20	0.29
4	0.56	0.54	0.32	0.41
5+	0.84	0.84	0.63	0.61
Number of children				
0	0.18	0.30	0.19	0.22
1	0.35	0.38	0.26	0.34
2	0.55	0.51	0.32	0.44
3	0.73	0.69	0.53	0.56
4	0.85	0.83	0.65	0.70
5+	0.93	0.94	0.80	0.84
Housing: rent/owned				
No	0.79	0.85	0.70	0.65
Yes	0.50	0.57	0.48	0.36
Housing area (sq. m per person)				
1 tertile	0.66	0.79	0.63	0.59
2 tertile	0.55	0.56	0.55	0.39
3 tertile	0.34	0.38	0.37	0.21
Housing: apartment or house				
No	0.73	0.84	0.67	0.61
Yes	0.50	0.58	0.47	0.34
Piped water				
No	0.70	0.73	0.52	0.38
Yes	0.50	0.58	0.53	0.41
Having a kitchen				
No	0.57	0.71	0.51	0.43
Yes	0.52	0.58	0.53	0.40
Having a latrine				
No	0.68	0.86	0.61	0.49
Yes	0.48	0.58	0.52	0.29
Female PA				
No	0.52	0.58	0.50	0.40
Yes	0.53	0.60	0.60	0.42
Married PA				
No	0.32	0.41	0.45	0.20
Yes	0.58	0.65	0.54	0.43
PA age				
0–18	0.39	0.57	0.63	0.32
19–34	0.44	0.54	0.45	0.35
35–49	0.68	0.72	0.60	0.47
50+	0.45	0.46	0.51	0.48
PA highest education				
0–9 years	0.56	0.60	0.54	0.41
10+ years	0.47	0.58	0.40	0.31

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

In both countries the poverty rate is higher for cases with a female PA. Cases whose PA is married are poorer than cases with a single PA; this holds true for Jordan and Lebanon. Looking at the age of the PA, we note that there are slight differences across the data sets. The poorest age group is the one whose PA is between 35 and 49 years, according to all data sets except LB-VASyR. The Jordan data sets are concordant in affirming that the poorest age group is 35–49 years old, followed by the youngest (0–18 and 19–34 years old), while the least poor is the group of cases whose PA is older (50 years and older). Differently, in Lebanon the second poorest group is the one with the older PA (50 years and older), while the least poor are the cases with a young PA (19–34 years old). Moreover, the LB-VASyR data show that the youngest PAs (0–18 years old) are the poorest of the data set.³ Finally, if the PA has studied longer and hence is more educated, the poverty rate is lower, which is consistent in the two countries.

Summing up, the poverty patterns are very similar across the four data sets considered and, hence, between Jordan and Lebanon. Also, the findings described are consistent between individual and case poverty rates.

Nonharmonized data

Next, we replicate the poverty comparative analysis using results from chapter 2 and the online appendixes A, B, and C. These results are evidently less comparable but provide more information in terms of the range of variables that may be considered useful for poverty and welfare analyses. We provide a comparative poverty profile according to the characteristics of the case (table 5.10) and of the PA (table 5.11). Note that reported statistics refer to individuals for the data sets JD-HV2 and LB-VASyR and to cases for the data sets JD-HV3 and LB-Verif.

Table 5.10 compares the effect of some characteristics of the PA on poverty rates across the different data sets. In all groups of refugees (except JD-HV2) the poverty rate is higher for cases whose PA is female; moreover, uniformly across the data sets, poverty incidence is higher for the group of Muslim and for the group of Arab refugees. Also, single PAs are less poor than married, divorced, or widowed PAs, both in Jordan and in Lebanon. The poverty incidence decreases with the age of the PA, with the education attained by the PA, and also with high-skilled occupations of the PA consistently in the two countries and four data sets. In conclusion, the poverty patterns are very similar across data sets and, hence, within Jordan and Lebanon.

According to the characteristics of the case (table 5.11) and looking at the migration patterns, the different data sets show that the poorest refugees tend to come from the governorates of Hama and Quneitra. In Jordan, the governorates of Ajloun and Tafilah host the poorest refugees. In Lebanon, the governorates of Bekaa and North Lebanon are those hosting the poorest refugees. There is full consistency among the data sets also about the following findings: (i) refugees entering informally are poorer than those crossing the border formally; (ii) poverty rates increase as the case/household size increases and as the number of

Table 5.10 Poverty Rate by Characteristics of the Principal Applicant (Nonharmonized Data)

<i>Characteristics</i>	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i> Individual (weighted)	<i>JD-HV3</i> Case (unweighted)	<i>LB-VASyR</i> Individual (weighted)	<i>LB-Verif</i> Case (unweighted)
Male	0.70	0.58	0.62	0.40
Female	0.67	0.60	0.71	0.42
Non-Muslim	0.23	0.33	n.a.	n.a.
Muslim	0.69	0.59	n.a.	n.a.
Non-Arab	0.51	0.47	0.45	n.a.
Arab	0.69	0.59	0.64	n.a.
Married or engaged	0.72	0.65	0.63	0.42
Divorced or separated	0.53	0.43	0.58	n.a.
Single	0.46	0.32	0.54	0.20
Widowed	0.60	0.50	0.73	n.a.
Age 0–18	0.59	0.57	0.82	0.32
Age 19–34	0.61	0.54	0.58	0.34
Age 35–49	0.79	0.72	0.69	0.47
Age 50+	0.59	0.46	0.62	0.47
Education < 6 years	0.73	0.56	0.66	0.49
Education 6–8 years	0.73	0.62	0.61	0.38
Education 9–11 years	0.69	0.62	0.64	0.30
Education 12+	0.63	0.53	0.46	0.30
Education 8 years or less	0.73	0.60	0.64	0.42
Education more than 8 years	0.65	0.58	0.57	0.30
Managers	0.65	0.62	0.59	n.a.
Professionals	0.59	0.48	0.25	n.a.
Technicians, associate professionals, and army	0.61	0.54	0.57	n.a.
Clerical, service and sales workers	0.68	0.61	0.65	n.a.
Skilled agricultural, forestry, and fish	0.79	0.67	0.75	n.a.
Craft and related trades workers	0.71	0.56	0.54	n.a.
Plant and machine operators	0.77	0.69	0.61	n.a.
Elementary occupations	0.77	0.65	0.63	n.a.
Blue-collar profession	0.74	n.a.	0.63	0.44
White-collar profession	0.66	n.a.	0.63	0.41
Low skills	0.69	n.a.	0.64	0.44
High skills	0.62	n.a.	0.62	0.42

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: n.a. = Not applicable. For JD-HV3, the categories Muslim and non-Muslim refer to Sunni and non-Sunni.

children or dependents increases; and (iii) the cases/households living in an apartment or house are less poor than the ones living in makeshift homes.

Predictors of Welfare and Poverty

We now replicate the welfare and the poverty models discussed in chapter 2 of this report, with the aim of detecting the covariates that show similar effects on welfare and poverty both in Jordan and in Lebanon. In order to compare the four data sets we first run the models using only the covariates that were harmonized for this comparative chapter. Therefore, the models explained here do not

Table 5.11 Poverty Rate by Characteristics of the Case (Nonharmonized Data)

	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i> Individual (weighted)	<i>JD-HV3</i> Case (unweighted)	<i>LB-VASyR</i> Individual (weighted)	<i>LB-Verif</i> Case (unweighted)
Poorest governorate of origin	Al-Hasakeh; Quneitra; Hama	Dar'a; Hama; Idleb	Quneitra; Ar-raqqa; Dar'a	
Poorest governorate of destination	Tafilah; Mafraq; Ajloun	Jarash; Ajloun; Tafilah	Bekaa; North Lebanon	Bekaa; North Lebanon
Formal entry/border crossing	0.59	0.47	0.62	0.39
Informal entry/border crossing	0.77	0.68	0.72	0.56
Case/household size				
1	0.12	0.26	0.11	0.80
2	0.22	0.43	0.23	0.15
3	0.39	0.41	0.20	0.29
4	0.55	0.53	0.32	0.41
5+	0.86	0.72	0.69	0.60
Number of children				
0	0.24	0.31	0.22	0.22
1	0.40	0.44	0.30	0.33
2	0.57	0.58	0.34	0.44
3	0.74	0.76	0.53	0.56
4	0.86	0.86	0.63	0.70
5+	0.94	0.94	0.83	0.84
Housing				
Makeshift	0.77	n.a.	0.77	0.61
Apartment	0.66	n.a.	0.59	0.42
House	0.73	n.a.	0.59	0.30

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: n.a. = Not applicable.

perfectly coincide with the ones described in the specific analysis of each of the four data sets (chapter 2 and online appendixes A, B, and C). In a following step, we compare the nonharmonized data using the information reported in each of the online appendixes that focused on the individual data sets.

Harmonized data

Welfare predictors. We first focus on the welfare model. Table 5.12 and table 5.13 present the estimates for the individual welfare and the case welfare (that is, with and without weights represented by the case size), respectively. Individual welfare increases with the age of the PA, according to all data sets. A similar finding is registered for the welfare of the case, with the only exception being the refugees interviewed in JD-HV3, whose welfare is lower for the oldest PA (50 years or older) than for the younger PA. Analogously across the countries, welfare is higher if the PA is more educated and if the PA is male. Looking at the marital status, only in Jordan there is a significant difference in welfare between married and single PA. In Lebanon such difference is statistically not significant. As easily

Table 5.12 Individual Welfare Model (Harmonized Data)

	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
PA age (Ref. 0–18 years)				
19–34	0.24 (12.21)**	0.05 (2.52)*	0.14 (2.55)*	0.08 (4.27)**
35–49	0.26 (13.25)**	0.07 (3.42)**	0.13 (2.51)*	0.11 (5.86)**
50+	0.24 (11.98)**	0.00 –0.17	0.06 –1.11	0.08 (4.55)**
PA education: 9+ years	0.08 (25.28)**	0.03 (11.41)**	0.05 (2.88)**	0.04 (8.14)**
Female PA	–0.01 –1.64	–0.10 (31.81)**	–0.22 (12.70)**	–0.02 (5.11)**
Married PA	0.06 (11.53)**	0.03 (6.67)**	0.01 –0.59	–0.01 –1.45
Case size (Ref. =1)				
2	–0.51 (48.51)**	–0.34 (35.12)**	–0.40 (3.92)**	–0.33 (19.80)**
3	–0.86 (74.76)**	–0.39 (34.98)**	–0.52 (5.38)**	–0.59 (33.55)**
4	–1.06 (87.75)**	–0.51 (41.52)**	–0.71 (7.41)**	–0.78 (42.99)**
5+	–1.31 (102.27)**	–0.60 (44.56)**	–0.83 (8.68)**	–0.97 (52.47)**
Number of children (Ref.=0)				
1	–0.04 (4.05)**	–0.05 (6.30)**	–0.10 (2.56)*	0.00 –0.40
2	–0.09 (9.37)**	–0.17 (17.74)**	–0.13 (3.45)**	–0.01 –1.14
3	–0.12 (11.24)**	–0.25 (23.63)**	–0.30 (7.48)**	–0.02 (2.60)**
4	–0.25 (22.46)**	–0.36 (31.90)**	–0.45 (11.02)**	–0.12 (13.23)**
5+	–0.38 (33.64)**	–0.56 (50.18)**	–0.73 (18.60)**	–0.41 (44.31)**
House: rent or owned	0.48 (59.18)**	0.71 (97.65)**	0.40 (24.57)**	0.38 (79.43)**
Housing area (Ref.= 1 tertile)				
2 tertile	0.04 (9.94)**	0.04 (11.76)**	0.09 (6.81)**	0.11 (28.72)**
3 tertile	0.15 (34.17)**	–0.01 (2.12)*	0.20 (12.25)**	0.21 (45.32)**
House: apartment or house	0.18 (23.05)**	0.07 (5.39)**	0.24 (16.36)**	0.21 (47.75)**
Piped water	–0.03 (5.36)**	0.01 (1.80)+	–0.03 (2.81)**	–0.11 (27.93)**
Having a kitchen	0.00 –0.02	0.09 (8.94)**	–0.05 (3.60)**	0.02 (4.52)**
Having a latrine	0.08 (18.06)**	–0.04 (2.80)**	0.00 –0.03	0.15 (43.19)**
Constant	5.00 (175.55)**	4.82 (223.53)**	5.41 (45.15)**	5.23 (231.76)**
Adjusted R-squared	0.35	0.42	0.32	0.33
N	167,193	104,168	10,461	105,334

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: Numbers in parentheses indicate standard errors. Significance levels are as follows: + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$.

Table 5.13 Case Welfare Model (Harmonized Data)

	Jordan		Lebanon	
	JD-HV2	JD-HV3	LB-VASyR	LB-Verif
PA age (Ref. 0–18 years)				
19–34	0.18 (6.13)**	–0.01 –0.24	0.16 –1.23	0.09 (3.05)**
35–49	0.20 (6.76)**	0.02 –0.74	0.17 –1.34	0.11 (3.45)**
50+	0.18 (6.00)**	–0.07 (2.13)*	0.09 –0.67	0.10 (3.11)**
PA education: 9+ years	0.10 (14.36)**	0.03 (5.11)**	0.07 –1.61	0.04 (3.60)**
Female PA	–0.03 (4.13)**	–0.19 (25.86)**	–0.28 (6.36)**	–0.02 (1.88)+
Married PA	0.10 (10.69)**	0.06 (5.66)**	–0.01 –0.22	–0.02 –1.50
Case size (Ref. =1)				
2	–0.51 (38.02)**	–0.36 (24.33)**	–0.39 (3.31)**	–0.33 (15.40)**
3	–0.86 (49.62)**	–0.42 (21.34)**	–0.51 (4.37)**	–0.59 (22.99)**
4	–1.06 (53.31)**	–0.56 (23.83)**	–0.71 (5.96)**	–0.77 (28.14)**
5+	–1.26 (55.59)**	–0.68 (24.79)**	–0.83 (6.74)**	–0.94 (32.23)**
Number of children (Ref.=0)				
1	–0.06 (3.81)**	–0.06 (3.74)**	–0.12 –1.57	0.00 –0.19
2	–0.11 (6.21)**	–0.18 (9.03)**	–0.16 (1.99)*	–0.01 –0.66
3	–0.17 (7.70)**	–0.24 (10.12)**	–0.32 (3.63)**	–0.03 (1.66)+
4	–0.30 (12.94)**	–0.34 (12.79)**	–0.48 (5.19)**	–0.13 (5.91)**
5+	–0.42 (18.06)**	–0.54 (20.66)**	–0.73 (8.21)**	–0.38 (15.30)**
House: rent or owned	0.56 (35.89)**	0.67 (38.50)**	0.47 (11.69)**	0.41 (42.93)**
Housing area (Ref.= 1 tertile)				
2 tertile	0.02 (2.11)*	0.04 (4.64)**	0.05 –1.30	0.09 (11.39)**
3 tertile	0.14 (15.74)**	–0.05 (4.39)**	0.12 (3.04)**	0.20 (21.08)**
House: apartment or house	0.16 (10.34)**	0.06 (2.02)*	0.24 (6.54)**	0.21 (24.46)**
Piped water	–0.02 (1.66)+	0.01 –1.01	–0.04 –1.18	–0.12 (14.49)**
Having a kitchen	0.03 –0.85	0.06 (2.78)**	–0.04 –1.15	0.00 –0.49
Having a latrine	0.09 (10.36)**	–0.02 –0.63	0.07 –0.47	0.16 (22.50)**
Constant	4.95 (100.28)**	5.00 (132.29)**	5.35 (24.93)**	5.22 (154.03)**
Adjusted R-squared	0.47	0.43	0.37	0.36
N	41,518	24,237	1,570	25,586

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: Numbers in parentheses indicate standard errors. Significance levels are as follows: + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$.

predicted, welfare decreases as the case size increases and as the number of children increases. This finding is consistent across the data sets.

Moving to the housing characteristics, all the data sets are concordant in affirming that cases renting or owning their house are better off than cases not paying for accommodation, and that cases living in apartments or proper houses show higher welfare than those living in tents or makeshift homes. Also, welfare increases as the area of the house (square meters per person) increases, according to all data sets except for the JD-HV3 data.

Less consistent are the effects of other housing characteristics considered: in Jordan having a kitchen increases welfare only for refugees interviewed by JD-HV3, while no significant difference is registered in JD-HV2. An ambiguous effect emerges in Lebanon. Conflicts appear also for latrine and piped water: having a latrine improves welfare in JD-HV2 and in LB-Verif, while it reduces welfare in JD-HV3. Finally, using piped water reduces welfare where this variable is significant. This is a counterintuitive result perhaps explained by the collinearity of this variable with others, such as having a kitchen.

Poverty predictors. Table 5.14 and table 5.15 summarize the estimates of the poverty model for individuals and for cases, respectively. The findings emerging from these tables are in line with the welfare models results discussed above. In table 5.14, the individuals' probability of being poor decreases with the age of the PA in all data sets. The probability of being poor is also lower if the PA is more educated and if the PA is male. Being married decreases the probability of poverty in all data sets when looking at the population probability; for cases, the probability remains significant only for the JD-HV2.

Not surprisingly, the probability of being poor sharply increases both with the case size and with the number of children. This finding is consistent according to all data sets. Furthermore, all data sets are consistent in showing that cases renting or owning their house and cases living in apartments or proper houses are less likely to fall into poverty. Also, the probability of poverty decreases as the area of the house increases. Finally, having a latrine reduces the probability of being poor in almost all data sets, while it reduces welfare in the JD-HV3. Conflicting results emerge for having a kitchen: in Jordan having a kitchen decreases the individual probability of being poor only for refugees interviewed by JD-HV3 data, while it increases the probability in JD-HV2 and in LB-VASyR.

Nonharmonized data

In this last section, we compare the results of the welfare and poverty models presented in chapter 2 and in online appendixes A, B, and C.

Jordan: JD-HV2 versus JD-HV3 data

Welfare predictors. The JD-HV2 data are able to explain between 48 and 53 percent of expenditure per capita and this compares to values between 42 and 56 percent for the JD-HV3 data. Hence, on average, these models have a good fit and are able to explain approximately half of the variance in expenditure per capita.

Table 5.14 Individual Poverty Model (Harmonized Data)

	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
PA age (Ref. 0–18 years)				
19–34	–0.36 (8.93)**	–0.48 (9.02)**	–0.70 (4.59)**	–0.13 (2.64)**
35–49	–0.35 (8.60)**	–0.54 (10.09)**	–0.66 (4.33)**	–0.16 (3.09)**
50+	–0.31 (7.28)**	–0.41 (7.43)**	–0.66 (4.30)**	–0.09 (1.77)+
PA education: 9+ years	–0.19 (25.40)**	–0.08 (8.44)**	–0.09 (2.13)*	–0.13 (9.03)**
Female PA	0.00 –0.44	0.19 (17.21)**	0.20 (4.72)**	0.05 (4.16)**
Married PA	–0.13 (10.12)**	–0.04 (2.20)*	–0.24 (4.92)**	0.09 (3.68)**
Case size (Ref. =1)				
2	0.43 (17.00)**	0.54 (19.00)**	0.56 (1.89)+	0.31 (5.16)**
3	0.93 (35.17)**	0.40 (12.06)**	0.47 (1.66)+	0.78 (12.94)**
4	1.25 (45.81)**	0.55 (14.84)**	0.86 (3.05)**	1.14 (18.64)**
5+	1.76 (60.42)**	0.91 (21.99)**	1.28 (4.53)**	1.61 (25.82)**
Number of children (Ref.=0)				
1	0.06 (3.02)**	0.02 –0.64	0.20 (2.09)*	0.04 (2.10)*
2	0.25 (12.55)**	0.39 (13.28)**	0.19 (2.07)*	0.08 (4.43)**
3	0.35 (15.73)**	0.62 (18.52)**	0.51 (5.46)**	0.09 (4.57)**
4	0.67 (27.89)**	0.97 (27.05)**	0.77 (8.06)**	0.44 (17.25)**
5+	1.07 (43.24)**	1.61 (44.85)**	1.38 (14.81)**	1.02 (36.71)**
House: rent or owned	–0.89 (38.83)**	–1.16 (30.42)**	–0.74 (17.13)**	–0.81 (58.47)**
Housing area (Ref.= 1 tertile)				
2 tertile	–0.07 (8.00)**	–0.19 (17.62)**	–0.05 –1.50	–0.30 (30.30)**
3 tertile	–0.33 (33.22)**	0.05 (2.74)**	–0.21 (5.47)**	–0.46 (37.56)**
House: apartment or house	–0.42 (20.28)**	–0.21 (3.43)**	–0.47 (12.81)**	–0.52 (43.03)**
Piped water	0.05 (3.04)**	–0.01 –0.31	0.12 (4.27)**	0.26 (23.36)**
Having a kitchen	0.14 (2.97)**	–0.16 (3.91)**	0.17 (5.72)**	0.02 –1.49
Having a latrine	–0.24 (22.86)**	–0.04 –0.49	–0.33 (2.28)*	–0.39 (41.34)**
Constant	0.59 (8.93)**	1.18 (15.85)**	0.42 –1.25	–0.08 –1.10
Pseudo R-squared	0.28	0.25	0.21	0.21
N	171,030	108,637	10,553	105,334

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: Numbers in parentheses indicate standard errors. Significance levels are as follows: + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$.

Table 5.15 Case Poverty Model (Harmonized Data)

	<i>Jordan</i>		<i>Lebanon</i>	
	<i>JD-HV2</i>	<i>JD-HV3</i>	<i>LB-VASyR</i>	<i>LB-Verif</i>
PA age (Ref. 0–18 years)				
19–34	–0.32 (5.41)**	–0.46 (6.17)**	–0.45 –1.40	–0.16 (1.81)+
35–49	–0.31 (5.13)**	–0.58 (7.61)**	–0.46 –1.43	–0.17 (1.90)+
50+	–0.18 (2.85)**	–0.39 (4.92)**	–0.35 –1.07	–0.13 –1.41
PA education: 9+ years	–0.19 (12.51)**	–0.05 (2.90)**	–0.17 –1.59	–0.10 (3.29)**
Female PA	0.14 (8.14)**	0.34 (16.13)**	0.29 (2.70)**	0.04 –1.47
Married PA	–0.16 (7.12)**	0.01 –0.26	–0.16 –1.38	0.05 –1.14
Case size (Ref. =1)				
2	0.41 (12.98)**	0.56 (14.99)**	0.56 (1.67)+	0.35 (4.96)**
3	0.90 (23.78)**	0.44 (8.57)**	0.51 –1.51	0.84 (10.65)**
4	1.23 (29.00)**	0.64 (10.26)**	0.89 (2.65)**	1.22 (14.54)**
5+	1.69 (34.79)**	1.05 (14.21)**	1.26 (3.67)**	1.64 (18.70)**
Number of children (Ref.=0)				
1	0.10 (3.23)**	0.02 –0.53	0.14 –0.76	0.03 –1.00
2	0.31 (8.36)**	0.40 (7.62)**	0.23 –1.19	0.07 (1.73)+
3	0.43 (9.64)**	0.60 (9.42)**	0.56 (2.72)**	0.08 (1.65)+
4	0.74 (14.93)**	0.93 (13.07)**	0.85 (4.00)**	0.43 (7.00)**
5+	1.12 (21.43)**	1.57 (21.74)**	1.35 (6.51)**	0.95 (12.80)**
House: rent or owned	–0.96 (25.82)**	–1.02 (17.72)**	–0.88 (8.78)**	–0.82 (30.90)**
Housing area (Ref.= 1 tertile)				
2 tertile	–0.05 (2.99)**	–0.17 (7.07)**	0.02 –0.28	–0.27 (12.87)**
3 tertile	–0.34 (17.41)**	0.17 (5.34)**	–0.11 –1.17	–0.42 (16.99)**
House: apartment or house	–0.28 (7.67)**	–0.17 –1.60	–0.49 (5.58)**	–0.52 (22.37)**
Piped water	0.01 –0.20	0.02 –0.58	0.12 –1.63	0.26 (11.39)**
Having a kitchen	0.10 –1.12	–0.08 –1.13	0.11 –1.38	0.04 –1.55
Having a latrine	–0.24 (11.57)**	–0.06 –0.46	–0.40 –1.22	–0.39 (20.09)**
Constant	0.48 (4.37)**	0.69 (6.61)**	0.25 –0.47	–0.11 –1.07
Pseudo R-squared	0.33	0.25	0.24	0.22
<i>N</i>	42,598	26,283	1,582	25,586

Source: Estimations based on JD-HV2, JD-HV3, LB-VASyR, and LB-Verif data.

Note: Numbers in parentheses indicate standard errors. Significance levels are as follows: + $p < 0.1$; * $p < 0.05$; ** $p < 0.01$.

The set of predictors is not identical but there are a number of factors that perform similarly with the two data sets (we focus here on the full models with PG and HV variables combined). In terms of the characteristics of the PA, results are almost identical. A case with a married, highly educated, and older PA has higher welfare on average according to both data sets.

In terms of characteristics of the case, results are also very similar. Case size is the most important predictor and the coefficients on this variable increase monotonically and with a negative sign across the number of persons for both data sets with no exceptions. The same can be said for the proportion of children. Cases who entered the country formally predict higher welfare, while cases that entered the country via the Tal Shibab border are those with the lowest predicted welfare. Having a kitchen or stove increases welfare, while crowding reduces it in both data sets. Other variables such as paying rent and coping mechanism and having ventilation were important in JD-HV2 data but not in JD-HV3 data. Vice versa, other variables such as food consumption and children's education were important in the JD-HV3 data but not in JD-HV2.

Poverty predictors. In terms of the characteristics of the PA, the poverty predictors largely mimic the welfare predictors but not for all variables. For example, a married and highly educated PA predicts lower poverty according to both data sets but older age predicts higher poverty, while in the welfare models it predicted higher welfare. In terms of characteristics of the case, variables that produce consistent results across the two Jordan data sets and across the welfare and poverty models are case size, proportion of children, the Tal Shibab point of entry, crowding (higher poverty), formal arrival, and paying rent (lower poverty). The variables that are not common to both data sets are similar to those of the welfare model.

Lebanon: LB-VASyR versus LB-Verif data

Welfare predictors. The welfare models utilizing the LB-VASyR and the LB-Verif data are able to reliably explain between a third and half of the variance of per capita expenditure, respectively. The LB-VASyR data would seem a better sample for the welfare estimations as compared to the LB-Verif sample, despite the fact that the latter sample is much larger and relies on a similar questionnaire. Evidently, the fact that the LB-VASyR is a random sample of refugees as opposed to the LB-Verif data set, which is a self-selected sample, plays a role in improving the explanatory capacity of the model.

The percentage of dependents or percentage of children in a household has a negative effect on per capita expenditure for Syrian refugees in Lebanon. The destination of refugees is a significant predictor for Syrian refugees in Lebanon using both data sets. Higher levels of education (above secondary) enter significantly into the model for both data sets and have a positive effect on welfare. Household size, which shows a negative effect on welfare in both instances, is the largest contributor to the explanatory power of the model for both data sets—over 14 percent for LB-Verif data and 10 percent for LB-VASyR. The second largest contribution to welfare of Syrian refugees in Lebanon is variables related

to housing conditions such as crowding or paying rent. Housing variables that can be used to predict welfare of refugees in Lebanon regardless of data source include variables on crowding and type of latrine, both of which have a negative effect on the welfare of refugees. In addition, luxury assets (such as a fridge and water heater) are predictors of increased wealth of refugees in Lebanon but have a different importance depending on the data source used.

In addition to the common variables described above, certain variables predict the welfare of refugees in Lebanon in only one or the other data source. According to the LB-VASyR data, the following variables help predict welfare of refugees in Lebanon: (i) first arrival of refugee household in Lebanon; (ii) number of children not attending school; (iii) limiting the portion size of meals as a coping strategy; (iv) cooking fuel available; and (v) household rents. On the other hand, some variables predict the welfare of refugees in Lebanon using LB-Verif but not LB-VASyR data, including: (i) single-headed households; (ii) type of occupancy (owned/furnished rental, unfurnished rental, assisted, squatting); (iii) number of household members working; (iv) amount of debt; and (v) food consumption.

Poverty predictors. The poverty models using the LB-VASyR and LB-Verif data are similar to the welfare models in that they retain most of the variables included in the welfare model. The biggest contributor to the poverty model is household size, which has a similar contribution for the LB-VASyR (9.7 percent) and the LB-Verif data (11.5 percent). The second group of variables that contributes to explaining whether a household is poor or non-poor are housing variables.⁴ Both models, using LB-VASyR and LB-Verif data, include the crowding indicator, luxury assets, and types of latrines. We can therefore conclude that household size, destination of refugees, and living conditions, such as type of housing, crowding, and latrines, and luxury assets contribute to predicting poverty well.

Two new variables entered the poverty model and predict whether a household is poor using the LB-Verif data: gender of head of household and at least one disabled adult, neither of which is significant in the LB-VASyR model. The poverty model using the LB-VASyR data includes the origin of refugees, which was not significant in the welfare model using LB-VASyR data and not available in the LB-Verif data.

Jordan versus Lebanon data

There are clearly more similarities than differences in the two welfare and poverty modeling exercises in Jordan and Lebanon. The similarities relate to the fact that the emergency context is similar (urban, protracted), the affected population is similar (demographically, socioeconomically, and culturally), and the host countries are similar (middle income, urbanized). The differences can be attributed to different data structures as already explained. The questionnaire and therefore the variables available for analysis are also different—that is, the LB-Verif data set has more information on income and employment. The unit of analysis is different: in Jordan, HV data were collected at the case level, while in

Lebanon we have multiple cases that make up a household. The capacity to merge the household surveys (both in Lebanon and in Jordan) with the PG data set is different: in Jordan it was easier to match PG data with survey data than in Lebanon, due to the difference in the unit of observation. The PG data themselves are different. In Lebanon there are missing variables, such as border crossing point, or data were collected differently; for example, in Lebanon level 1 or basic data were collected before returning to households to collect level 2 data. With regards to the ability to predict welfare, the analysis using the Jordan JD-HV2 (JD-HV3) data set achieves 48 (42) percent predictive capacity with PG only, and 53 (56) percent with additional indicators. The Lebanon LB-VASyR (LB-Verif) data achieved 6 (30) percent using PG indicators and 47 (45) percent using the larger data set and additional indicators.⁵ Finally, with regards to predictive capacity and estimated leakage and under-coverage rates, the results are almost identical.

Conclusion

This chapter made the most of available data on Syrian refugees in Jordan and Lebanon to derive lessons on poverty and the predictors of poverty and welfare. We compared results across the two countries, four data sets, harmonized and nonharmonized data, and using weighted (individual level) and non-weighted (case level) data. We kept in mind that absolute values of poverty are not strictly comparable, as the samples and questionnaires considered are different.

Comparing expenditure distributions, we found the LB-Verif data to show the highest values across the whole distribution while among the three remaining distributions (JD-HV2, JD-HV3, and LB-VASyR) there is no absolute dominance along the entire distribution. For lower parts of the distribution, JD-HV2 data show the lowest welfare, while for upper parts of the distributions JD-HV3 data show the lowest welfare. Moreover, the CDF curves cross several times, indicating that the ranking changes at each crossing point. We also found that the ranking across data sets shown by the poverty gap is not necessarily the same as the one shown by the poverty rate. This means that results on poverty are very sensitive to the poverty line and to the depth of poverty, a finding that confirms the lessons of chapter 2 of the study.

Inequality is surprisingly high among refugees although we observed some signs of decline between 2013 and 2014. The average level of inequality (Gini coefficient) for all data sets considered is 0.39. These levels of inequality are high when compared to the Syrian population before the crisis (0.32 in 2007), to hosting countries (Jordan = 0.34 in 2010 and Lebanon = 0.36 in 2005), and to other countries in the region such as Egypt (0.32 in 2009). We would have expected inequality to be low because refugees rely on a reduced set of assets and income opportunities and they tend to be a self-selected group of poorer people as compared to the Syrian pre-crisis population. These results are therefore surprising.

Looking at the poverty rates (headcount, poverty gap, and severity of poverty), we showed that poverty is high even if we use a poverty line that is lower

than the one used by hosting countries. According to data analyzed, refugees in Jordan appear to be poorer than in Lebanon. The poverty rates registered both with JD-HV2 and with JD-HV3 data are higher than the ones estimated for Lebanon. The JD-HV3 data show the highest poverty rate overall (73.2 percent). The poverty gaps are also higher in Jordan as compared to Lebanon but the poverty gap for JD-HV2 is higher than for JD-HV3. The same is true for the severity of poverty. This indicates that, overall, poverty has increased between the two rounds of the Jordan HV data but it has declined among the poorest individuals. If we look at Lebanon, the poverty rates for the LB-VASyR data are always significantly higher than the poverty rates for the LB-Verif data. This is due to the different types of samples considered; the LB-Verif includes those refugees that appealed as they were excluded from the WFP food vouchers and are therefore expected to be better off on average.

The poverty profile is similar across the four data sets considered and, hence, between Jordan and Lebanon. Also, the findings are consistent between individual and case poverty rates. In particular, individual and case poverty rates increase as the case/household size increases and as the number of children increases, while they are much lower for cases that rent or own their house and also for those living in bigger houses. The cases living in a proper apartment or house are less poor than the ones living in makeshift homes or tents. In both countries of destination the poverty rate is higher for cases with a female PA. Cases whose PA is married are poorer than cases with single PAs, and if the PA is more educated, the poverty rate is lower.

The welfare and poverty models find a set of core variables to be very consistent across countries and data sets in their capacity to predict welfare and poverty. Variables that almost invariably predict higher poverty and lower welfare are: (1) case or household size, (2) the number of children, (3) crowding, and (4) informal arrival in the country. Variables that almost invariably predict lower poverty and higher welfare are: (5) renting or owning the property, and (6) living in an apartment or house made of concrete. Having a kitchen or a proper latrine are also often found to be good predictors of increased welfare and reduced poverty. These are important findings, because the four data sets considered are very heterogeneous in terms of samples, questionnaires, data collection methods, and degree of representation of the underlying population of refugees. Such findings provide the UNHCR with a solid baseline to target the refugee population based on a rather restricted number of indicators and irrespective of how the samples, questionnaires, and data sets have been constructed.

It is important to stress that the poverty profile is a univariate analysis while the welfare and poverty models are multivariate analyses. Results can be different between the two analyses. For example, we find married people to be poorer in the poverty profile but less poor in the poverty models. That is due to the fact that married people tend to live in larger households and have more children. Once we control for these factors, the effect of this variable on poverty changes. This is what makes the consistency of the results between the poverty profile and the poverty models the most valuable. For almost all harmonized indicators we

find similar results between the two analyses. This indicates that there is weak correlation between the independent variables of the poverty model, an essential feature of good econometric models.

There are clearly more similarities than differences in the two welfare and poverty modeling exercises in Jordan and Lebanon. Similarities may be attributed to the fact that the emergency context is similar (urban, a protracted crisis), the affected population is similar although not identical (demographically, socio-economically, culturally), and the host countries have similarities (middle income, urbanized). The differences found in results can be attributed to different samples and questionnaires administered. This means that there is scope for improving and harmonizing the UNHCR's data collection efforts across countries and also within countries. If this is done, the UNHCR will be in a very good position to target refugees based on the restricted number of indicators shown above and on a reduced set of data collection exercises, something that could contain the cost of the existing refugees' assistance programs significantly.

Annex 5A. Expenditure Questions across Different Questionnaires

JD-HV2

How much (in JD) did your household spend last month on: food, water, housing, electricity and gas, medical costs, clothes and shoes, household items, education, transportation.

Monthly expenditure: Rent, bills (water, electricity, etc.), food, treatment (medical, pharmaceutical), education, other (specify).

JD-HV3

Monthly expenditure (JD): Rent, utilities (electricity, gas, etc.), food (excluding WFP vouchers), water (network, tanker, bottled, dislodging waste water, etc.), treatment (medical, pharmaceuticals), education, transportation, infant needs (diapers, milk), basic health and hygiene items (hygiene and NFIs), debt repayment (monthly), other (specify).

LB-VASyR

What is the estimated amount spent by the household during the last month for the following items: Food expenditure, rental of current residence, gas (for cooking and heating), health-related expenditures, education and related expenditures, drinking water, transport, debt repayment, all other expenditures.

LB-Verif

What is the estimated amount spent by the household during the last month for the following items: Total, food, house rent.

Notes

1. The values for the national poverty line in Lebanon should be treated with caution. The last official poverty line dates back to the 2004/2005 survey and it was determined on a household level. Therefore, we had to take an average poverty line and update this line to 2013 using the CPI index published in the IMF World Economic Outlook database (April 2015). For Jordan, we used instead the official poverty line used in 2010 and updated this line to 2013 using the CPI published in the World Bank World Development Indicators database (March, 2015).
2. The terms case and household as well as principal applicant and household head are used interchangeably. However, data for Jordan refer to case and principal applicant while data for Lebanon refer to household and household head.
3. These differences could also stem from the fact that ages are taken from LB-VASyR and LB-Verif data in the case of Lebanon while PG data were used in the case of Jordan.
4. It should be noted that certain variables were not available in the LB-Verif data, such as first arrival or number of children not attending school.
5. Only one PG variable (destination of refugees) could be used in the PG model.

ECO-AUDIT

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The Syrian refugee crisis, which began in 2011, is one of the most pressing disasters in the world today, with its effects reverberating around the globe. By the end of 2015, more than 6.5 million of the country's people had been internally displaced and 4.4 million were registered refugees. The number of internally displaced persons and refugees amounts to about half of Syria's pre-crisis population. Thousands have died while trying to reach safety.

Due to the large humanitarian response, there is now a wealth of available information on refugees' income and expenses, food and nutrition, health, education, employment, vulnerability, housing, and other measures of well-being. These data have been little explored, as humanitarian organizations face daily challenges that make the full use of existing data very difficult.

The Welfare of Syrian Refugees: Evidence from Jordan and Lebanon aims to assess the poverty and vulnerability of these refugees and evaluate existing and alternative policies designed to help them. The authors find that current policies, including cash transfers and food vouchers, are effective in reducing poverty, but fail to lead to—nor are they designed to yield—economic inclusion and self-reliance. Those goals would require a different humanitarian and development paradigm, one that focuses on growth policies for areas affected by refugees where the target population has a mix of refugees and hosting populations.

This volume is the result of the first comprehensive collaboration between the World Bank Group and the United Nations High Commissioner for Refugees (UNHCR) and aims to better understand and ultimately improve the well-being of Syrian refugees living in Jordan and Lebanon.



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