



# **The Economic Costs of the Israeli Occupation for the Palestinian People: The Impoverishment of Gaza under Blockade**



UNITED NATIONS



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### **Note**

This study was prepared by the UNCTAD secretariat, drawing on research prepared by UNCTAD consultant Mr. Jean-Louis Arcand, Professor, International Economics, Graduate Institute of International and Development Studies, Geneva. The study seeks to stimulate debate on the research topic.

The term “dollars” (\$) refers to United States dollars.

In tables, a hyphen (-) indicates that the item is not applicable.

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## **Abbreviations**

EBP	Empirical best prediction
GDP	Gross domestic product
GIC	Growth incidence curve
PCBS	Palestinian Central Bureau of Statistics



## Executive summary

The Gaza Strip has been under a complete land, sea and air closure and restrictions since June 2007, that in effect amount to a blockade, with nearly 2 million people living in 365 square kilometres. In June 2007, Israel tightened restrictions on the movement of people and goods in and out of Gaza. The entrance of goods was reduced to a minimum, and exports were banned. In addition to the closure and restrictions, there have been three major rounds of hostilities during a six-year timespan; the first operation was in December 2008. While restrictions on the movement of people and goods in and out of Gaza have slightly eased in the ensuing years, movement remains both highly restricted and unpredictable. This has contributed to an unprecedented, permanent humanitarian crisis.

The result of the closure and restrictions and military operations has been the near collapse of the regional economy of Gaza, as well as its separation from the rest of the Palestinian economy. Gaza has registered one of the world's highest unemployment rates, and more than half of its population lives below the poverty line. The majority of the population has no access to safe water, a regular and reliable electricity supply or a proper sewage system. In the 11 years between 2007 and 2018, the regional economy of Gaza grew by just 4.8 per cent, and its share of the Palestinian economy decreased from 31 per cent in 2006 to 18 per cent in 2018. As a result, gross domestic product (GDP) per capita shrank by 27 per cent, unemployment increased by 49 per cent and poverty increased by 42 per cent.

Two counterfactual growth paths or scenarios for Gaza from 2007 onwards allow for an assessment of the economic losses owing to the occupation and its measures.

Scenario 1 assumes that the economy of Gaza continued to follow its growth trend from the period 1995–2006, when it grew by 3.7 per cent per year. Applying this annual growth rate from 2007 onwards shows that the GDP of Gaza would have been 23.7 per cent higher annually than its actual performance. The ensuing cumulative real economic losses amount to \$7.8 billion, equivalent to 2.7 times the GDP of Gaza or 50 per cent of the GDP of the Occupied Palestinian Territory in 2018. GDP per capita in 2018 would have been 46.7 per cent higher than its actual level.

Scenario 2 assumes that, from 2007 onwards, the share of Gaza in the economy of the Occupied Palestinian Territory remained the same as in 2006. This implies that the economy of Gaza continued to grow at the same rate as that of the West Bank, that is, by 6.6 per cent annually. Under this scenario, the GDP of Gaza would have been 50 per cent higher than under the baseline scenario and the cumulative real economic losses stand at \$16.7 billion, equivalent to 5.7 times the GDP of Gaza or 107 per cent of the GDP of the Occupied Palestinian Territory in 2018. GDP per capita in 2018 would have been 105.5 per cent higher than its actual level or equal to \$1,539 (constant 2015 dollars).

It should be stressed that the two scenarios estimate only the economic costs of the occupation that resulted from the closure and restrictions and the military operations in Gaza in the period 2007–2018. Therefore, they are conservative and partial, and do not include the total costs of the occupation for the Palestinian people in Gaza, because neither scenario assumes an end to the occupation. In other words, they both assume the existence of all of the measures and restrictions

under the occupation, in Gaza or the West Bank, with the difference being the prolonged closure and restrictions in Gaza and the recurrent hostilities. It should also be noted that scenario 2 is more relevant, as it shows that, if the closure and restrictions and recurrent hostilities had not taken place, there would not have been such major impacts that prevented Gaza from maintaining its share in the Palestinian economy.

The deterioration of the living conditions in Gaza between 2007 and 2017 is also apparent in an analysis of microeconomic data. Using standard statistical methods that combine survey and census data, the analysis shows that the poverty headcount in 2007 was 40 per cent of the population but rose to 56 per cent in 2017. Concomitantly, the poverty gap in Gaza increased from 13.95 per cent to 19.87 per cent. When assistance is excluded, the poverty measures are greater. The analysis shows that the poverty headcount increased from 44.45 per cent in 2007 to 63.66 per cent in 2017 and that the poverty gap increased from 17.36 to 26.06 per cent. The poverty gap estimates allow for the calculation of the total minimum annual cost of eliminating poverty; this cost quadrupled between 2007 and 2017, from \$209 million to \$838 million. These numbers represent 8.7 and 28.7 per cent of the GDP of Gaza in 2007 and 2017, respectively. The \$629 million difference between the minimum costs in 2007 and 2017 captures the cost of the closure and restrictions in terms of poverty. It amounts to 22.3 per cent of the GDP of Gaza or 4 per cent of the GDP of the Occupied Palestinian Territory in 2017 (constant 2015 dollars).

Combining the macro-level growth scenarios with household-level data allows for the further quantification of the costs of occupation. Under scenario 1, the poverty rate would have fallen from 56.19 to 35.12 per cent and the poverty gap would have decreased from 19.87 to 11.88 per cent in 2017. Under scenario 2, the poverty rate would have fallen even further, to 14.99 per cent, and the poverty gap would have decreased to 4.26 per cent in 2017. Therefore, whether the problem is considered from a macro-level or micro-level perspective, the cost of reversing the impact of the closure and restrictions and recurrent hostilities on the welfare of households in Gaza is enormous.

This study also outlines a number of recommendations for placing Gaza on a track towards achieving sustainable development. These include lifting the closure and restrictions and all restrictions on access and movement, to reintegrate Gaza with the West Bank and the rest of the world; unlocking the economic potential of Gaza with the establishment of a seaport and airport; initiating significant water and energy projects to restore full public access to water and electricity; and utilizing the valuable oil and natural gas resources off the shore of Gaza.

## **I. Introduction and objectives**

Israel occupied Gaza and the West Bank, including East Jerusalem, in June 1967. However, despite the disengagement of Israel from Gaza in 2005, the occupation remained in full force, leading to unfavourable prospects for peace. The years that followed proved even more difficult for the impoverished population in Gaza.

Except for a 12-kilometre border with Egypt, the occupying Power has retained control over all of the land, sea and air borders of Gaza. With a complete air, land and sea closure and restrictions since June 2007, nearly 2 million Palestinians live in 365 square kilometres, with one of the highest population densities in the world. In addition to the closure and restrictions, since December 2008, there have been three major rounds of hostilities that have resulted in the loss of life or injury to thousands of Palestinians and the destruction of productive capacity and have led to a humanitarian crisis and a case of profound aid dependence.

In 2012, the United Nations warned that the ongoing negative trends needed to be reversed if Gaza was to be a liveable place in 2020 (United Nations, 2012). However, since then, socioeconomic conditions have worsened and Gaza has witnessed one of the worst economic performances globally, registered one of the world's highest unemployment rates and had more than half of its population fall below the poverty line (International Labour Office, 2018). The vast majority of the population of Gaza does not have access to clean water, electricity or a proper sewage system and Gaza is experiencing major environmental deterioration. Since the onset of the closure and restrictions, the Palestinian people in Gaza have experienced 13 years of de-development, suppressed human potential and denial of basic human rights. Efforts at revival have been made, yet interventions have been primarily focused on reconstruction and humanitarian relief, leaving few resources for development or resuscitation of the productive base.

### **A. Mandate**

The occupation has had profound socioeconomic impacts on the Palestinian people and imposes heavy costs on the Palestinian people that have been accumulating over time. The General Assembly of the United Nations, in six resolutions (69/20, 70/12, 71/20, 72/13, 73/18 and 74/10), requested UNCTAD to report to the General Assembly on the economic costs of the Israeli occupation for the Palestinian people.

The characterization and estimation of these economic costs have been presented in various reports prepared in response to the resolutions. In 2015, UNCTAD prepared a note for the General Assembly titled "Economic costs of the Israeli occupation for the Palestinian people" (United Nations, General Assembly, 2015). In 2016, UNCTAD prepared a more detailed report for the seventy-first session of the General Assembly and in 2018, prepared a report for the seventy-third session of the General Assembly (United Nations, General Assembly, 2016; 2018). Most recently, UNCTAD prepared a report for the seventy-fourth session of the General Assembly (United Nations, General Assembly, 2019). In these reports, UNCTAD emphasizes that occupation continues to impose substantial economic costs on the Palestinian people. In addition, UNCTAD highlights the urgent need for the further evaluation of these costs and a greater understanding of their impact on the welfare of the Palestinian people and the prospects for economic development

in the Occupied Palestinian Territory. UNCTAD also stresses the need to establish, within the United Nations system, a systematic, evidence-based, comprehensive and sustainable framework for estimating the economic costs of occupation as an essential step in reversing its damages, achieving the Sustainable Development Goals in the Occupied Palestinian Territory and forging a just and lasting peace in the Middle East.

## **B. Objectives**

The main objective of this study is to shed light on the critical situation in Gaza and estimate the costs of the closure and restrictions and military operations for the Palestinian people in Gaza, with a particular focus on the socioeconomic conditions at the household level. The first part of the study, following an overview of the closure and restrictions and recurrent hostilities, considers two counterfactual growth paths for Gaza from 2007 onwards, to give some indication of the range of the potential economic growth that could have been realized had the closure and restrictions and recurrent hostilities not occurred, that is, the economic costs in terms of GDP loss. The second part of the study applies the empirical best prediction (EBP) method of Molina, Rao and Datta (2015) to combine the strengths of household surveys and censuses, to estimate the poverty headcount and other indicators, which in turn allow for an assessment of the impact of the closure and restrictions and recurrent hostilities on households in Gaza using poverty gap and depth indicators. Finally, the study contains a set of recommendations for the occupying Power, Palestinian policymakers, the international community and development agencies related to the need to end the closure and restrictions in Gaza and mitigate their significant impact.

## **II. Gaza under closure and restrictions and recurrent hostilities: Overview**

Long-standing restrictions on the movement of people and goods to and from Gaza have undermined the living conditions of 2 million Palestinians. Many of the current restrictions, originally imposed by Israel in the early 1990s, were intensified in June 2007 with the imposition of closure and restrictions (United Nations, 2017). In June 2007, Israel tightened restrictions on the movement and access of people and goods in and out of Gaza, whereby the entrance of goods was reduced to a minimum, the exportation of goods was banned and restrictions were imposed on the entrance of fuel and on travel between Gaza and the West Bank and East Jerusalem. While restrictions on the movement of people have slightly eased since the complete closure in 2007, movement remains highly restricted and unpredictable (United Nations, 2017).

### **A. Closure of land, sea and airspace**

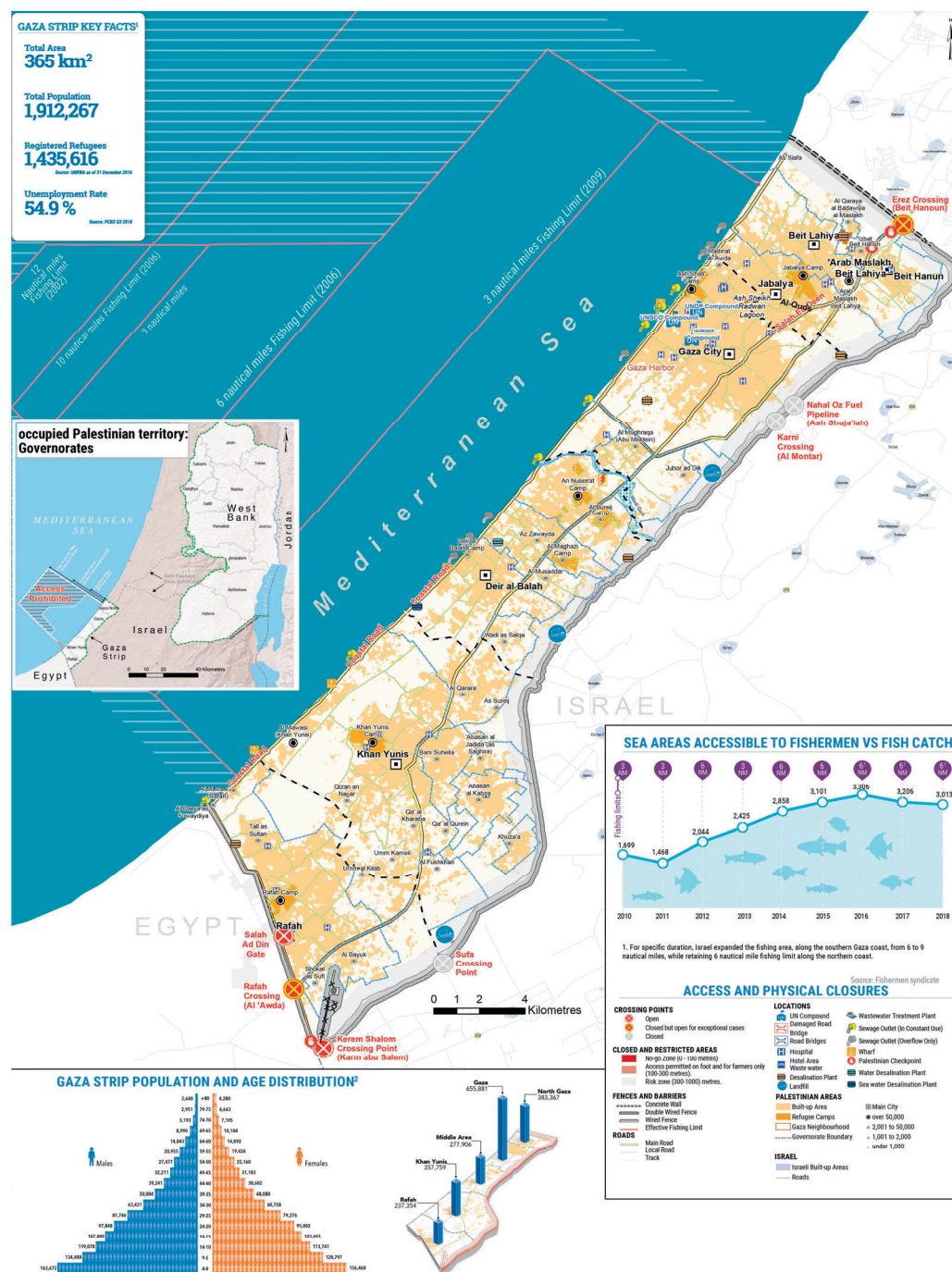
The United Nations Under-Secretary-General for Humanitarian Affairs has compared Gaza to an open-air prison, in which the movement of people and access of goods across borders is entirely determined by the occupying Power (United Nations News, 2009). As of June 2007, the borders of Gaza were closed for nearly the entirety of the workday, compared with in 1999, when they were open for almost 100 per cent of the workday. Prior to 2007, Gaza had five crossing points with Israel for pedestrian travel and the movement of goods (see map):

- Kerem Shalom crossing point (Karm Abu Salem), currently open (for goods)
- Sufa crossing point, closed since 2008
- Karni crossing (Al Montar), closed since 2007
- Nahal Oz fuel pipeline (Ash Shuja'iah), closed since 2010
- Erez crossing (Beit Hanoun), currently open (for pedestrians)

Control by Israel involves not only pedestrian and commercial land crossing points but also the sea and airspace of Gaza. Israel sets a risk zone that stretches 100–500 metres into Gaza from the border with Israel, as well as access restricted areas stretching 100–300 metres into Gaza from the border with Israel, in which access is permitted only on foot and for farmers, and a 100-metre no-go zone along the border (see map). In addition, agricultural land near the border has been sprayed with herbicides (Gisha, 2019). At sea, the fishing zone agreed on in the Oslo Accords extended to 20 nautical miles, but in practice has not exceeded 12 nautical miles and has mostly varied between 3 and 6 nautical miles since 2006, occasionally extending to 9 nautical miles for a few weeks at a time. The restrictions by Israel make fishing off the coast of Gaza hazardous. At times, Israel has enforced restrictions with the use of force, sometimes resulting in injury or death, and Palestinian boats and equipment are often damaged, seized or confiscated (Gisha, 2019).



## Gaza: Access and movement, December 2018



*Abbreviations:* NM, nautical miles; OCHA, Office for the Coordination of Humanitarian Affairs; Q3, third quarter; UN, United Nations; UNDP, United Nations Development Programme; UNSCO, Office of the Special Coordinator for the Middle East Peace Process; UNRWA, United Nations Relief and Works Agency for Palestine Refugees in the Near East.

*Source:* Office for the Coordination of Humanitarian Affairs, 2018, Occupied Palestinian Territory: Gaza Strip access and movement, September, available at <https://www.ochaopt.org/content/gaza-strip-access-and-movement-december-2018-0>.

## **B. Restrictions on the movement of people**

Currently, only two crossing points are used for pedestrian travel in and out of Gaza, namely, Rafah crossing (Al Awda) with Egypt and Erez crossing (Beit Hanoun) with Israel (see map). At the start of the closure and restrictions, the exit of Palestinians through the Erez crossing was limited to humanitarian cases. According to the Office for the Coordination of Humanitarian Affairs (n/d), the Rafah crossing point was opened for 2,118 days and closed for 2,257 days in 2007–2018, with the closure mainly occurring in 2014–2017. When this crossing point is closed, the Erez crossing, controlled by Israel, is the only gateway from Gaza to the rest of the world and is also the gateway to the West Bank, entrance into which is controlled by Israel (Gisha, 2019). The measures imposed by Israel continue to significantly impact the daily life of Palestinians in Gaza. Many families are permanently divided between Gaza and the West Bank or Israel and relatives cannot meet except under specific circumstances, such as grave illness, a death or the wedding of a first-degree relative. United Nations (2017) states that “the effect of not having contact with people outside of Gaza has significant social, economic and even psychological consequences as the population remains essentially cut off from the rest of the world”.

## **C. Restrictions on the movement of goods**

In June 2007, Israel began to impose restrictions on the entrance of goods into Gaza, allowing only basic humanitarian products. By 2010, three of the four crossing points for goods between Gaza and Israel had been shut down. From June 2007 to June 2010, an average of 2,400 trucks per month entered Gaza through Israel, compared with 10,400 trucks per month in 2005, a year in which Israel had not significantly restricted the entrance of goods into Gaza (Gisha, n/d). Between June 2007 and mid-2010, the closure of Gaza was implemented according to several criteria, including, among others, the use of mathematical formulae to determine the amount of goods entering Gaza, using the following: an estimate of the inventory of basic goods and products; the daily per capita consumption for each basic good according to the Palestinian Central Bureau of Statistics (PCBS); and the number of inhabitants of Gaza (the criteria were noted in documents from the Ministry of Defense of Israel; see Gisha, 2010). Based on these calculations, a draft report of inventory estimates was prepared whereby at a lower, warning, limit, the authorities of Israel allowed a greater inflow of the product in question, yet the inflow of goods was reduced or stopped for some products during times of political unrest (Gisha, n/d).

Another significant constraint on Palestinian productive activities is the list of dual-use civilian goods that Israel does not allow Palestinians to import because they have potential military applications (World Bank, 2018). The list includes civilian machinery, spare parts, fertilizers, medical equipment, appliances, telecommunications equipment, metals, chemicals, steel pipes, milling machines, optical equipment and navigation aids. The dual-use list contains 56 items requiring special approval to be brought into the Occupied Palestinian Territory (both Gaza and the West Bank) and an additional 61 items that apply to Gaza, including construction material, raw material for productive sectors, such as wood and pesticides, medical equipment and water pumps used during seasonal flooding events. Despite some easing of restrictions, in particular for construction materials, there are significant delays in the approval of other dual-use items for import (World Bank, 2018). In 2014, the Gaza Reconstruction Mechanism was established to coordinate the entrance of building materials and goods agreed upon by Israel and the Government



of the State of Palestine, monitored by the United Nations. Consequently, basic construction materials such as cement and steel, designated for internationally funded and private projects, can enter Gaza.

#### **D. Three military operations**

In addition to the closure and restrictions, Gaza was the subject of three major rounds of hostilities over six years, the first of which took place in December 2008. The recurrent hostilities claimed the lives of 3,804 Palestinians and 95 Israelis; 79 of the 95 casualties were from the security forces (B'Tselem, n/d; Office for the Coordination of Humanitarian Affairs, n/d). In October 2014, during a visit to Gaza, the Secretary-General of the United Nations said that the destruction was “beyond description” (United Nations News, 2014). In April 2015, during a visit to Gaza, the United Nations Special Coordinator for the Middle East Peace Process stated that “no human being who visits can remain untouched by the terrible devastation that one sees here in Gaza” and that, as shocking as the devastation of the buildings might be, “the devastation of peoples’ livelihoods is 10 times more shocking” (United Nations News, 2015).

The following summary of the impact of the recurrent hostilities is based on United Nations (2017):

- During the hostilities from 27 December 2008 to 18 January 2009, nearly 1,400 Palestinians were killed; 13 Israelis were killed; and some 60,000 homes were damaged or destroyed, leaving some 20,000 people homeless. In addition, 5,380 people were wounded (State of Palestine, 2015).
- During the eight-day hostilities in November 2012, 174 Palestinians, including 107 civilians, were killed; 6 Israelis, including 3 civilians, were killed; and some 10,000 homes were damaged.
- During the hostilities from 7 July to 26 August 2014, 2,251 Palestinians, including at least 146 civilians, were killed; 71 Israelis, including 5 civilians, were killed; and 171,000 homes were damaged, 17,800 of which were rendered completely uninhabitable, thereby displacing 100,000 inhabitants.

#### **E. Impact and costs of closure and restrictions and recurrent hostilities**

Some indicators of the impact and costs are:

- According to the International Monetary Fund (2017), the damage from the hostilities from December 2008 to January 2009 was equivalent to over 60 per cent of the total capital stock of Gaza and the damage from the hostilities in 2014 was equivalent to 85 per cent of the capital stock that existed after the previous hostilities.
- The International Monetary Fund (2018) notes that had the utilization of production inputs been similar to that in the West Bank, growth rates in Gaza could have been three times higher than the actual rates.
- In 2014, during which the 50-day hostilities took place, the GDP of Gaza was reduced by \$460 million (World Bank, 2015).

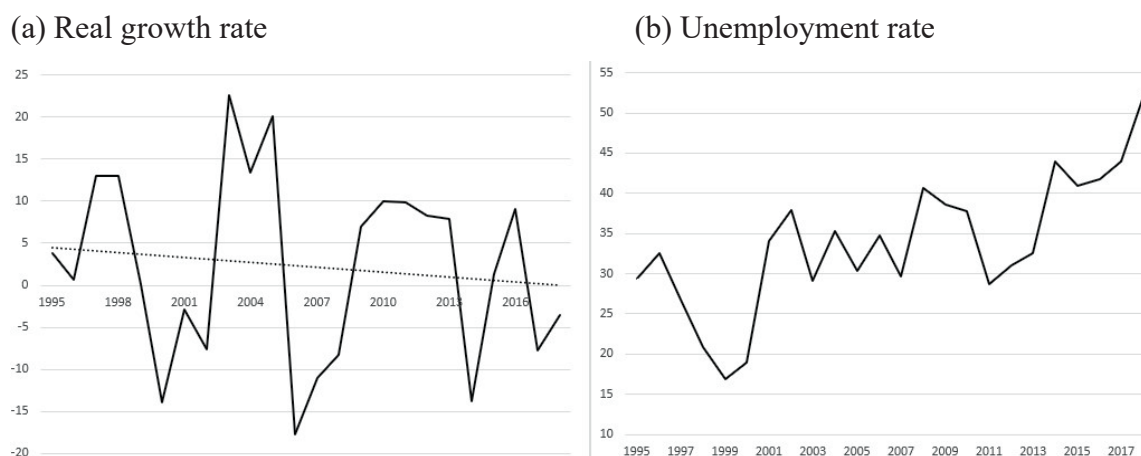
- Conservative estimates by the World Bank (2017) indicate that lifting the economic limitations could generate additional cumulative growth in the range of 32 per cent by 2025. In addition, some relaxation of the dual-use list alone could generate an additional 11 per cent of growth in Gaza by 2025.
- The direct economic losses caused by the military operation from December 2008 to January 2009 is estimated at \$2.5 billion (UNCTAD, 2009).
- During the military operations in 2012 and 2014, over 64,000 residential units and at least 1,000 industrial and commercial establishments were destroyed or damaged. The value (not cost of replacement) of assets in Gaza damaged as a result of the last two military operations is estimated at more than \$2.7 billion (UNCTAD, 2015).
- The total cost of recovery and reconstruction activities in Gaza in the aftermath of the military operation in 2014 is estimated at \$3.9 billion (State of Palestine, 2015).

### III. The economic costs of the Israeli occupation for the Palestinian people in Gaza: Closure and restrictions and recurrent hostilities, 2007–2018

#### A. The Palestinian economy in Gaza: Performance and trends

In the period 1994–2018, except for the first five years, the regional economy of Gaza experienced one of the worst economic performances globally. In this 25-year period, the GDP of Gaza grew by 48 per cent in real terms and the population grew by 136 per cent, resulting in a 44 per cent decline in real GDP per capita. The latter plummeted from 96 per cent of the GDP per capita of the West Bank in 1994 to 30 per cent in 2018. Meanwhile, unemployment increased by 22 percentage points, reaching 52 per cent, one of the highest rates in the world. For more than 13 years, the economy of Gaza has been undergoing a vicious cycle of de-development (see figure 1).

Figure 1  
**Gaza: Real growth and unemployment rates**  
(Percentage)



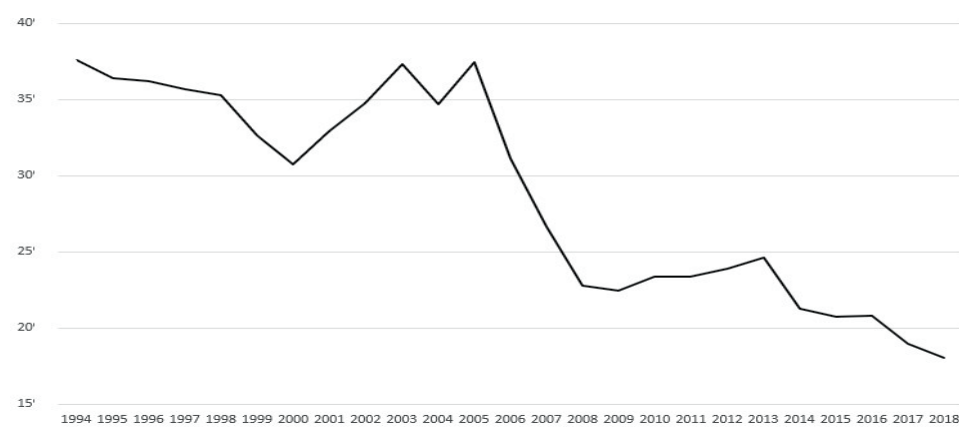
Source: PCBS, 2019a.

According to UNCTAD (2017), annual real GDP growth consistently above 5.3 per cent is needed to make a minor dent in unemployment. The International Monetary Fund (2017) provides an explanation of the failure to reverse the upward trend in unemployment over the past 25 years and implies that at least 4 per cent in annual GDP growth is required simply to maintain unemployment at current levels and prevent an even more precipitous socioeconomic deterioration. Unless current trends are reversed, unemployment will continue to rise, per capita income will decrease and poverty will inevitably worsen, adding to the risk of a re-emergence of a vicious cycle of mutually reinforced economic decline and political crisis.

The Palestinian economy in Gaza has gone through three structural phases. In the period 1994–1999 that followed the signing of the Oslo Accords, the regional economy of Gaza grew by, on average, 6.1 per cent annually, and that of the West Bank grew by 10.7 per cent. In 2000, following the outbreak of the second intifada, Palestinian labourers from Gaza were prohibited from entering or working in Israel. In the period 2000–2006, much of the Palestinian infrastructure, including institutions of the Palestinian National Authority, was destroyed and the movement of workers and goods was restricted. This had a spillover effect that severely affected economic growth, employment and overall development, as well as poverty. In this period, the economy of Gaza

grew by a mere 2 per cent annually. Finally, since June 2007, Gaza has been under a complete land, sea and air closure and restrictions, and three military operations have taken place. In the period 2007–2018, the economy of Gaza grew by, on average, 0.8 per cent annually, and that of the West Bank, which is under occupation and faces similar restrictions, but is not affected by closure and restrictions, grew by 6.6 per cent annually. As a result, the share of Gaza in the Palestinian economy fell from 37 per cent in 1995 to 18 per cent in 2018. Prior to 2007, the share of Gaza had not fell below 31 per cent and had averaged around 35 per cent (see figure 2). Moreover, investment in Gaza virtually disappeared, falling from 31 per cent of total investment and 11 per cent of the GDP of the Occupied Palestinian Territory in 1994 to 10 per cent and only 2.7 per cent, respectively, in 2018. Non-building investment in Gaza remained minimal, at 0.2 per cent of GDP and only 2 per cent of total non-building investment in 2018.

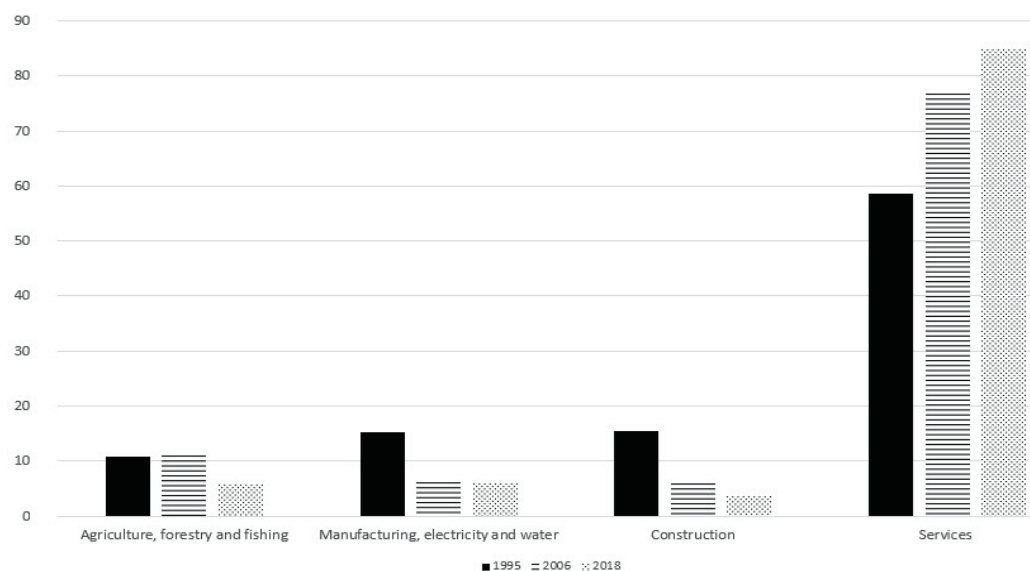
Figure 2  
**Gaza: Share in the Palestinian economy**  
 (Percentage)



Source: PCBS, 2019b.

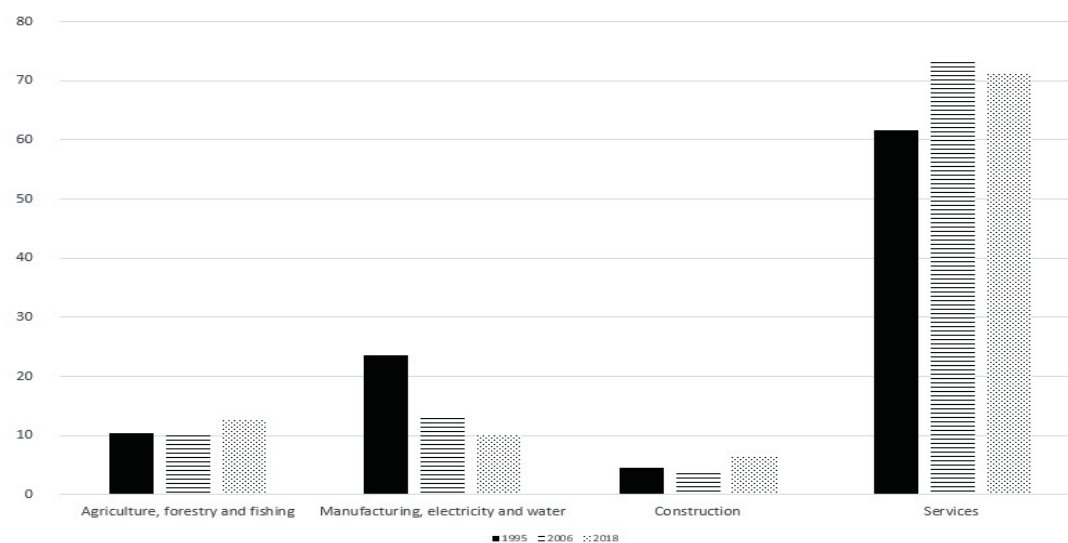
Since 1995, the structure of the economy of Gaza has changed dramatically owing to heightened political risks, restrictions on movement and access, limited access to imported inputs, destruction and isolation from global markets. The share of productive sectors in the economy, that is, agriculture and manufacturing, fell from 26 per cent in 1995 to 12 per cent in 2018 and their contribution to employment fell from 34 per cent in 1995 to around 23 per cent in 2018 (see figures 3 and 4). This has been elaborated by UNCTAD (2016; 2017) in analyses of the de-industrialization and de-agriculturalization of the economy. It raises a serious concern related to the future development of the economy of Gaza because the agriculture and manufacturing sectors have a greater capacity for innovation, productivity growth, the realization of economies of scale and the expansion of employment.

Figure 3  
**Gaza: Sectoral share of the economy**  
 (Percentage)



Source: PCBS, 2019b.

Figure 4  
**Gaza: Sectoral share of employment**  
 (Percentage)



Source: PCBS, 2019a.

## B. The Palestinian economy in Gaza under closure and restrictions and recurrent hostilities

The performance of the economy of Gaza has always been far from achieving its full potential owing to the policies, restrictions and measures under occupation. The closure and restrictions and the military operations in Gaza since 2007 have further worsened economic performance and continue to impede the realization of the full economic potential of Gaza. Pro-development policies could have been implemented, but measures imposed by the occupying Power in Gaza have instead generated a humanitarian crisis. Table 1 presents some indicators of the dismal economic performance in 2006–2018, before and after the closure and restrictions.

Table 1

### Gaza: The economy before and after closure and restrictions – selected indicators

Indicator	2006	2018	Difference	Percentage change
Population (thousands)	1 349	1 933	0.584	43
Population density (people per square kilometre)	3 696	5 296	1 600	43
Real GDP (millions of constant 2015 dollars)	2 691	2 819	128	4.8
Share in Occupied Palestinian Territory GDP (percentage)	31.1	18.1	-13.0	-42
Real GDP per capita (millions of constant 2015 dollars)	1 994	1 458	-536	-26.9
Investment share in Occupied Palestinian Territory GDP (percentage)	9.5	2.7	-6.8	-71.6
Exports share in Occupied Palestinian Territory GDP (percentage)	0.8	1.0	0.2	20
Imports share in Occupied Palestinian Territory GDP (percentage)	19	7.5	-11.5	-61
Unemployment rate (percentage)	34.8	52.0	17.2	49.4
Poverty (percentage)	39 (2007)	55.4 (2017)	16.4	42.1

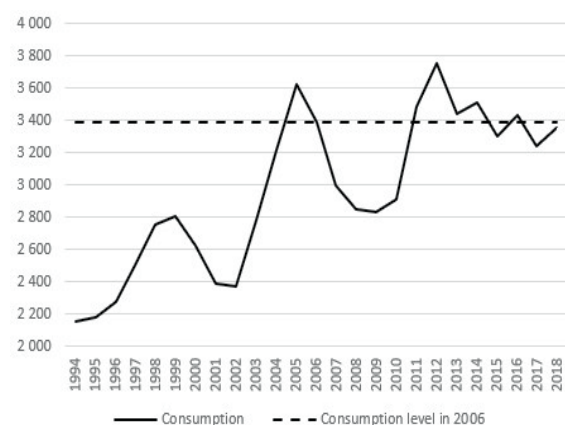
Source: PCBS, 2019a; PCBS, 2019b.

In the 11 years between 2007 and 2018, the economy of Gaza grew by just 4.8 per cent and its share in the Palestinian economy decreased by 42 per cent, from 31 per cent in 2006 to 18 per cent in 2018. Consequently, GDP per capita shrank by 27 per cent, unemployment increased by 49 per cent and poverty increased by 42 per cent. Figure 5 shows the negative trends in consumption, investment and imports since the initiation of closure and restrictions.

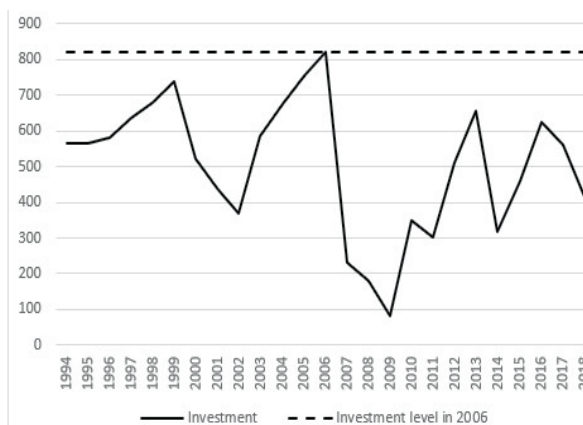
Access restrictions are not only limited to movement in and out of Gaza. Israel has also defined access restricted areas on land and at sea; up to 35 per cent of the agricultural land in Gaza and as much as 85 per cent of its fishing area have been affected at various points. At sea, the fishing zone agreed on in the Oslo Accords extended to 20 nautical miles, but in practice has ranged from 6 to 15 nautical miles (Office for the Coordination of Humanitarian Affairs, 2019). This has led to overfishing and endangering of the sustainability of fishing resources (United Nations, 2017).

Figure 5  
**Gaza: Components of the gross domestic product**  
(Millions of constant 2015 dollars)

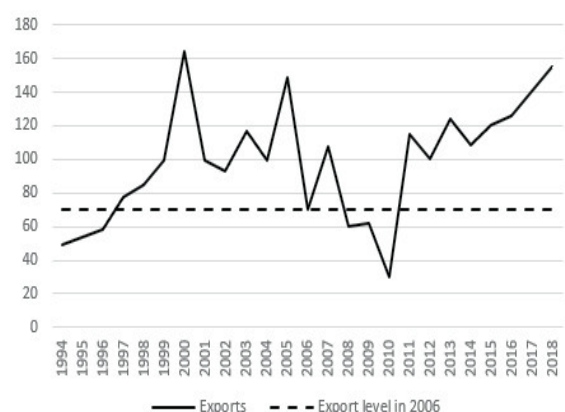
(a) Consumption



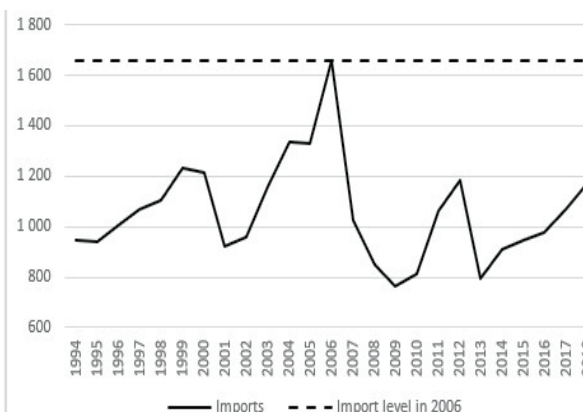
(b) Investment



(c) Exports



(d) Imports



Source: PCBS, 2019b.

The closure and restrictions and destruction of the infrastructure in Gaza after three military operations have had a grave impact on access to electricity and clean water, as well as on the environment.

Electricity shortages have suppressed key economic and productive activities. In 2017, households received, on average, two hours of electricity per day and shortages continue to disrupt everyday life by restricting productive activities and hindering the delivery of basic services (Al-Haq, 2017). The demand for electricity is rising, yet the Gaza power plant covers just 6 per cent of the overall demand and operates at less than one fifth of its 140-megawatt capacity, owing to fuel shortages and a lack of imported parts. As a result, Gaza imports more than 85 per cent of its electricity from Israel. The supply of electricity continues to be restricted to 4–8 hours a day (Office for the Coordination of Humanitarian Affairs, 2018).

The dearth of safe drinking water poses serious health-related and economic challenges. The coastal aquifer of Gaza – its sole water source – has been virtually depleted by overextraction and the intrusion of seawater. This leaves less than 4 per cent of the groundwater in Gaza fit for human consumption. In 2000, 98 per cent of the population had access to safe drinking water through the



public water network, but this had fallen to less than 11 per cent by 2014, and the situation has been growing worse since then (United Nations, 2017).

The electricity shortage and destruction and disrepair of the sanitation infrastructure have resulted in an environmental breakdown. Each day, over 100 million litres of untreated sewage enter the Mediterranean Sea, resulting in the extensive contamination of beaches, to levels four times higher than those specified by international environmental standards (Office for the Coordination of Humanitarian Affairs, 2018; UNCTAD, 2019a).

Gaza has experienced significant negative impacts on the well-being and overall morale of the population, as well as on the environment and the economy. However, the question remains as to what would have happened had Gaza not experienced closure and restrictions and military operations. The lives lost and other human tolls cannot be measured in monetary terms, yet the loss of output can be estimated.

### **C. The economic costs of the Israeli occupation for the Palestinian people: Gaza under closure and restrictions and recurrent hostilities, 2007–2018**

Based on analyses by Arcand and Al-Azzeh (forthcoming), this section details estimates of the economic costs incurred by the Palestinian people owing to the closure and restrictions and military operations in Gaza in the period 2007–2018. The political uncertainty, the ongoing closure and restrictions and the severe constrictions they lead to on the movement of people and access of goods, combined with three military operations, have imposed significant economic costs on the economy of Gaza. The methodologies that may be used to estimate these economic costs are limited by many problems, such as endogeneity, the overlapping of different causal factors and measurement problems. Furthermore, the costs owing to the closure and restrictions cannot be measured separately from the costs owing to the recurrent hostilities and vice versa.

However, an estimation of counterfactual growth paths for Gaza from 2007 onwards can give some indication of the range of economic losses, assuming the closure and restrictions and military operations had not occurred. This exercise is not solely aimed at answering the question, what if there were no occupation? Rather, it aims to explore the implications of the closure and restrictions and recurrent hostilities by considering what the situation could have been had they not occurred. The results suggest that the loss of potential output in terms of GDP under all assessed growth paths is significant, which in turn indicates that per capita output would have been significantly higher than it actually is.

Based on growth trends in Gaza prior to 2007 and the relationship between the economies of Gaza and the West Bank, two counterfactual growth paths or scenarios are assessed. The historical economic performance in Gaza in the period 2007–2018 is used as the baseline scenario for estimating the potential economic losses.

The first scenario assumes that the economy of Gaza continued to follow its historical growth trend from the period 1995–2006. That is, it continued to grow at an annual average of 3.7 per cent from 2007 onwards. Under this scenario, the annual GDP of Gaza would have been, on average, 23.7 per cent higher than under the baseline scenario and the potential cumulative real GDP losses (economic cost in constant 2015 dollars) in the period 2007–2018 would have been \$7.8 billion,

equivalent to half of the GDP of the Occupied Palestinian Territory and 276 per cent of the GDP of Gaza in 2018 (see figure 6 and table 2). GDP per capita in 2018 would have been \$695 or 46.7 per cent higher than under the baseline scenario (see figure 6 and table 3).

The second scenario assumes that, from 2007 onwards, the share of Gaza in the economy of the Occupied Palestinian Territory remained the same as in 2006. This implies that the economy of Gaza continued to grow at the same rate as that of the West Bank, that is, by an annual average of 6.6 per cent in the period 2007–2018. Under this scenario, the annual GDP of Gaza would have been, on average, 50 per cent higher than under the baseline scenario and the potential cumulative real GDP losses (economic cost in constant 2015 dollars) in the period 2007–2018 would have been \$16.7 billion, equivalent to 107 per cent of the GDP of the Occupied Palestinian Territory and almost six times the value of the GDP of Gaza in 2018 (see figure 7 and table 2). GDP per capita in 2018 would have been \$1,539 or 105.5 per cent higher than under the baseline scenario (see figure 7 and table 3).

The loss of potential GDP under the two scenarios is significant and means that output per capita could have been considerably higher than it is today. However, it should be stressed that both scenarios assume a growth performance under occupation. In other words, they both assume the existence of all of the measures and restrictions imposed under occupation in Gaza and the West Bank, with the difference being the closure and restrictions in Gaza and the three military operations. Furthermore, scenario 2 is more relevant as it shows that, if the closure and restrictions and military operations had not taken place, there would not have been such major impacts that prevented Gaza from maintaining its share in the Palestinian economy. Therefore, the estimates presented here are conservative and partial and do not include the total costs of the occupation for the Palestinian people in Gaza. The estimates here cover only the economic costs of the occupation that resulted from the closure and restrictions and military operations in Gaza in the period 2007–2018.

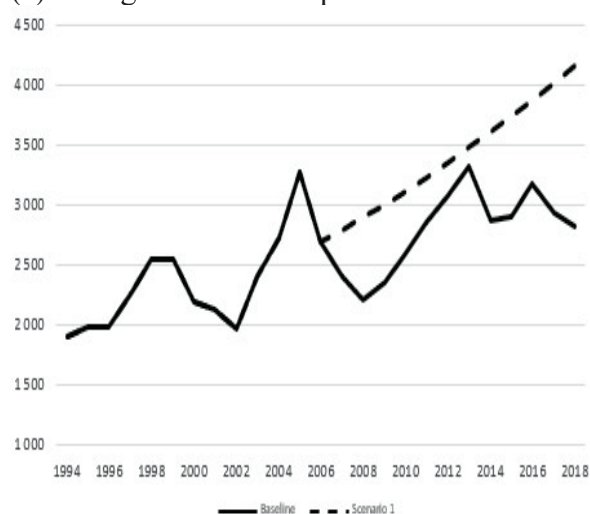
It is also important to stress that the above estimates are only losses of potential GDP. In addition to these losses, other costs emanating from the measures and restrictions imposed by the occupying Power should be considered. These include the costs of the destruction of infrastructure, residential units and commercial structures that occurred during the recurrent hostilities and the reconstruction that followed.

Ending the occupation and lifting all restrictions on movement are necessary for the unlocking of the economic potential of Gaza, with the establishment of a seaport and airport and significant water and energy projects to restore full public access to water and electricity, as well as the utilization of the highly valuable natural gas off the shore of Gaza. UNCTAD (2019b) indicates that the loss for the Palestinian people from denial of the right to exploit their natural oil and gas resources could be in the billions of dollars.

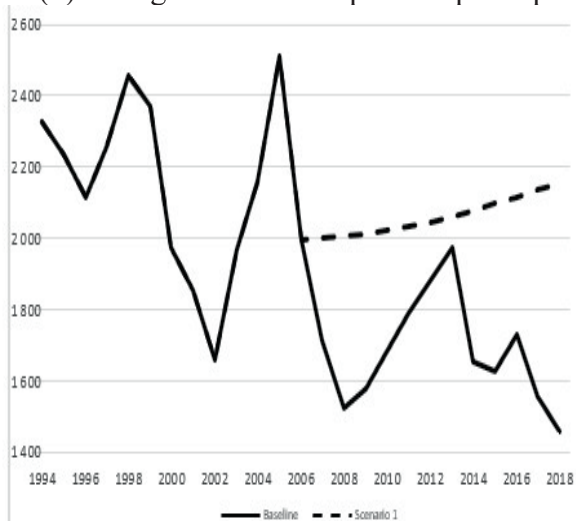
Figure 6

**Gaza: Gross domestic product, scenario 1**  
(Millions of constant 2015 dollars)

(a) Real gross domestic product



(b) Real gross domestic product per capita

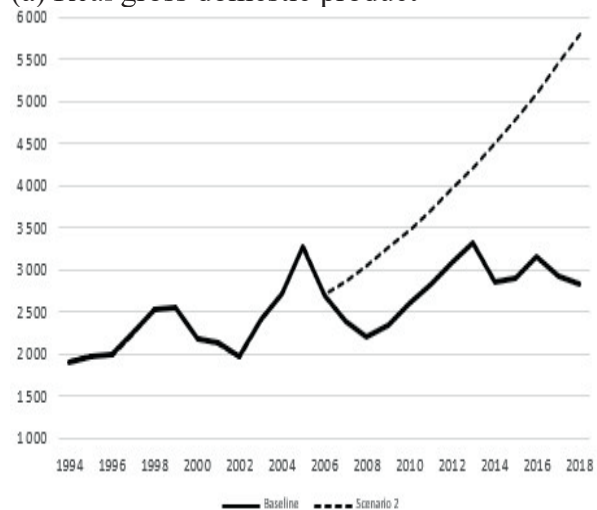


Source: UNCTAD calculations.

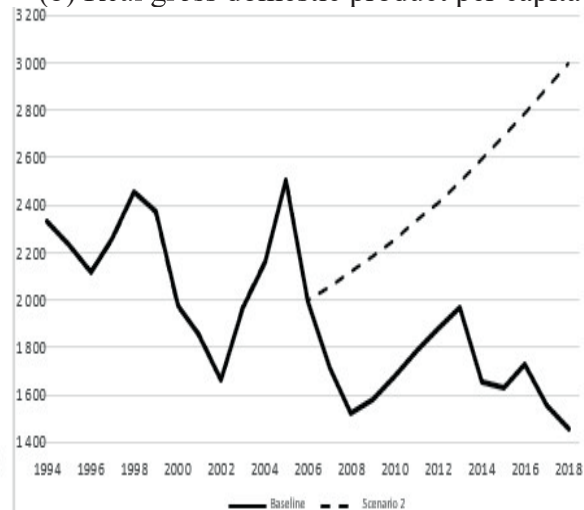
Figure 7

**Gaza: Gross domestic product, scenario 2**  
(Millions of constant 2015 dollars)

(a) Real gross domestic product



(b) Real gross domestic product per capita



Source: UNCTAD calculations.

Table 2

**Gaza: Real gross domestic product, scenarios 1 and 2**

(Millions of constant 2015 dollars)

Year	Baseline scenario	Scenario 1			Scenario 2		
		Real GDP	Difference	Percentage difference	Real GDP	Difference	Percentage difference
2007	2 393.2	2 790.5	397.3	16.6	2 868.5	475.3	19.9
2008	2 196.7	2 893.7	697.0	31.7	3 057.8	861.1	39.2
2009	2 350.8	3 000.8	650.0	27.6	3 259.6	908.8	38.7
2010	2 586.3	3 111.8	525.5	20.3	3 474.8	888.5	34.4
2011	2 840.5	3 226.9	386.4	13.6	3 704.1	863.6	30.4
2012	3 076.7	3 346.3	269.6	8.8	3 948.6	871.9	28.3
2013	3 320.5	3 470.2	149.7	4.5	4 209.2	888.7	26.8
2014	2 860.7	3 598.6	737.9	25.8	4 487.0	1 626.3	56.8
2015	2 900.1	3 731.7	831.6	28.7	4 783.1	1 883.0	64.9
2016	3 164.9	3 869.8	704.9	22.3	5 098.8	1 933.9	61.1
2017	2 921.4	4 013.0	1 091.6	37.4	5 435.3	2 513.9	86.1
2018	2 818.9	4 161.4	1 342.5	47.6	5 794.1	2 975.2	105.5
<b>Cumulative</b>	<b>33 430.7</b>	<b>41 214.6</b>	<b>7 783.9</b>	<b>23.3</b>	<b>50 121.0</b>	<b>16 690.3</b>	<b>49.9</b>

Source: UNCTAD calculations.

Table 3

**Gaza: Real gross domestic product per capita, scenarios 1 and 2**

(Millions of constant 2015 dollars)

Year	Baseline scenario	Scenario 1			Scenario 2		
		GDP per capita	Difference	Percentage difference	GDP per capita	Difference	Percentage difference
2007	1 714.7	1 999.3	284.6	16.6	2 055.2	340.5	19.9
2008	1 521.4	2 004.1	482.7	31.7	2 117.8	596.4	39.2
2009	1 575.6	2 011.2	435.6	27.6	2 184.7	609.1	38.7
2010	1 679.4	2 020.6	341.2	20.3	2 256.3	576.9	34.4
2011	1 788.7	2 032.0	243.3	13.6	2 332.5	543.8	30.4
2012	1 880.3	2 045.1	164.8	8.8	2 413.1	532.8	28.3
2013	1 971.5	2 060.4	88.9	4.5	2 499.1	527.6	26.8
2014	1 651.3	2 077.2	425.9	25.8	2 590.1	938.8	56.8
2015	1 628.9	2 096.0	467.1	28.7	2 686.5	1 057.6	64.9
2016	1 730.8	2 116.3	385.5	22.3	2 788.4	1 057.6	61.1
2017	1 556.6	2 138.2	581.6	37.4	2 896.1	1 339.5	86.1
2018	1 458.3	2 152.8	694.5	47.6	2 997.4	1 539.1	105.5

Source: UNCTAD calculations.

## **IV. Estimated poverty cost of closure and restrictions and recurrent hostilities, 2007–2017**

Using household surveys and census data, this chapter contains an analysis of the deterioration of household living conditions and welfare in Gaza between 2007 and 2017. The impact of the closure and restrictions and military operations on households in Gaza is assessed in terms of the poverty headcount and the poverty gap. The latter makes it possible to estimate the change in the minimal cost of raising all households to the poverty line between 2007 and 2017. In addition, this chapter contains reflections on some of the peculiarities of the pattern of allocation of assistance in the Occupied Palestinian Territory. Finally, it assesses the poverty headcount and poverty gap based on the counterfactual growth patterns described in chapter III. The analysis in this chapter is based on Arcand and Al-Azzeh (forthcoming).

### **A. Measuring poverty in Gaza, 2007–2017**

This section contains an analysis of the evolution of the level and depth of poverty in Gaza in the period 2007–2017 using the following two methods: survey-based; and EBP, which improves the accuracy of the poverty measures through the use of information from censuses. The findings present a sombre picture of poverty in Gaza – both over time and in comparison with the West Bank – where the level of poverty, as well as its depth, increased dramatically in the decade corresponding to the period of the closure and restrictions. The findings in this section suggest that while the minimum cost of eliminating poverty in Gaza in 2007 was equivalent to 8.7 per cent of the GDP of Gaza, this cost had risen to 28.7 per cent by 2017.

#### **1. Survey-based method**

Based on the Palestinian expenditures and consumption surveys, the economic conditions of households in Gaza severely deteriorated between 2007 and 2017. The survey-based method uses only the small samples in the surveys from 2007 and 2017 to model the relationship between total expenditures per adult equivalent and the individual, household and location characteristics in the survey.<sup>1</sup>

##### **(a) Poverty headcount**

Using the definition of the poverty line as 60 per cent of the national median total household expenditures per adult equivalent, expressed in constant 2015 dollars, the poverty line in Gaza was

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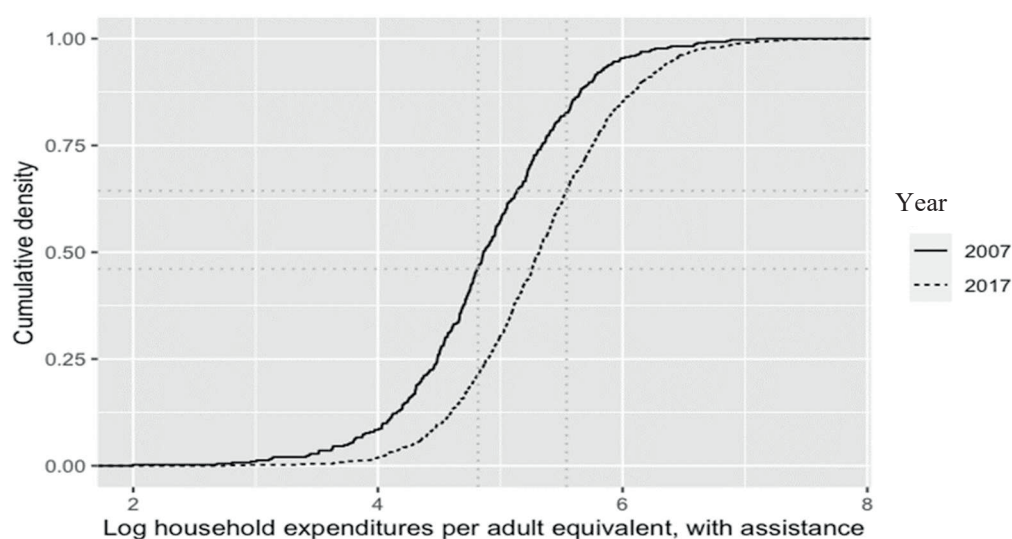
<sup>1</sup> Adult equivalent is defined as  $(1 + (\text{number of adults} - 1) \times 0.8 + (\text{number of children} \times 0.5))$ , which is the definition used by the Organization for Economic Cooperation and Development and the World Bank (see annex I). PCBS uses a slightly different definition, namely  $((\text{number of adults} + 0.46 \times \text{number of children})^{0.89})$ . Expressing matters in terms of adult equivalent rather than, for example, in per capita terms, depicts a more accurate picture of poverty. This is because household structures in Gaza, similar to those in most developing countries, are highly heterogeneous. Many households include a large number of children. Consumption requirements in a household comprised of six adults are completely different from those in a household comprised of two adults and four children. Expressing matters in terms of adult equivalent permits such important sources of interhousehold heterogeneity to be accounted for.

equal to monthly expenditures per adult equivalent of \$123 in 2007 and \$255 in 2017.<sup>2</sup> Accordingly, data from the two Palestinian expenditures and consumption surveys indicate that the share of households in Gaza living below this line increased from 46.17 per cent in 2007 to 64.47 per cent in 2017.

The poverty headcount, that is, the proportion of households living below the poverty line, based on relatively sparse survey data, includes assistance, which includes all cash and in-kind assistance to households provided by the government and non-governmental agencies. Excluding assistance, the corresponding poverty headcount increased from 49.74 per cent in 2007 to 66.75 per cent in 2017. Thus, while total real monthly expenditures per adult equivalent increased from an average of \$283 in 2007 to \$519 in 2017 (constant 2015 dollars), the proportion of households living below the poverty line increased substantially. The increase in total expenditures per adult equivalent for all households is illustrated in figure 8, which plots the empirical cumulative density functions for total monthly household expenditures per adult equivalent in 2007 and 2017. However, the importance of assistance in keeping households out of poverty declined over the decade; it contributed to keeping 3.57 per cent of households above the poverty line in 2007, but only 2.28 per cent in 2017 (see section B).

Figure 8

**Gaza: Empirical cumulative density functions for total monthly household expenditures per adult equivalent, including assistance**  
(Constant 2015 dollars)



*Notes:* The horizontal axis shows the value of expenditures and the vertical axis shows the proportion of households with expenditures below that level. A horizontal line drawn at a vertical intercept at 0.50 shows the median level of household expenditures as off the curve, then moving down to the horizontal axis. The vertical dotted grey line on the left represents the poverty line in 2007 and that on the right represents the poverty line in 2017. The increase in average total expenditures per adult equivalent is seen in the fact that the empirical cumulative density function for 2017 lies below that for 2007. This is sometimes referred to as first-order stochastic dominance. This would correspond to a shift to the right in a standard histogram, which represents the probability density function.

*Source:* UNCTAD calculations.

<sup>2</sup> This measure of the relative poverty line is used by, among others, the European Union, the Organization for Economic Cooperation and Development, the United Nations Children's Fund and the United Nations Development Programme (see [https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:At-risk-of-poverty\\_rate](https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:At-risk-of-poverty_rate) (accessed 25 August 2020)).



## **(b) Poverty gap**

Headcounts are an inaccurate measure of poverty as they do not reflect its depth, and include all households below the poverty line without taking into account the fact that the degree to which different households fall below the poverty line may differ greatly, as illustrated in the following hypothetical configurations: in the first, 50 per cent of households are \$0.01 below the poverty line; in the second, 50 per cent of households are \$100 below the poverty line. In terms of poverty headcount, both configurations would have a value of 50 per cent. The poverty gap addresses this issue by adding the distance, in monetary terms, separating each household from the poverty line, ascribing a weight of 1 to households below the poverty line and 0 to those above. It therefore represents the average percentage shortfall of households relative to the poverty line. For example, if the poverty line was equal to \$200, in the first hypothetical configuration, the poverty gap would be  $(0.01 \div 200 = 0.00005)$  and, in the second, would be  $(100 \div 200 = 0.5)$ .

Accordingly, based on the Palestinian expenditures and consumption surveys, the poverty gap in Gaza increased from 15.8 per cent in 2007 to 25.7 per cent in 2017. The poverty gap multiplied by the poverty line, then multiplied by the total number of households, measures the minimum aggregate lump-sum transfer needed to lift all households out of poverty.<sup>3</sup> As such, it is used in this section as a plausible measure of the costs of occupation in terms of poverty.

## **(c) Inequality and assistance in Gaza and the West Bank, 2007 and 2017**

With regard to inequality, there is a sharp contrast between Gaza and the West Bank. As shown in figure 9, in Gaza, the Lorenz curves for 2007 and 2017 remain essentially unchanged, that is, inequality declined by only a small amount.<sup>4</sup> In contrast in the West Bank, the Lorenz curve for 2017 is entirely above that of 2007, showing that inequality declined significantly.

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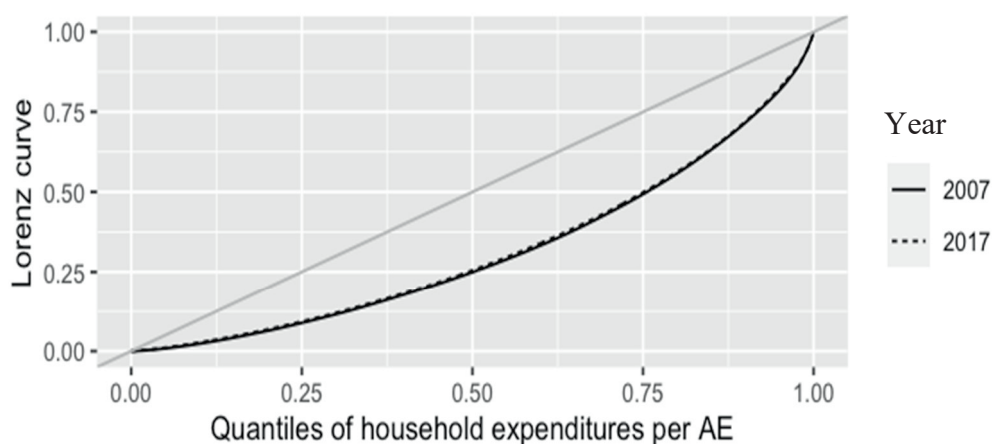
<sup>3</sup> Perfect targeting means that the exact shortfall with regard to the poverty line of each household may be identified. This is not feasible in practice, nor is it desirable in terms of policy, for reasons of political economy. The proposed aggregate measure in this section should therefore be taken as a lower bound on the total cost of raising the poor in Gaza to the poverty line.

<sup>4</sup> A Lorenz curve can help to summarize distribution and study its properties in terms of inequality. In this case it plots the share of total expenditures accounted for by the poorest 20 per cent of all households in Gaza when they are depicted in increasing order in terms of household expenditures. A Lorenz curve goes from the origin at 0.0 to 1.1, whereby the 100 per cent richest households necessarily accounts for 100 per cent of total income. Moreover, a Lorenz curve is convex, that is, it slopes upward at an increasing rate, because the share of total expenditures accounted for by the Nth poorest households is always less than N per cent of total income. A Lorenz curve that lies on the 45-degree line corresponds to a perfectly egalitarian distribution of income, with all households having the same level of expenditures per adult equivalent. Therefore, the closer the curve to the 45-degree line, the more the distribution is equal, whereas the further it shifts towards the southeast corner, the more the distribution is unequal. As such, a Lorenz curve entirely below another indicates an increase in inequality.

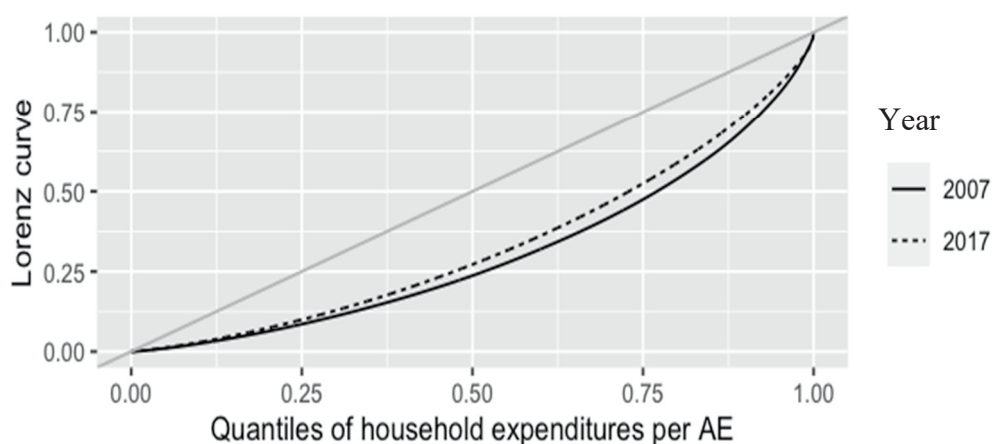


Figure 9  
Gaza and the West Bank: Lorenz curves, 2007 and 2017

(a) Gaza



(b) West Bank



Abbreviation: AE, adult equivalent.  
Source: UNCTAD calculations.

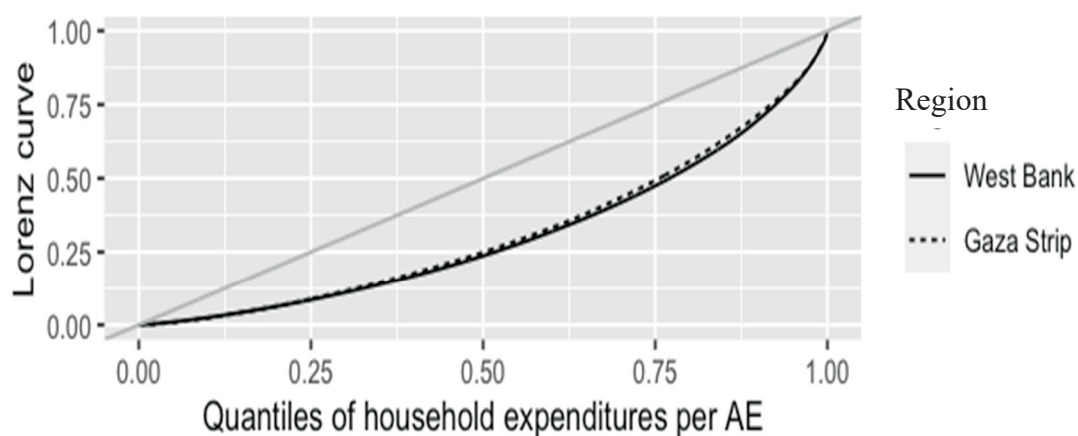
The shape of a Lorenz curve is often summarized using measures of scale, of which the most commonly used is the Gini coefficient.<sup>5</sup> The Gini coefficient in Gaza declined from 0.374 to 0.365 between 2007 and 2017, indicating slightly less inequality. The corresponding figures for the West Bank were 0.393 in 2007 and 0.337 in 2017. By comparison, the most recent Gini coefficient for Egypt is 0.315, which is low by regional standards. Other neighbouring countries such as Israel and Lebanon have Gini coefficients of 0.389 and 0.507, respectively. In 2007, inequality, in terms of the Gini coefficient, was lower in Gaza than in the West Bank and by 2017, the situation had reversed. In 2007, the Lorenz curve for Gaza was above that for the West Bank and in 2017, it was below (see figure 10).

<sup>5</sup> The Gini coefficient corresponds to the surface area between the Lorenz curve and the 45-degree line, expressed as a share of half of the square, that is, the triangle, below the 45-degree line. As such, the Gini coefficient is equal to 0 when the distribution of expenditures in the population is perfectly egalitarian, that is, there is no space between the Lorenz curve and the 45-degree line, and is equal to 1 when inequality reaches its maximum level, that is, the Lorenz curve lies against the southern and eastern sides.

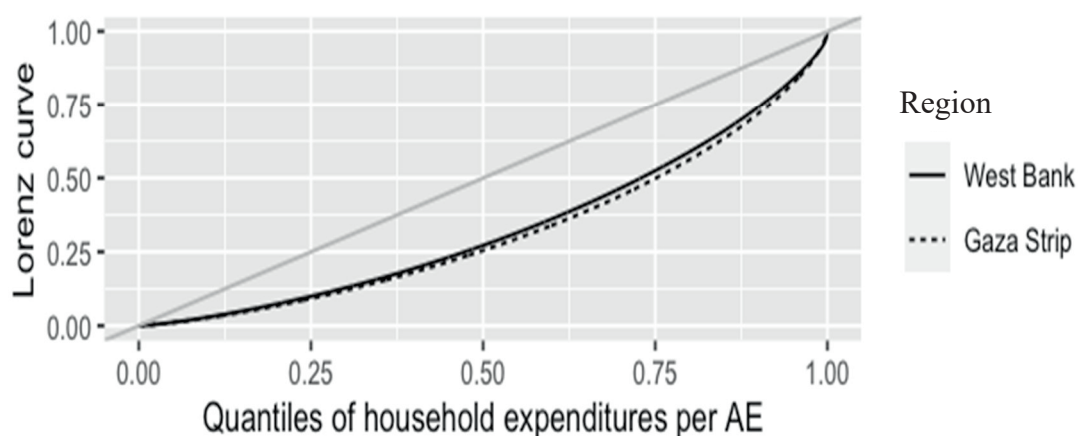
Figure 10

**Gaza and the West Bank: Reversal of inequality between 2007 and 2017**

**(a) 2007**



**(b) 2017**



*Abbreviation:* AE, adult equivalent.

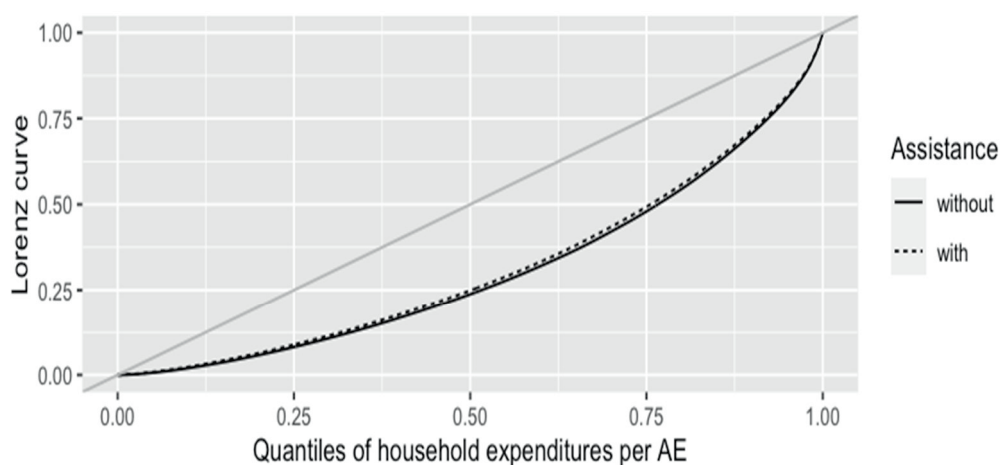
*Source:* UNCTAD calculations.

The provision of assistance somewhat reduces inequality in Gaza. As shown in figure 11, in 2017, the Lorenz curve with assistance was slightly above that without assistance, indicating that assistance helps to reduce inequality as well as poverty. The same result is seen for 2007, but to a lesser extent. This is also seen in terms of scale: the Gini coefficient for expenditures per adult equivalent in 2017 without assistance was 0.402 and with assistance was 0.365. The same result is seen, to a lesser extent, in 2007: the Gini coefficient without assistance was 0.392 and with assistance was 0.374. The distributional effects of assistance in Gaza are examined at greater length in section B.

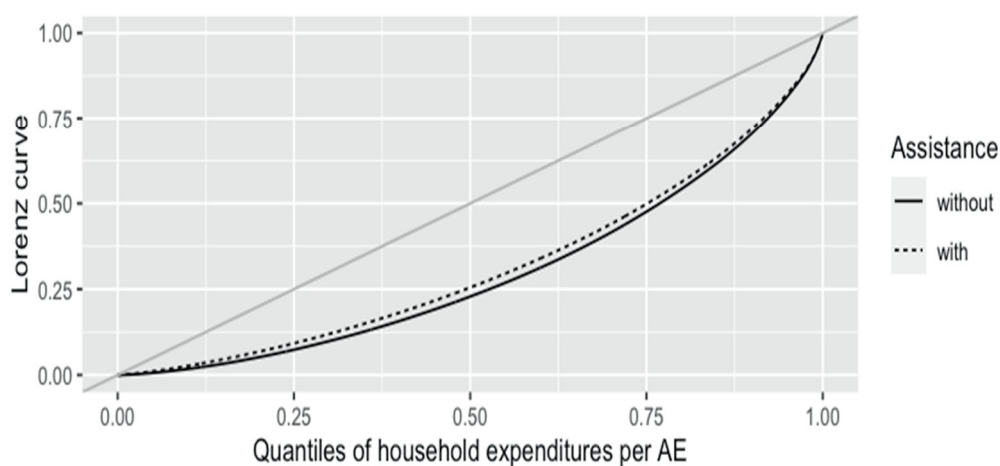
Figure 11

**Gaza: Lorenz curves with and without assistance, 2007 and 2017**

(a) 2007



(b) 2017



*Abbreviation:* AE, adult equivalent.

*Source:* UNCTAD calculations.

## 2. Empirical best prediction method

One limitation of the survey-based method is that it is based on relatively small samples. Recent developments in poverty mapping and small area estimation make it possible to improve this method by combining survey data with census data (Elbers, Lanjouw and Lanjouw, 2003; Molina, Rao and Datta, 2015). As is typical in other countries as well, Palestinian census data do not include information on household or individual consumption, expenditures or income. However, the Palestinian expenditures and consumption surveys and the censuses in 2007 and in 2017 compile data on a relatively broad set of common variables, including location, whether urban, rural or a refugee camp; characteristics of the household head, such as education level; demographic characteristics of the household; sector of employment; employment status; access to basic services, such as public water; characteristics of the household dwelling; and household assets.

To determine the headcount and depth of poverty, the EBP method follows three steps. First, data from the Palestinian expenditures and consumption surveys are used to estimate statistical

regression equations of household expenditures per adult equivalent and the observable characteristics of the household. Second, the estimated coefficients obtained from the regressions are combined with the census data (covering a greater number of households) to impute the household level of expenditures per adult equivalent. Third, the imputed measures of household expenditures are used to recalculate the poverty headcount and poverty gap measures for each year. For the statistical relationship linking household expenditures per adult equivalent to the household characteristics to be estimated, this information must be available in both the survey and census data that constitute the basis for the estimation.

#### **(a) Poverty headcount and poverty gap**

Tables 4 and 5 show the regression results of log total expenditures per adult equivalent with assistance and without assistance, respectively, on the set of standard covariates at the national level. A common set of covariates are maintained from the two surveys so as to maximize comparability between the synthetic income measures constructed using census data and the parameter estimates. There are two exceptions, namely, possession of a mobile telephone, which did not appear in the survey in 2007, and access to electricity, which was an issue in 2007 but was less of a concern in 2017 (although this item does not take into account whether electricity is actually available, which, more often than not, is not the case in Gaza). The relatively small sample sizes, in particular in Gaza, are noted and the regressions should not be interpreted in terms of causality.

Several interesting patterns emerge. First, whether in 2007 or 2017, the divergence between households in Gaza and the West Bank is substantial. The expenditures per adult equivalent of a household in Gaza were lower than those of a household in the West Bank by 44.1 and 43.2 per cent in 2007 and 2017, respectively. Second, the level of education of the household head remains an important determinant of expenditures. Third, the employment status of the household is paramount in terms of expenditures. Employment in Israel, for instance, was associated with expenditures per adult equivalent that were 21 per cent greater in 2007 and 16 per cent greater in 2017. The fact that employment in Israel and settlements is not available for the workforce of Gaza partly explains the welfare gap between Gaza and the West Bank. Fourth, the characteristics of the household dwelling, as well as the number of household assets, are significantly associated with expenditures per adult equivalent.

The goodness-of-fit measure is appropriate for cross-sectional data of this type, with an R-squared of 0.52 for 2007 and 0.55 for 2017, yet it could be improved with more fine-grained geographical information on the location of the sample households. Such data would improve the goodness-of-fit measure by including average values of certain covariates at the level of locality. Since the goal here is not to estimate poverty or inequality measures at disaggregated local levels for areas covered by the census but not by the Palestinian expenditures and consumption survey, it is possible to eschew complicated covariance structures (that is, household-specific and region-specific disturbances, which essentially corresponds to a random-effects model) and concentrate instead on generating bootstrapped synthetic measures of monthly household expenditures per adult equivalent for households in the census. These are generated by applying the coefficients estimated in the econometric model of expenditures in tables 4 and 5 to the values of the corresponding covariates available in the census sample, thereby combining the survey and census data in the EBP method. The final poverty measures are obtained by averaging the results from

multiple replications. This procedure is followed separately for 2007 and 2017. In interpreting the results based on the EBP method, the underlying statistical trade-offs should be kept in mind. On the one hand, poverty measures are estimated for all households included in the census sample, thereby boosting the sample size by more than one order of magnitude. On the other hand, this increase in sample size comes at the expense of using imputed measures of household expenditures rather than the actual measures available from the Palestinian expenditures and consumption surveys. The bootstrapping procedure is designed to mitigate any bias stemming from this imputation.

Table 4

**Regression results: Log real monthly expenditures per adult equivalent, with assistance**

<b>Independent variables from the Palestinian expenditures and consumption survey</b>	<b>2007</b>	<b>2017</b>
Intercept	5.254 (0.276) ***	5.722 (0.097) ***
<b>Location (West Bank and urban are the base categories)</b>		
Gaza	-0.441 (0.043) ***	-0.432 (0.026) ***
Rural	-0.059 (0.043)	-0.051 (0.019) **
Camp	-0.043 (0.051)	-0.015 (0.029)
<b>Characteristics of household head</b>		
Female head	-0.041 (0.063)	-0.015 (0.031)
Marital status of head	0.098 (0.131)	0.041 (0.058)
Educational level	0.099 (0.038) **	0.066 (0.019) ***
Refugee status of head	-0.067 (0.039)	-0.033 (0.019)
Insurance	0.039 (0.046)	0.013 (0.023)
<b>Demographic characteristics of household</b>		
Number of females	-0.070 (0.012) ***	-0.092 (0.008) ***
Number of males	-0.041 (0.014) **	-0.068 (0.008) ***
Number of adult females	0.016 (0.021)	-0.001 (0.012)
Number of adult males	-0.003 (0.015)	0.014 (0.009)
<b>Sector of employment (services is the base category)</b>		
Agriculture	-0.095 (0.058)	-0.069 (0.036)
Construction	-0.037 (0.053)	-0.025 (0.027)
Industry	-0.108 (0.056)	-0.027 (0.030)
<b>Employment status</b>		
Number of employed household members	0.081 (0.019) ***	0.052 (0.011) ***
Employment in Israel	0.213 (0.058) ***	0.163 (0.027) ***
Employment in national government	-0.006 (0.048)	0.106 (0.025) ***
<b>Access to basic services</b>		
Access to public water	-0.169 (0.058) **	-0.160 (0.027) ***
Access to electricity	-0.027 (0.161)	-
Connection to sewage network	0.129 (0.041) **	-0.028 (0.021)
<b>Characteristics of household dwelling</b>		
House ownership	-0.264 (0.049) ***	-0.052 (0.022) *
House is a villa	0.138 (0.160)	0.221 (0.104) *
Number of rooms	-0.030 (0.018)	-0.008 (0.009)
Number of rooms per adult	0.236 (0.047) ***	0.120 (0.019) ***
Main source of heating is diesel	-0.115 (0.095)	0.241 (0.179)
<b>Household assets</b>		
Car	0.246 (0.040) ***	0.380 (0.020) ***
Refrigerator	0.133 (0.083)	0.080 (0.052)
Boiler	0.093 (0.038) *	0.091 (0.017) ***
Central heating	0.300 (0.127) *	0.028 (0.081)
Vacuum	0.103 (0.043) *	0.080 (0.020) ***
Cooking stove	-0.061 (0.191)	0.026 (0.030)
Washing machine	0.034 (0.067)	-0.054 (0.017) **
Home library	0.171 (0.041) ***	0.087 (0.026) ***
Television	-0.001 (0.085)	0.168 (0.019) ***
Telephone line	0.173 (0.038) ***	0.066 (0.019) ***
Satellite dish	0.208 (0.044) ***	0.067 (0.026) *
Computer	0.164 (0.038) ***	0.073 (0.019) ***
Mobile telephone	-	0.220 (0.025) ***
<i>R-squared</i>	<i>0.522</i>	<i>0.552</i>
<i>Adjusted R-squared</i>	<i>0.506</i>	<i>0.547</i>
<i>Number of observations</i>	<i>1 223</i>	<i>3 720</i>
<i>Root mean square error</i>	<i>0.541</i>	<i>0.485</i>

Notes: Variables and units of measurement and summary statistics from the surveys and censuses are in annexes I and II. Expenditures are in constant 2015 dollars. Standard errors are in parentheses. \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

Source: UNCTAD calculations.

Table 5

**Regression results: Log real monthly expenditures per adult equivalent, without assistance**

Independent variables from Palestinian expenditures and consumption survey	2007	2017
Intercept	5.174 (0.320) ***	5.597 (0.109) ***
<b>Location (West Bank and urban are the base categories)</b>		
Gaza	-0.447 (0.050) ***	-0.504 (0.030) ***
Rural	-0.053 (0.050)	-0.067 (0.022) **
Camp	-0.056 (0.060)	-0.047 (0.032)
<b>Characteristics of household head</b>		
Female head	-0.024 (0.073)	-0.080 (0.035) *
Marital status of head	0.160 (0.152)	0.063 (0.066)
Educational level	0.113 (0.044) *	0.078 (0.021) ***
Refugee status of head	-0.065 (0.045)	-0.027 (0.022)
Insurance	0.022 (0.053)	-0.014 (0.025)
<b>Demographic characteristics of household</b>		
Number of females	-0.073 (0.014) ***	-0.091 (0.009) ***
Number of males	-0.044 (0.016) **	-0.077 (0.009) ***
Number of adult females	0.014 (0.024)	-0.011 (0.013)
Number of adult males	-0.017 (0.018)	0.004 (0.010)
<b>Sector of employment (services is the base category)</b>		
Agriculture	-0.085 (0.067)	-0.063 (0.040)
Construction	-0.018 (0.062)	-0.003 (0.030)
Industry	-0.152 (0.065) *	-0.015 (0.034)
<b>Employment status</b>		
Number of employed household members	0.099 (0.022) ***	0.085 (0.013) ***
Employment in Israel	0.219 (0.067) **	0.174 (0.031) ***
Employment in national government	0.028 (0.056)	0.159 (0.029) ***
<b>Access to basic services</b>		
Access to public water	-0.163 (0.068) *	-0.182 (0.030) ***
Access to electricity	-0.077 (0.187)	-
Connection to sewage network	0.138 (0.047) **	-0.030 (0.023)
<b>Characteristics of household dwelling</b>		
House ownership	-0.308 (0.057) ***	-0.054 (0.025) *
House is a villa	0.150 (0.186)	0.206 (0.117)
Number of rooms	-0.012 (0.021)	-0.005 (0.011)
Number of rooms per adult	0.168 (0.054) **	0.128 (0.022) ***
Main source of heating is diesel	-0.060 (0.110)	0.235 (0.201)
<b>Household assets</b>		
Car	0.266 (0.046) ***	0.382 (0.022) ***
Refrigerator	0.107 (0.096)	0.107 (0.058)
Boiler	0.094 (0.045) *	0.092 (0.020) ***
Central heating	0.307 (0.147) *	0.026 (0.091)
Vacuum	0.145 (0.050) **	0.086 (0.022) ***
Cooking stove	0.066 (0.222)	0.018 (0.034)
Washing machine	0.001 (0.078)	-0.066 (0.019) ***
Home library	0.167 (0.047) ***	0.086 (0.029) **
Television	-0.026 (0.098)	0.190 (0.021) ***
Telephone line	0.210 (0.044) ***	0.074 (0.021) ***
Satellite dish	0.217 (0.051) ***	0.085 (0.029) **
Computer	0.140 (0.044) **	0.080 (0.021) ***
Mobile telephone	-	0.260 (0.028) ***
<i>R-squared</i>	<b>0.464</b>	<b>0.549</b>
<i>Adjusted R-squared</i>	<b>0.447</b>	<b>0.544</b>
<i>Number of observations</i>	<b>1 223</b>	<b>3 720</b>
<i>Root mean square error</i>	<b>0.627</b>	<b>0.544</b>

Notes: Variables and units of measurement and summary statistics from the surveys and censuses are in annexes I and II. Expenditures are in constant 2015 dollars. Standard errors are in parentheses. \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

Source: UNCTAD calculations.



The EBP method measure of the poverty headcount in 2007, including assistance, is 40 per cent, lower than the survey-based method estimate of 46 per cent (see table 6). This rises to 56.19 per cent in 2017, again lower than the survey-based method estimate of 64.47 per cent, but still demonstrating a significant increase over the 10-year period. Concomitantly, the EBP method measure of the poverty gap in Gaza increases from 13.95 per cent in 2007 to 19.87 per cent in 2017. The magnitudes are again lower than those obtained using the survey-based method, but still great. When assistance is excluded, the poverty measures are greater: the EBP method measure of the poverty headcount increases from 44.45 per cent in 2007 to 63.66 per cent in 2017 and the poverty gap increases from 17.36 per cent in 2007 to 26.06 per cent in 2017.

Table 6

**Gaza: Poverty headcount and poverty gap, with and without assistance**

	Poverty headcount		Poverty gap	
	Survey-based method	EBP method	Survey-based method	EBP method
<b>With assistance</b>				
<b>2007</b>	0.4617	0.4007	0.1588	0.1395
<b>2017</b>	0.6447	0.5619	0.2574	0.1987
<b>Without assistance</b>				
<b>2007</b>	0.4974	0.4445	0.1865	0.1736
<b>2017</b>	0.6675	0.6366	0.3097	0.2606

Source: UNCTAD calculations.

**(b) Increase in minimum cost of eliminating poverty: Poverty cost of closure and restrictions and recurrent hostilities**

Based on these estimations, a lower bound on the cost of raising all households to the poverty line can be estimated as follows:

$$\text{Minimum cost of eliminating poverty} = \text{poverty gap} \times \text{poverty line} \times 12 \\ \text{months} \times \text{number of adult equivalents per household} \times \text{number of households}$$

The fourth element on the right-hand side of this relationship stems from the fact that the poverty gap measure is expressed per adult equivalent and must therefore be scaled up by the number of adult equivalents in the household. Using the poverty gap estimated by the EBP method, the minimum real costs of eliminating poverty in constant 2015 dollars in Gaza are as follows:

- 2007 cost =  $0.1395 \times \$123.7 \times 12 \times 4.49 \times 224\,848 = \$209$  million
- 2017 cost =  $0.1987 \times \$255.2 \times 12 \times 3.97 \times 347\,035 = \$838$  million

The total minimum annual cost of eliminating poverty thus quadrupled, from \$209 million in 2007 to \$838 million in 2017, equivalent to 8.7 and 28.7 per cent of the GDP of Gaza in 2007 and 2017, respectively. The difference between the minimum costs in 2007 and 2017, at \$629 million, provides a measure of the cost of the closure and restrictions in terms of poverty. This difference amounts to 22.3 per cent of the GDP of Gaza or 4 per cent of the GDP of the Occupied Palestinian

Territory in 2017. This indicates the enormity of the cost of reversing the impact of the closure and restrictions and recurrent hostilities on the welfare of households in Gaza.

This section contains estimates of the level and depth of poverty in Gaza using data gleaned from two household surveys and two censuses. Both the definition of the poverty line and the empirical methodologies brought to bear on the problem are standard in the academic literature on poverty. The results highlight the prevalence and depth of poverty in Gaza. Moreover, the worsening of poverty over time corresponds with the period of closure and restrictions.

The increasing burden of poverty in Gaza requires an urgent, immediate response by the international community. On the one hand, economic growth should be restored and Gaza should be free to utilize its full economic potential. On the other hand, redistributive policies should be put into place in order to protect the most vulnerable members of the population. The next section contains a more detailed quantitative examination of such policies.

## **B. Allocation of assistance**

With regard to the poverty headcount and poverty gap, the differences between these two measures based on expenditures with and without assistance, means that an explanation is required of how the latter is allocated. This section reflects on cash and in-kind assistance provided to households in the Occupied Palestinian Territory. The methodology involves estimating the statistical relationship between assistance and the household expenditures category, while controlling for a number of key household characteristics. As such, semiparametric estimation methods are used to allow the relationship between assistance (in terms of both level of assistance and as a fraction of pre-assistance household expenditures) and pre-assistance household expenditures to vary freely. This is in contrast to a linear regression in which the marginal impact of pre-assistance household expenditures on the level or share of assistance is constrained to be equal to a constant that is the same for all households. A priori, a progressive structure in which assistance, as a fraction of pre-assistance household expenditures, falls as pre-assistance expenditures rise, should be the norm.

Figure 12 shows the semiparametric estimate, using the national sample and based on a specification in which the parametric terms are the same as those used in the models drawn using the EBP method (table 6), of the relationship between assistance and household expenditures per adult equivalent. The parametric portion of the estimation is shown in table 7. Somewhat surprisingly, given that the poverty headcount and the poverty gap are significantly lower in the West Bank than in Gaza (the corresponding numbers for the West Bank are a poverty headcount of 13.6 per cent and a poverty gap of 3.4 per cent), there is no difference, *ceteris paribus*, in the amount of assistance received by households in Gaza compared with households in the West Bank. The marginal effect of pre-assistance household expenditures per adult equivalent on assistance per adult equivalent (indicated by the negative slope) is strongly negative to the left of the poverty line, indicated by the vertical line in figure 12. Shortly thereafter it begins to flatten out and then, paradoxically (once a level of roughly \$1,500 has been reached), it begins to increase.

Table 7

**Parametric portion of semiparametric estimate of the determinants of assistance per adult equivalent and assistance as a fraction of total expenditures per adult equivalent**

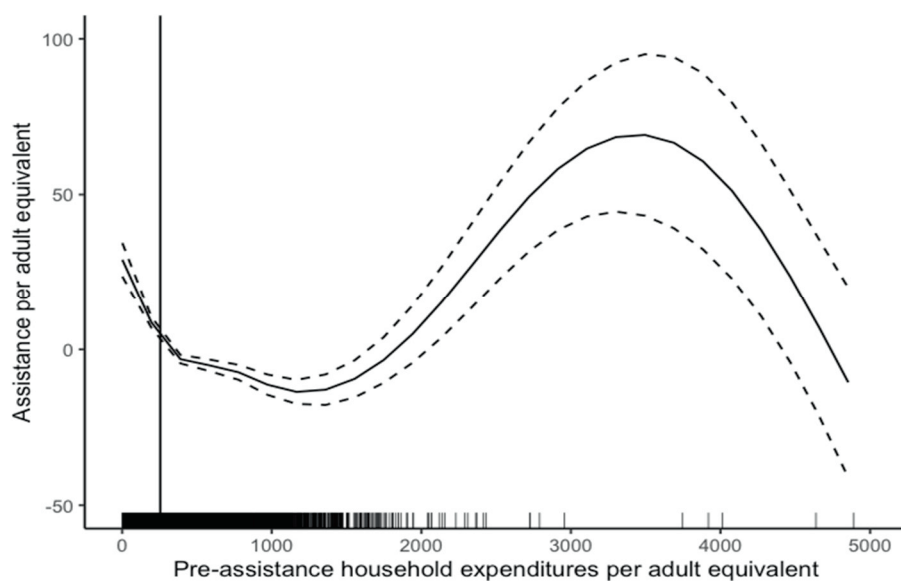
<b>Dependent variable</b>	<b>Assistance per adult equivalent</b>	<b>Assistance as a fraction of total expenditures per adult equivalent</b>
<b>Independent variables from the Palestinian expenditures and consumption survey 2017</b>		
Intercept	8.923 (6.428)	-0.024 (0.107)
<b>Location (West Bank and urban are the base categories)</b>		
Gaza	-0.826 (1.849)	-0.133 (0.031) ***
Rural	-0.619 (1.293)	0.001 (0.022)
Camp	5.770 (1.900) **	0.021 (0.032)
<b>Characteristics of household head</b>		
Female head	17.166 (2.087) ***	0.119 (0.035) ***
Marital status of head	0.331 (3.876)	0.004 (0.065)
Educational level	-0.676 (1.242)	-0.001 (0.021)
Refugee status of head	-1.713 (1.280)	-0.018 (0.021)
Insurance	6.375 (1.497) ***	0.036 (0.025)
<b>Demographic characteristics of household</b>		
Number of females	-2.299 (0.528) ***	-0.013 (0.009)
Number of males	-0.497 (0.527)	0.024 (0.009) **
Number of adult females	1.371 (0.769) *	0.019 (0.013)
Number of adult males	1.250 (0.595)	0.012 (0.010)
<b>Sector of employment (services is the base category)</b>		
Agriculture	0.364 (2.361)	-0.034 (0.039)
Construction	-4.302 (1.760) *	-0.045 (0.029)
Industry	-2.720 (2.021)	-0.026 (0.034)
<b>Employment status</b>		
Number of employed household members	-3.944 (0.746) ***	-0.039 (0.012) **
Employment in Israel	-0.244 (1.829)	0.021 (0.030)
Employment in national government	-5.314 (1.698) **	-0.009 (0.028)
<b>Access to basic services</b>		
Access to public water	0.531 (1.765)	0.013 (0.029)
Connection to sewage network	-1.087 (1.372)	0.001 (0.023)
<b>Characteristics of household dwelling</b>		
House ownership	0.351 (1.491)	-0.028 (0.025)
House is a villa	1.438 (7.029)	0.017 (0.117)
Number of rooms	-0.721 (0.629)	-0.007 (0.010)
Number of rooms per adult	2.004 (1.305)	0.034 (0.022)
Main source of heating is diesel	-1.282 (11.903)	0.044 (0.198)
<b>Household assets</b>		
Car	4.176 (1.390) **	0.026 (0.023)
Refrigerator	-2.314 (3.423)	0.047 (0.057)
Boiler	-1.175 (1.164)	0.031 (0.019)
Central heating	-5.256 (5.415)	-0.035 (0.090)
Vacuum	-1.660 (1.315)	-0.016 (0.022)
Cooking stove	1.542 (2.010)	0.024 (0.033)
Washing machine	2.156 (1.152)	0.015 (0.019)
Home library	0.339 (1.733)	0.020 (0.029)
Television	0.188 (1.271)	0.013 (0.021)
Telephone line	0.531 (1.263)	0.018 (0.021)
Satellite dish	3.796 (1.716) *	-0.053 (0.029)
Computer	2.638 (1.271) *	0.001 (0.021)
Mobile telephone	0.696 (1.674)	0.029 (0.028)
<i>Akaike information criterion</i>	<i>36 411.3</i>	<i>5 943.20</i>
<i>Deviance explained</i>	<i>0.159</i>	<i>0.160</i>
<i>Dispersion</i>	<i>1 029.5</i>	<i>0.285</i>
<i>R-squared</i>	<i>0.148</i>	<i>0.149</i>
<i>Generalized cross validation score</i>	<i>1 042.874</i>	<i>0.289</i>

Notes: Variables and units of measurement and summary statistics from the surveys and censuses are in annexes I and II. Expenditures are in constant 2015 dollars. Standard errors are in parentheses. \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001.

Source: UNCTAD calculations.

Figure 12

**Semiparametric estimate of the effect of pre-assistance expenditures per adult equivalent on assistance per adult equivalent**  
(Constant 2015 dollars)

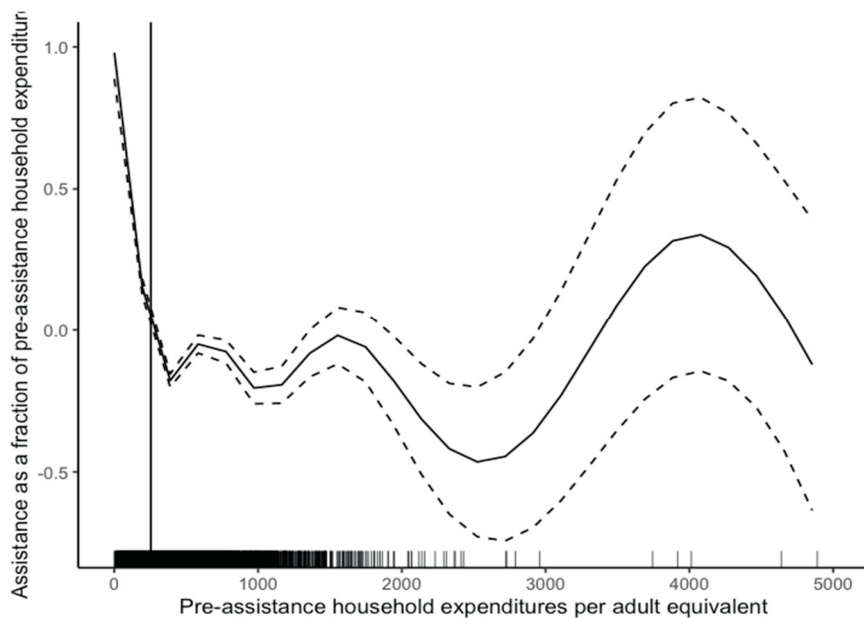


*Note:* Dotted lines correspond to the 95 per cent confidence interval.

*Source:* UNCTAD calculations.

Figure 13

**Semiparametric estimate of the effect of pre-assistance expenditures per adult equivalent on assistance as a fraction of pre-assistance expenditures**  
(Constant 2015 dollars)



*Note:* Dotted lines correspond to the 95 per cent confidence interval.

*Source:* UNCTAD calculations.

This puzzling pattern of assistance allocation acquires a clearer focus when the left-hand side variable is replaced with assistance as a fraction of pre-assistance expenditures per adult equivalent. The parametric portion of the corresponding estimates indicates that, *ceteris paribus*, households in Gaza receive in the form of assistance 13 per cent less of their pre-assistance expenditures than do households in the West Bank.

The at times regressive nature of the allocation of assistance is shown in figure 13. Reading from left to right, it is apparent that once the poverty line is crossed, there are a significant number of households for which the allocation of assistance appears to be regressive, that is, as household expenditures without assistance increase, the share of assistance received as a fraction of pre-assistance expenditures actually increases. This association is seen again at even higher levels of expenditures per adult equivalent, even though the 95 per cent confidence intervals begin to widen as the data become more sparse for the upper levels of expenditure distribution.

The results indicate that a significant number of households in the middle portion of the expenditure distribution benefit from assistance, yet better targeting of assistance to households below the poverty line could reduce the level and depth of poverty. Further studies are therefore needed to shed light on the mechanisms by which assistance is currently allocated.

### **C. Impact of the economic costs of the closure and restrictions and recurrent hostilities on poverty in Gaza**

In chapter III, two counterfactual growth paths for the economy of Gaza are considered. In this section, these scenarios are applied using household level data to ascertain their implications for poverty for Gaza. The tool used is the growth incidence curve (GIC), first introduced by Ravallion and Chen (2003).

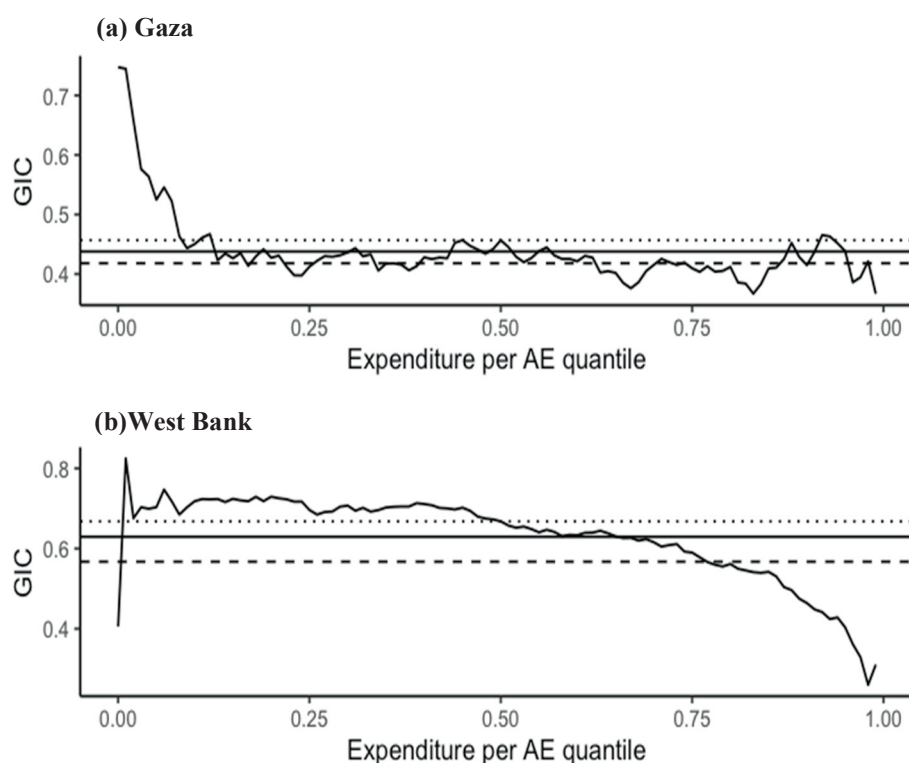
The use of the GIC methodology is a particularly transparent way to understand changes in the distribution of household expenditures over time. While the mean growth rate of household expenditures over a given period of time is a useful datum, it does not shed light on how different categories of households have benefited or whether they have not benefited from increases in average expenditures. For example, given two categories of households, below and above the poverty line, if growth is pro-poor, a given mean increase in household expenditures per adult equivalent should benefit the poor households more than the non-poor households and the opposite should occur if the growth is not pro-poor. GIC plots this relationship for each quantile of distribution; the horizontal axis shows each quantile of distribution and the vertical axis shows the percentage change in the total household expenditures of each quantile in the period under consideration.

GICs for the period 2007–2017, estimated separately for Gaza and the West Bank, are shown in figure 14, in which the solid horizontal line represents the mean growth rate of household expenditures per adult equivalent. Any quantile of the population that benefited more than the mean is on a GIC portion that lies above this horizontal line and any quantile that benefited less is on a portion that lies below this line. Pro-poor growth corresponds to a GIC portion that lies above the mean growth rate for lower quantiles of the expenditure distribution and above for higher quantiles, resulting in a downward-sloping GIC. In both Gaza and the West Bank, growth has been largely pro-poor, as indicated by the downward-sloping GIC; more so in the West Bank than in

Gaza. On the other hand, the poorest of the poor, that is, those in the far left-hand portion of the curve, appear to have benefited significantly more than the rest of the population of Gaza, although the average levels of growth are significantly lower than those in the West Bank.

Figure 14

**Gaza and the West Bank: Growth incidence curves, 2007–2017**



*Abbreviations:* AE, adult equivalent; GIC, growth incidence curve.

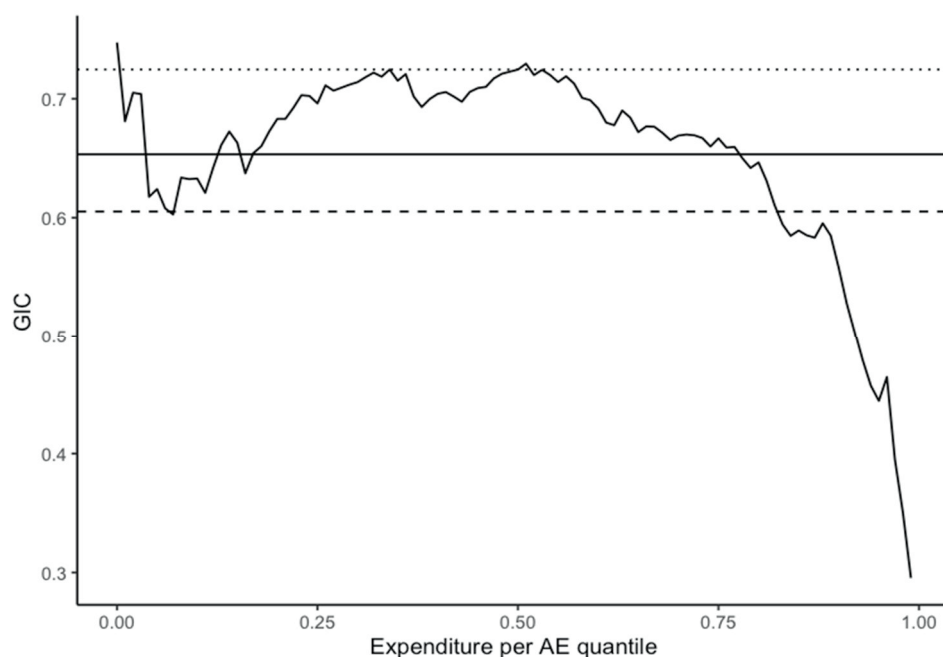
*Note:* The solid horizontal line in the upper part shows the mean growth rate, the dotted line shows the growth at the mean and the dashed line shows growth at the median.

*Source:* UNCTAD calculations.

The counterfactual scenarios detailed in chapter III imply a level of GDP per capita under scenario 1 that would have been 37.4 per cent higher than the actual level in 2017 and under scenario 2, 86.1 per cent higher. In this section, it is assumed that the average level of expenditures per adult equivalent would have followed the increases in GDP per capita under the two scenarios, but that these increases would have been distributed to different households proportionally in accordance with their relative position along the national GIC (figure 15). For example, according to the national GIC, a household in the twenty-fourth percentile of distribution would have seen its expenditures per adult equivalent increase by 70.24 per cent between 2007 and 2017. Since the mean increase of household expenditures per adult equivalent was equal to 65.33 per cent, this household is assigned an increase in expenditures per adult equivalent of  $((70.24 \div 65.33) \times 37.4$  per cent) under scenario 1 and of  $((70.24 \div 65.33) \times 86.1$  per cent) under scenario 2. Regional GIC coefficients stemming from the two GICs in figure 14 can also be applied, but this does not appreciably change the results. Once the counterfactual values of household expenditures per adult equivalent are constructed, the survey-based and EBP methods are applied, while the poverty line is maintained at its actual monthly level in 2017 of \$255 per adult equivalent (constant 2015 dollars).



Figure 15  
Occupied Palestinian Territory: Growth incidence curve, 2007–2017



Abbreviations: AE, adult equivalent; GIC, growth incidence curve.

Note: The solid horizontal line in the upper part shows the mean growth rate, the dotted line shows the growth at the mean and the dashed line shows growth at the median.

Source: UNCTAD calculations.

Table 8  
Gaza: Poverty headcount and poverty gap measures under scenarios 1 and 2

	Poverty headcount		Poverty gap	
	Survey-based method	EBP method	Survey-based method	EBP method
<b>2017, actual*</b>	0.6447	0.5619	0.2574	0.1987
<b>Scenario 1</b>	0.4021	0.3512	0.1391	0.1188
<b>Scenario 2</b>	0.1680	0.1499	0.0365	0.0426

\* From table 6.

Source: UNCTAD calculations.

The results shown in table 8 represent another way of characterizing the costs of occupation from a microeconomic perspective. Without the closure and restrictions and military operations, under scenario 1, the poverty rate (using the EBP method) would have fallen from 56.19 to 35.12 per cent and would have fallen even further, to 14.99 per cent, under scenario 2. In addition, the poverty gap would have decreased from 19.87 to 11.88 per cent under scenario 1 and would have fallen further to 4.26 per cent under scenario 2. Given that the minimum total annual cost of eliminating poverty is directly proportional to the poverty gap, these results indicate that under scenario 1, the cost would have been half, whereas under scenario 2, it would have been only one fifth.

## **V. Conclusion and recommendations**

### **A. Concluding remarks**

The 2 million Palestinians in Gaza have been under a complete land, sea and air closure and restrictions since June 2007 and, after December 2008, endured three major rounds of hostilities in the span of six years.

This study attempts to quantify the economic costs of occupation related to the closure and restrictions and the military operations in the period 2007–2018. From a macroeconomic perspective, the foregone economic growth could have resulted in GDP per capita of between 50 and 100 per cent greater than the current level. It is estimated that the cumulative loss of potential GDP, or part of the economic costs of occupation, in the period 2007–2018 is \$16.7 billion (real 2015 dollars), equivalent to six times the GDP of Gaza or 107 per cent of the GDP of the Occupied Palestinian Territory in 2018. Total GDP in this period could have increased by nearly 40 per cent. This could have reduced the poverty rate in 2017 from 56 to 15 per cent and contracted the poverty gap from 20 to 4 per cent.

It should be emphasized that these estimates are conservative and partial because they account only for the costs of the period of closure and restrictions and the recurrent hostilities in Gaza and do not include the total costs of the occupation for the Palestinian people in Gaza. The estimates also do not include costs in the billions of dollars, borne by the Palestinian people and the international community, resulting from the destruction of infrastructure, residential units and commercial structures that occurred during the recurrent hostilities and from reconstruction.

From a microeconomic perspective, poverty rates rose from 40 per cent in 2007 to 56 per cent in 2017 and the poverty gap increased from 14 to 20 per cent. As such, the minimum annual cost of raising the entire population just to the poverty line quadrupled, from \$209 million in 2007 to \$838 million in 2017, about 29 per cent of the GDP of Gaza or 5.4 per cent of the GDP of the Occupied Palestinian Territory in 2017.

It should be noted that the \$629 million increase in the cost of raising the population of Gaza to the poverty line in 2017, above its cost in 2007, is part of the costs borne by the Palestinian people owing to the closure and restrictions and recurrent hostilities. Furthermore, this cost is annual, borne by the Palestinian people every year as long as the closure and restrictions are in place and the reconstruction of infrastructure, private and public structures and productive capacities is not completed in order to bring Gaza back to at least where it was before the closure and restrictions were put in place and before the recurrent hostilities.

### **B. Recommendations**

The increasing burden of poverty in Gaza requires an immediate response to restore economic growth, free the economic trajectory from the closure and restrictions and attendant destruction and pave the way for genuine reconstruction to restore sustainable growth. The occupying Power, Palestinian policymakers, the international community and development agencies may wish to consider the following:

- Ending the closure and restrictions in Gaza, in the context of Security Council resolution 1860, to allow the regional economy of Gaza to trade freely with the rest of the Occupied

Palestinian Territory in the West Bank and East Jerusalem, as well as with Arab and global markets, and to restore the right to freedom of movement for medical care, education, recreation, family life and business.

- Prioritizing the reconstruction in Gaza of infrastructure, private and public structures and productive capacities, including the construction and operation of a seaport and airport. Priority should also be given to a comprehensive investment programme to rehabilitate the productive sectors, with an emphasis on reintegrating the economy with those of the West Bank, East Jerusalem and the rest of the world.
- Overcoming the electricity crisis by rehabilitating and upgrading the power plant in Gaza and securing funds for importing spare parts and fuel and for importing electricity to cover the rising demand.
- Accelerating the construction of a water desalination plant to secure the water supply for the population of Gaza.
- Enabling the State of Palestine to develop the natural gas fields discovered in the 1990s in the Mediterranean Sea off the shore of Gaza.

The high ratio of dependency in Gaza means that if one worker is unemployed, this impacts many others. Combating poverty therefore requires the implementation of pro-poor growth strategies featuring large-scale investment in employment-intensive sectors, as well as better targeting of assistance to ensure greater benefits for vulnerable households.

Finally, given the increasing divergence in terms of living conditions between Gaza and the West Bank, reunification and reintegration of the two areas is of paramount importance at all levels, including administrative, fiscal, political and economic. The international community can play a key role in this process by providing sustained political and financial support for the reunification to proceed in ways that help the State of Palestine cope with the fiscal and political implications of bringing the two areas under a unified governance framework.

## Annex 1

### Variables: Definition and measurement

The following table shows all of the variables used in the regressions presented in tables 4, 5 and 7.

Table 1.1

### Variables: Definition and measurement

Variable	Description
Adult equivalent	Organization for Economic Cooperation and Development and World Bank definition of adult equivalent using the equation: $(1 + (\text{number of adults} - 1) * 0.8 + (\text{number of children} * 0.5))$
Total monthly expenditures per adult equivalent	Total household expenditures with assistance (constant 2015 dollars) divided by adult equivalent of household
Assistance	All government and non-government cash and in-kind assistance (constant 2015 dollars)
Total monthly expenditures without assistance per adult equivalent	Total household expenditures without assistance (constant 2015 dollars) divided by adult equivalent of household
Gender of household head	Dummy variable that takes the value of 1 if female and 0 if male
Marital status of household head	Dummy variable that takes the value of 1 if ever married and 0 otherwise
Educational level of household head	Dummy variable that takes the value of 1 if attainment is secondary education or above and 0 if the attainment is below secondary education
Refugee status of household head	Dummy variable that takes the value of 1 if registered or unregistered refugees and 0 if they are not refugees
Health insurance	Dummy variable that takes the value of 1 if covered by a health insurance scheme and 0 if not covered by a health insurance scheme
Number of females	Number of females in household
Number of males	Number of males in household
Number of adult males	Number of males above 15 years old
Number of adult females	Number of females above 15 years old
Agriculture	Dummy variable that takes the value of 1 if head of household works in the agriculture and fishing sectors and 0 if not
Construction	Dummy variable that takes the value of 1 if head of household works in the construction sector and 0 if not
Industry	Dummy variable that takes the value of 1 if head of household works in the mining, manufacturing, electricity and water sectors and 0 if not
Services	Dummy variable that takes the value of 1 if head of household works in the services sectors and 0 if not
Number of employed household members	Number of employed members of household
Employment in Israel	Dummy variable that takes the value of 1 if head of household is employed in Israel or the settlements and 0 if not
Employment in national government	Dummy variable that takes the value of 1 if head of household is employed in the national government and 0 if not
Access to public water	Dummy variable that takes the value of 1 if household is connected to the public water network and 0 if not
Access to electricity	Dummy variable that takes the value of 1 if household is connected to the electricity network and 0 if not
Connections to sewage network	Dummy variable that takes the value of 1 if household is connected to the public sewage network and 0 if not

Variable	Description
House ownership	Dummy variable that takes the value of 1 if household owns the dwelling they live in and 0 if not
House is a villa	Dummy variable that takes the value of 1 if household dwelling is a villa and 0 if not
Number of rooms	Number of rooms in household dwelling
Number of rooms per adult	Number of rooms in household dwelling divided by adult equivalent of household
Main source of heating is diesel	Dummy variable that takes the value of 1 if main source of heating is diesel and 0 otherwise
Car	Dummy variable that takes the value of 1 if household owns a private car and 0 if not
Refrigerator	Dummy variable that takes the value of 1 if a refrigerator is available in household dwelling and 0 if not
Boiler	Dummy variable that takes the value of 1 if a boiler is available in household dwelling and 0 if not
Central heating	Dummy variable that takes the value of 1 if central heating is available in household dwelling and 0 if not
Vacuum	Dummy variable that takes the value of 1 if a vacuum is available in household dwelling and 0 if not
Cooking stove	Dummy variable that takes the value of 1 if a cooking stove is available in household dwelling and 0 if not
Washing machine	Dummy variable that takes the value of 1 if a washing machine is available in household dwelling and 0 if not
Home library	Dummy variable that takes the value of 1 if a home library is available in household dwelling and 0 if not
Television	Dummy variable that takes the value of 1 if a television is available in household dwelling and 0 if not
Telephone line	Dummy variable that takes the value of 1 if a telephone line is available in household dwelling and 0 if not
Satellite dish	Dummy variable that takes the value of 1 if a satellite dish is available in household dwelling and 0 if not
Computer	Dummy variable that takes the value of 1 if a computer is available in household dwelling and 0 if not
Mobile telephone	Dummy variable that takes the value of 1 if a mobile telephone is available in household dwelling and 0 if not

*Source:* Palestinian expenditures and consumption surveys and censuses, 2007 and 2017.

## Annex 2

### Summary statistics from Palestinian expenditures and consumption surveys and censuses, 2007 and 2017

The following tables show the summary statistics of data used in the regressions presented in tables 4, 5 and 7.

Table 2.1

#### Summary statistics: Palestinian expenditures and consumption survey, 2007

Variable	Mean	Standard deviation	Minimum	Percentile (25)	Median	Percentile (75)	Maximum
Expenditures per adult equivalent, with assistance	283.7	275.5	7.4	127.2	206.1	339.5	4 473.6
Expenditures per adult equivalent, without assistance	276.1	275.1	0.33	118.4	201.9	332.0	4 473.6
West Bank	0.679	0.467	0	0	1	1	1
Urban	0.551	0.498	0	0	1	1	1
Gaza	0.321	0.467	0	0	0	1	1
Urban	0.551	0.498	0	0	1	1	1
Rural	0.289	0.453	0	0	0	1	1
Camp	0.160	0.367	0	0	0	0	1
Gender of head	0.087	0.281	0	0	0	0	1
Marital status of head	0.984	0.124	0	1	1	1	1
Educational level	0.315	0.465	0	0	0	1	1
Refugee status of head	0.424	0.494	0	0	0	1	1
Insurance	0.841	0.366	0	1	1	1	1
Number of females	3.175	1.780	0	2	3	4	12
Number of males	3.226	1.806	0	2	3	4	10
Number of adult females	0.664	0.893	0	0	0	1	5
Number of adult males	3.002	1.580	1	2	2	4	9
Agriculture	0.107	0.309	0	0	0	0	1
Construction	0.140	0.347	0	0	0	0	1
Industry	0.097	0.296	0	0	0	0	1
Number of employed household members	1.312	1.061	0	1	1	2	8
Employment in Israel	0.100	0.300	0	0	0	0	1
Employment in national government	0.158	0.365	0	0	0	0	1
Access to public water	0.895	0.306	0	1	1	1	1
Access to electricity	0.989	0.106	0	1	1	1	1
Connection to sewage network	0.493	0.500	0	0	0	1	1
House ownership	0.874	0.332	0	1	1	1	1
House is a villa	0.010	0.099	0	0	0	0	1
Number of rooms	3.983	1.437	1	3	4	5	15
Number of rooms per adult	1.035	0.617	0.187	0.667	0.909	1.190	6.00
Main source of heating is diesel	0.029	0.169	0	0	0	0	1
Car	0.251	0.434	0	0	0	1	1
Refrigerator	0.955	0.207	0	1	1	1	1
Boiler	0.725	0.447	0	0	1	1	1
Central heating	0.016	0.127	0	0	0	0	1
Vacuum	0.289	0.453	0	0	0	1	1
Cooking stove	0.993	0.086	0	1	1	1	1
Washing machine	0.927	0.260	0	1	1	1	1
Home library	0.267	0.442	0	0	0	1	1
Television	0.957	0.204	0	1	1	1	1
Telephone line	0.430	0.495	0	0	0	1	1
Satellite dish	0.787	0.409	0	1	1	1	1
Computer	0.360	0.480	0	0	0	1	1
<b>Number of observations</b>	<b>1 223 households</b>						

Source: Palestinian expenditures and consumption survey, 2007.



Table 2.2  
Summary statistics: Census, 2007

Variable	Mean	Standard deviation	Minimum	Percentile (25)	Median	Percentile (75)	Maximum
West Bank	0.654	0.476	0	0	1	1	1
Urban	0.735	0.441	0	0	1	1	1
Gaza	0.346	0.476	0	0	0	1	1
Rural	0.175	0.380	0	0	0	0	1
Camp	0.089	0.285	0	0	0	0	1
Gender of head	0.092	0.289	0	0	0	0	1
Marital status of head	0.975	0.157	0	1	1	1	1
Educational level	0.370	0.483	0	0	0	1	1
Refugee status of head	0.416	0.493	0	0	0	1	1
Insurance	0.774	0.418	0	1	1	1	1
Number of females	2.884	1.715	0	2	3	4	20
Number of males	2.960	1.780	0	2	3	4	27
Number of adult females	0.608	0.840	0	0	0	1	7
Number of adult males	2.732	1.533	0	2	2	4	16
Agriculture	0.050	0.217	0	0	0	0	1
Construction	0.146	0.354	0	0	0	0	1
Industry	0.087	0.281	0	0	0	0	1
Number of employed household members	0.970	0.867	0	0	1	1	11
Employment in Israel	0.107	0.309	0	0	0	0	1
Employment in national government	0.173	0.378	0	0	0	0	1
Access to public water	0.806	0.395	0	1	1	1	1
Access to electricity	0.925	0.264	0	1	1	1	1
Connection to sewage network	0.461	0.498	0	0	0	1	1
House ownership	0.765	0.424	0	1	1	1	1
House is a villa	0.016	0.124	0	0	0	0	1
Number of rooms	3.558	1.327	1	3	3	4	24
Number of rooms per adult	1.029	0.632	0.070	0.632	0.882	1.212	12.778
Main source of heating is diesel	0.004	0.061	0	0	0	0	1
Car	0.176	0.381	0	0	0	0	1
Refrigerator	0.867	0.339	0	1	1	1	1
Boiler	0.629	0.483	0	0	1	1	1
Central heating	0.027	0.163	0	0	0	0	1
Vacuum	0.266	0.442	0	0	0	1	1
Cooking stove	0.922	0.268	0	1	1	1	1
Washing machine	0.855	0.352	0	1	1	1	1
Home library	0.187	0.390	0	0	0	0	1
Television	0.879	0.326	0	1	1	1	1
Telephone line	0.401	0.490	0	0	0	1	1
Satellite dish	0.765	0.424	0	1	1	1	1
Computer	0.364	0.481	0	0	0	1	1
<b>Number of observations</b>	<b>123 187 households</b>						

Source: Palestinian census, 2007.

Table 2.3

**Summary statistics: Palestinian expenditures and consumption survey, 2017**

<b>Variable</b>	<b>Mean</b>	<b>Standard deviation</b>	<b>Minimum</b>	<b>Percentile (25)</b>	<b>Median</b>	<b>Percentile (75)</b>	<b>Maximum</b>
Expenditures per adult equivalent, with assistance	519.7	516.1	15.6	255.1	425.3	661.3	19 219.3
Expenditures per adult equivalent, without assistance	509.6	518.2	1.1	244.8	413.8	656.3	19 219.3
West Bank	0.776	0.417	0	1	1	1	1
Urban	0.567	0.496	0	0	1	1	1
Gaza	0.224	0.417	0	0	0	0	1
Rural	0.318	0.466	0	0	0	1	1
Camp	0.115	0.318	0	0	0	0	1
Gender of head	0.105	0.306	0	0	0	0	1
Marital status of head	0.979	0.143	0	1	1	1	1
Educational level	0.659	0.474	0	0	1	1	1
Refugee status of head	0.417	0.493	0	0	0	1	1
Insurance	0.813	0.390	0	1	1	1	1
Number of females	2.678	1.488	0	2	2	4	9
Number of males	2.728	1.598	0	2	3	4	13
Number of adult females	0.548	0.815	0	0	0	1	5
Number of adult males	2.833	1.411	1	2	2	4	10
Agriculture	0.062	0.242	0	0	0	0	1
Construction	0.173	0.378	0	0	0	0	1
Industry	0.089	0.285	0	0	0	0	1
Number of employed household members	1.339	0.985	0	1	1	2	8
Employment in Israel	0.139	0.346	0	0	0	0	1
Employment in national government	0.157	0.364	0	0	0	0	1
Access to public water	0.892	0.311	0	1	1	1	1
Connection to sewage network	0.425	0.494	0	0	0	1	1
House ownership	0.832	0.374	0	1	1	1	1
House is a villa	0.006	0.078	0	0	0	0	1
Number of rooms	4.987	1.346	1	4	5	6	14
Number of rooms per adult	1.499	0.816	0.154	1.000	1.304	1.765	8.000
Main source of heating is diesel	0.002	0.046	0	0	0	0	1
Car	0.294	0.456	0	0	0	1	1
Refrigerator	0.973	0.162	0	1	1	1	1
Boiler	0.519	0.500	0	0	1	1	1
Central heating	0.011	0.104	0	0	0	0	1
Vacuum	0.401	0.490	0	0	0	1	1
Cooking stove	0.920	0.271	0	1	1	1	1
Washing machine	0.511	0.500	0	0	1	1	1
Home library	0.124	0.330	0	0	0	0	1
Television	0.562	0.496	0	0	1	1	1
Telephone line	0.372	0.483	0	0	0	1	1
Satellite dish	0.871	0.335	0	1	1	1	1
Computer	0.367	0.482	0	0	0	1	1
Mobile telephone	0.837	0.370	0	1	1	1	1
<b>Number of observations</b>	<b>3 720 households</b>						

*Source:* Palestinian expenditures and consumption survey, 2017.

Table 2.4  
Summary statistics: Census, 2017

Variable	Mean	Standard deviation	Minimum	Percentile (25)	Median	Percentile (75)	Maximum
West Bank	0.608	0.488	0	0	1	1	1
Urban	0.755	0.430	0	1	1	1	1
Gaza	0.392	0.488	0	0	0	1	1
Rural	0.161	0.368	0	0	0	0	1
Camp	0.083	0.277	0	0	0	0	1
Gender of head	0.100	0.300	0	0	0	0	1
Marital status of head	0.979	0.144	0	1	1	1	1
Educational level	0.441	0.497	0	0	0	1	1
Refugee status of head	0.415	0.493	0	0	0	1	1
Insurance	0.456	0.498	0	0	0	1	1
Number of females	2.527	1.488	0	1	2	3	16
Number of males	2.608	1.559	0	1	2	4	15
Number of adult females	0.518	0.757	0	0	0	1	7
Number of adult males	2.606	1.394	0	2	2	3	13
Agriculture	0.037	0.188	0	0	0	0	1
Construction	0.159	0.366	0	0	0	0	1
Industry	0.000	0.000	0	0	0	0	0
Number of employed household members	0.607	0.774	0	0	0	1	7
Employment in Israel	0.000	0.000	0	0	0	0	0
Employment in national government	0.145	0.353	0	0	0	0	1
Access to public water	0.578	0.494	0	0	1	1	1
Connection to sewage network	0.546	0.498	0	0	1	1	1
House ownership	0.861	0.346	0	1	1	1	1
House is a villa	0.011	0.106	0	0	0	0	1
Number of rooms	3.620	1.194	1	3	4	4	20
Number of rooms per adult	1.158	0.679	0.081	0.714	1.000	1.400	10.000
Main source of heating is diesel	0.002	0.049	0	0	0	0	1
Car	0.259	0.438	0	0	0	1	1
Refrigerator	0.978	0.146	0	1	1	1	1
Boiler	0.560	0.496	0	0	1	1	1
Central heating	0.016	0.126	0	0	0	0	1
Vacuum	0.400	0.490	0	0	0	1	1
Cooking stove	0.990	0.101	0	1	1	1	1
Washing machine	0.954	0.209	0	1	1	1	1
Home library	0.095	0.294	0	0	0	0	1
Television	0.135	0.342	0	0	0	0	1
Telephone line	0.336	0.472	0	0	0	1	1
Satellite dish	0.903	0.296	0	1	1	1	1
Computer	0.371	0.483	0	0	0	1	1
Mobile telephone	0.966	0.181	0	1	1	1	1
<b>Number of observations</b>	<b>170 937 households</b>						

Source: Palestinian census, 2017.


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