Palestine Economic Policy Research Institute (MAS)

Reading in Selected Labor Market Indicators from PCBS Surveys

Duja Michael
Belal Al-Falah

2019

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P.O. Box 19111, Jerusalem and P.O. Box 2426, Ramallah
Tel: ++972-2-2987053/4, Fax: ++972-2-2987055, e-mail: info@mas.ps
Web Site: www.mas.ps

Readings in Selected Labor Market Indicators from PCBS Surveys

Researchers: Duja Michael
Belal Fallah

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Foreword

During its formative years in the mid-1990's, MAS embarked on a project in cooperation with PCBS to produce a series of "First Readings of the PCBS Statistical Reports". The purpose was to provide a quick and timely analysis of published statistical reports in order to highlight findings, identify trends and provide forecasts that are of immediate use to policymakers, who are often averse to delving into complex statistical tables and reports. It turned out that what was intended to be a light undertaking in most cases required as many resources as those needed for a full research paper. In particular, the long time needed to complete and publish the "first reading" diminished its topicality. Therefore, MAS had to suspend this publication. Furthermore, as the Institute began publishing the Quarterly Economic and Social Monitor, much of the purpose of these "First Readings" was met by the Monitor.

Twenty years later, MAS decided to re-launch the in-depth "Reading" format with this publication, which concerns selected labor market indicators. This is not a quick "first reading" of a statistical report intended, but a thorough reading thereof. However, the summary at the beginning serves the purpose of highlighting the main findings of pertinence to policymakers, while the details that follow in the subsequent chapters provide material for further detailed reading. We hope that the response of policymakers will be such as to encourage MAS to continue "reading" other datasets as they are published.

On behalf of MAS, I would like to thank the authors for their effort and PCBS staff for their cooperation.

Nabeel Kassis
Director General

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Objectives and Summary of Findings

1. Study Objectives

The objective of this research is to provide insights on a selected number of vital labor market indicators that policymakers and the research community can rely on for an evidence-based understanding of the Palestinian labor market. Undoubtedly, a voluminous literature has studied the Palestinian labor market in an attempt to recommend policies and understand its determinants. The main contribution of this research hinges on thoroughly exploring topics that have gained little attention thus far. In doing so, we benefit from the rich datasets provided by the Palestinian Central Bureau of Statistics (PCBS) surveys; most notably, the Palestinian Labor Force Survey. The labor market topics covered in this report include female labor force participation rate (LFPR) and the unemployment rate, with an emphasis on the level of education and age; Palestinian workers in the Israeli labor market; horizontal skill mismatch; methods of job search; and the extent of compliance with labor market regulations. The analysis of this report utilizes both historical and recently published data to provide a thorough understanding of how the Palestinian labor market functions in areas related to these topics. The main findings are summarized below.

2. Summary of Findings

Female Labor Force Participation Rate (FLFPR) and Unemployment Rate: Gender and Educational Analysis

Labor market outcomes for females differ greatly based on educational attainment and age. Female LFPR in 2018 amounted to 25.3%. Yet, this figure masks substantial differences between high and low educated females. LFPR for educated females (those with tertiary education)[1] was 66.7% compared to 10% for the low educated (those with less than tertiary education).[2]

[1] The same definition of educated workers is used throughout this paper.
[2] In this report, LFPR is measured excluding those enrolled in education.

Over time, the findings show different LFPR trends for educated females based on age and region. In the West Bank, LFPR has decreased persistently for the young cohort since the end of the Second Intifada (2000-2004), while it increased for the older cohort until 2013 before it started to fall in recent years. The case is the opposite in Gaza Strip, LFPR has increased over time for both cohorts. To explain these conflicting trends, the paper focuses on young educated females and provides evidence that links the decrease in LFPR in the West Bank to negative labor market demand shocks (decreases in employment). On the other hand, the rise in LFPR is accompanied by a rising unemployment rate in Gaza Strip. It appears that poor economic conditions in the Gaza Strip may have induced more educated females to join the labor market as a coping mechanism to mitigate the loss of income experienced by their households.

The findings of this analysis suggest that using aggregate measures of LFPR, as often done, to devise policies that aim at enhancing female linkages to the labor market can be misleading. Considering age, educational attainment, and regions to explore labor market outcomes is essential for sound policymaking.

Palestinian workers in the Israeli labor market

There has been an increase in the share of educated Palestinian workers in the Israeli labor market, rising from 5.7% in 1999 to about 10% in 2017. The paper explores whether this shift reflects a rise in the demand for educated Palestinian workers or a change in the skill distribution of labor supplied to the Israeli labor market. Available evidence supports the latter, whereby even educated workers commute to the Israeli labor market to benefit from higher wages regardless of the skill level of the job. Most educated workers are employed in occupations that require low levels of education. Also, the occupational distribution of Palestinian workers in Israel has not changed since 1999. Furthermore, economic returns to education for the Palestinian workers in the Israeli labor market are close to zero.

The paper also highlights the overdependence on the Israeli labor market to absorb a large share of Palestinian workers and fuel the Palestinian

economy. According to PCBS's labor force survey of 2017, the share of Palestinian workers who commute from the West Bank to the Israeli labor market amounted to 19% of the total workforce. They earned remittances valued at USD 1.92 billion, constituting 13% of the national GDP, measured using 2017 prices.

With prolonged Israeli occupation and the accompanying political upheaval, the likelihood remains high that Israel could arbitrarily and unexpectedly restrict access to its labor market. In such a case, the Palestinian economy is expected to suffer serious repercussions, as it has in previous episodes. The paper shows that the magnitude of this effect is expected to vary spatially depending on a locality's share of Palestinian workers in the Israeli labor market. Data from PCBS's Population, Housing, and Establishments Census of 2017 show that cross locality variation in dependence on jobs in Israel ranges between 0% to over 80%. The paper projects localities' shares of workers in Israel on the map of the West Bank, which serves as a guide to identifying localities that are expected to suffer more from any future increase in the restrictions on commuting to the Israeli labor market.

Horizontal skill mismatch

The paper further explores the extent of horizontal skills mismatch (i.e. whether the education field is aligned with the job requirements) in Palestine. The data shows that the incidence of skills mismatch (share of mismatched workers) in 2017 was 28% and that skills mismatch varies greatly by workers' demographic characteristics, fields of education, and economic activities. Using regression analysis, the findings show that skills mismatch is costly as mismatched workers earn lower wages. Interestingly, the magnitude of the wage penalty is higher for females (18%) than it is for males (10%).

The study also examines the linkage between the unemployment rate and the skills mismatch. It is expected that with a higher unemployment rate, employment competition among job seekers might induce some of them to accept available jobs irrespective of the skill's nature. Utilizing regression analysis, the effect of unemployment is seen to matter only for females. This indicates that a high incidence of mismatch among

female workers is likely to persist alongside a high unemployment rate. The main policy implication of this finding is that information sharing, a commonly used practice, may not *significantly* reduce skills mismatch for female workers. On the other hand, with no linkages between the male unemployment rate and the skill mismatch, implementing the same policy may decrease job mismatch for male workers.

Methods of job search

Chances for individuals to find employment are often related to their job search strategies. Analysis of job search methods undertaken in Palestine shows a distinct pattern: the largest share of the educated cohort, both in the West Bank and in the Gaza Strip, utilizes the Internet. Nonetheless, most of the low educated check directly with employers, followed, with a wide gap, by asking friends or relatives. The paper also documents differences in the job search by type of economic activity and suggests that it is important for policymakers and stakeholders to consider interventions that aim at reducing the unemployment rate and enhancing skills matching between job seekers and employers, in a manner that takes into account these differences in search strategies.

Compliance with labor market regulations

The paper explores the extent to which firms in the private sector comply with the Palestinian labor market regulations (LMRs) over the 2010-2018 period. The LMRs include severance payment; paid annual leave; sick leave; and, maternity leave. The compliance rate is measured by estimating the share of workers who benefit from these regulations, such that a low share reflects a poor compliance rate. Over time, changes in the compliance rate estimated separately for male and female workers show a declining compliance rate for most LMRs. One exception is severance payment, in which the underlying share is relatively stable during the overall period with a temporary decline between 2012 and 2014.

The study also explores compliance with the minimum wage, though the analysis is limited to workers employed in the private sector and reside in the West Bank. The minimum wage level was adopted by the PNA

during a period when Hamas formed its own government in Gaza Strip, and applies only to the West Bank. The study estimates the share of workers who earn below the minimum wage and documents a substantial gap between males and females. In 2018, the corresponding share for males amounted to 11% versus 43% for females. Exploring overtime changes in the share of workers earning below the minimum wage, the study shows a decrease of 20 percentage points for males versus 11 percentage points for females. A large portion of the decline took place in 2018. Note, however, that the declining pattern may reflect an overall rise in wages rather than improvement in compliance.

Overall, the results show that compliance with LMRs is weak and that the lack of government enforcement is the main cause. The results also provide important implications related to enforcing the social security law, once revisited. Unless the current enforcement levels are substantially upgraded, the extent of compliance with social security is expected to be as low as the compliance with other LMRs.

1. Female Labor Force Participation Rate (FLFPR) and unemployment

1.1 Gender and education analysis

As is the case in many developing countries, the female labor force participation rate (FLFPR) in Palestine is low. According to PCBS's labor force survey, it amounted to 25% in 2018 (21.5% in the West Bank and 31% in the Gaza Strip).[3] Economic literature shows that the decision to join the labor market is driven by several socio-economic and demographic characteristics, including age, marital status, educational attainment, societal and cultural barriers (see Olsen *et al* 2006 and Neff *et al* 2012), spouse's level of income, expected market wage, and fertility (See Klasen and Pieters 2012). Guided by descriptive analysis, this section highlights the role of educational attainment. The data show that LFPR for educated females (those with tertiary education)[4] was 67% compared to 10% for the low educated (those with less than tertiary education).[5] This finding suggests that understanding female linkages to the labor market and the corresponding policies ought to consider educational attainment. In this section, the analysis is extended to cover the difference in LFPR for educated females by age. The corresponding sample is split into a young cohort (aged between 19 and 29 years old) and an older cohort (between 30 and 64 years). Development in LFPR is tracked, in comparison to male cohorts, over the 1999-2018 period and linked to changes in labor demand. The outcome of this exercise provides information that gives a better understanding of changes in female LFPR; a prerequisite for devising effective policies.

Figure (1) tracks LFPR for educated females, both for the young and the older cohorts, in the West Bank and compares them with the LFPR for their peer males. The data, measured in quarters, show that LFPR for young educated females has followed a declining trend since the Second Intifada (2000- 2004). Interestingly, negative shocks that affected the

[3] The measure of labor force participation includes all individuals within an age boundary of 15-64 and not enrolled in education.

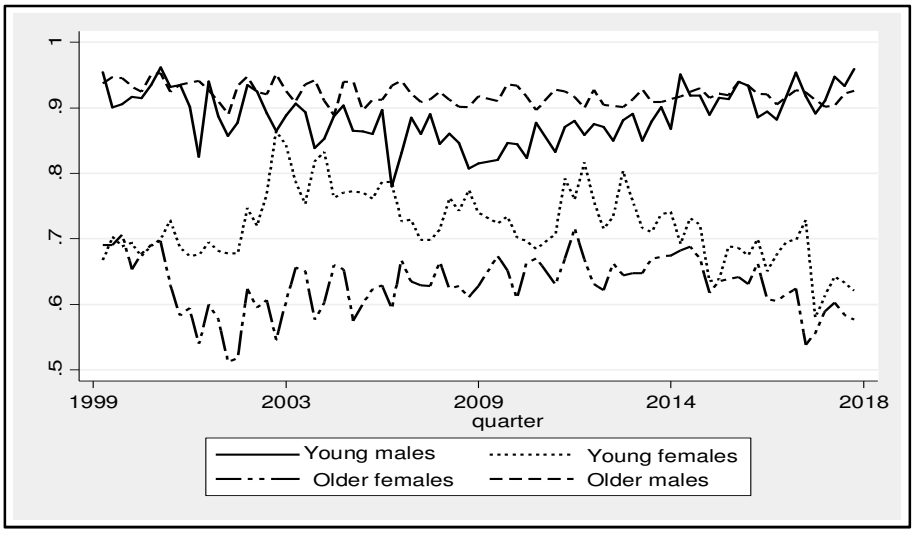
[4] The authors use the same definition of educated workers throughout this paper.

[5] In this report, the authors measure LFPR excluding those enrolled in education.

Palestinian economy during that period (including external and internal closures)[6] did not have a big impact on this cohort.

As for other cohorts, including young educated males and older educated females, they experienced a negative shock during the Second Intifada. As the Second Intifada ended, Israel gradually scaled back some of its restrictive measures and as a result, their LFPR improved throughout the period and regained their initial level. One notable exception to this trend, however, can be seen in the LFPR for older educated females, which started declining again after 2013. Interestingly, the data show that LFPR for young educated females was higher than that of the older educated females at the beginning of the period. Though, over time the gap has narrowed.

Figure (1): Changes in LFPR for Educated Individuals in the West Bank: 1999-2018



Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals with an age boundary of 19 and 29, while older cohort includes those with an age boundary of 30 and 64. Educated (low educated) cohort includes those with tertiary education (less than tertiary education).

[6] See Mansour (2010) for more discussion on the shocks that hit the Palestinian economy during the Second Intifada.

Figure (2) tracks LFPR for the less educated groups and shows substantial differences between male and female cohorts. LFPR for females has remained low (below 20%) throughout the period. The trends have also remained relatively stable for all cohorts post the Second Intifada, except for the older low-educated females whose LFPR improved slightly during the 2003 and 2007 period and grew subsequently. Figure (2) also exhibits a temporary drop in the male LFPR at the beginning of the Second Intifada, reflecting the effect of restricting access to the Israeli labor market. The data suggest that some of the Palestinian workers who were employed in the Israeli labor market during that period had temporarily left the labor market.

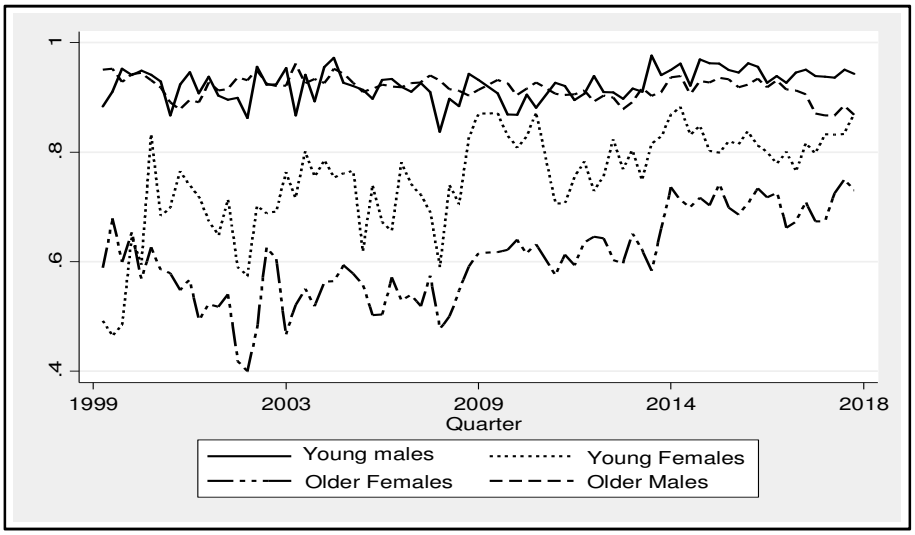
Figure (2): Changes in LFPR for Low Educated Individuals in the West Bank: 1999-2018

Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals with an age boundary of 19 and 29, while older cohort includes those with an age boundary of 30 and 64. Educated (low educated) cohort includes those with tertiary education (less than tertiary education).

The results for the Gaza Strip show similar LFPR trends to the West Bank, particularly for the educated males (see Figure 3). Nonetheless, LFPR for educated females shows a different pattern. It has risen though in a volatile manner, both for the young and the older cohorts, following the Second Intifada. LFPR for the less educated cohorts has also

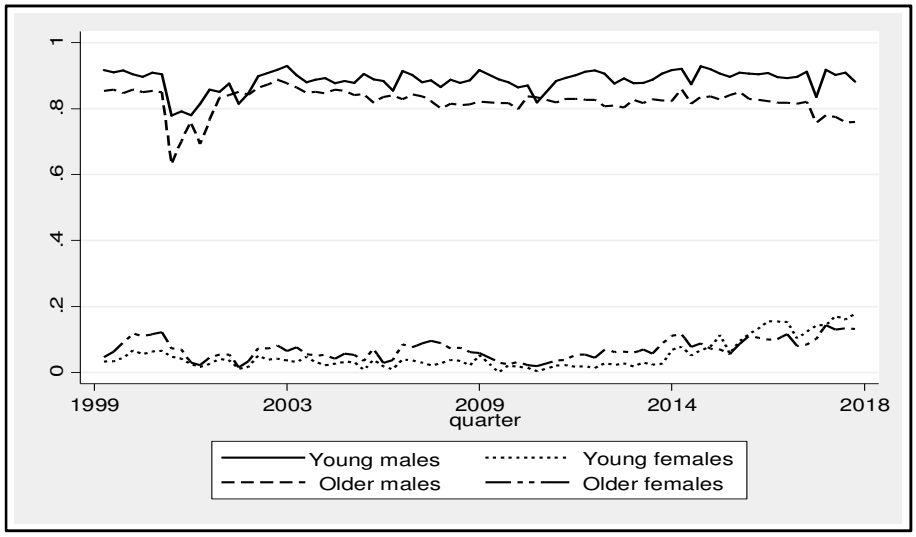
followed similar trends to the West Bank's (see Figure (4)). One exception is that LFPR for the young and the older female cohorts has slightly improved during the last few years.

Figure (3): Changes in FLFPR for Educated Individuals in the Gaza Strip: 1999-2018



Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals with an age boundary of 19 and 29, while older cohort includes those with an age boundary of 30 and 64. Educated (low educated) cohort includes those with tertiary education (less than tertiary education).

Figure (4): Changes in FLFPR for Low Educated Individuals in Gaza Strip: 1999-2018



Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals with an age boundary of 19 and 29, while older cohort includes those with an age boundary of 30 and 64. Educated (low educated) cohort includes those with tertiary education (less than tertiary education).

1.2 Factors affecting changes in the LFPR of young educated females: the role of job opportunities

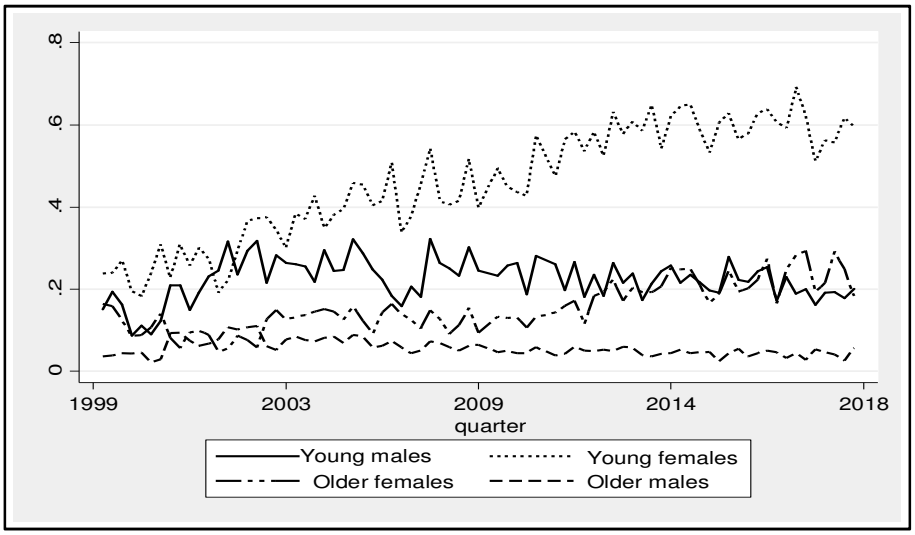
This section invokes the demand theory to explain changes in LFPR for educated females by exploring the extent to which changes in job opportunities is a driving factor. To help understand the linkage, changes in unemployment rates are compared for the same educated cohorts (Figure 5). For the West Bank, the unemployment rate for the young educated females has steadily risen post the Second Intifada, while their male peers have followed a declining unemployment trend. The recent rise in the unemployment rate for older educated females is also correlated with the underlying decrease in their LFPR.

This finding suggests that lack of job opportunities for young educated females is correlated with lower LFPR.[7] Theories from labor economics

[7] Read Fallah et al (2018) for more discussion on the linkages between labor force participation and labor demand shocks in the West Bank. The authors utilize PCBS's labor force data, covering the

suggest that poor (improved) labor market conditions are expected to discourage (encourage) individuals to leave (enter) the labor market (see Cahuc and Zylberberg 2004).

Figure (5): Changes in Unemployment Rate for Educated Individuals in the West Bank: 1999-2018

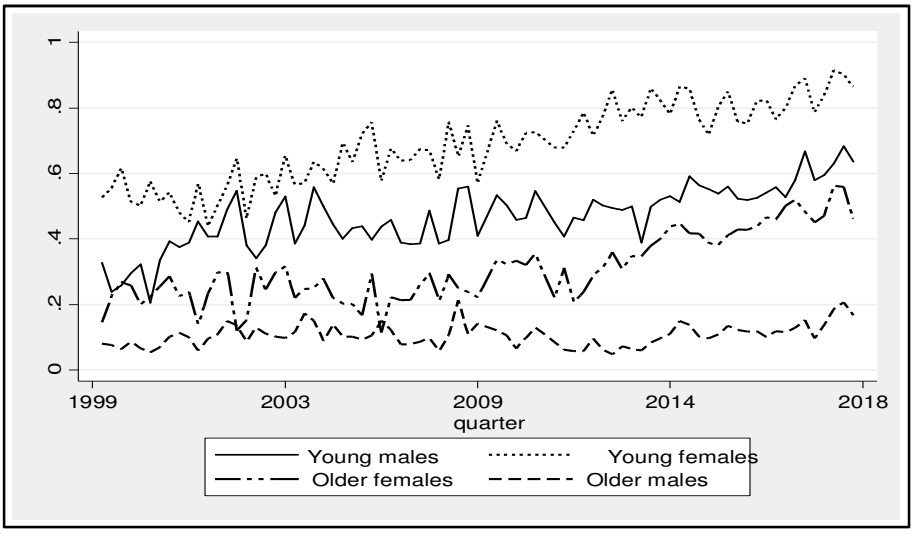


Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals with an age boundary of 19 and 29, while older cohort includes those with an age boundary of 30 and 64. Educated (low educated) cohort includes those with tertiary education (less than tertiary education).

As for the Gaza Strip, the unemployment rate for the young educated females has risen sharply, at a higher rate compared with the West Bank's, since the end of the Second Intifada. The prolonged blockade, which Israel has imposed since 2005 and intensified when Hamas militarily controlled Gaza Strip, as well as the devastating consequences of the wars waged in 2008-2009, 2012 and 2014 are the main contributing factors. Other cohorts have also suffered the repercussion of these shocks. The unemployment rate for older educated females and younger educated males has also increased following 2007, but at a lower level than that of the young educated females.

2005-2011 period, to see how LFPR for educated cohorts, males and females, respond to changes in employment. In this paper, the authors revisit the same issue but expand the analysis to cover the Gaza Strip and stretch the research period to cover the years between 1999 and 2018.

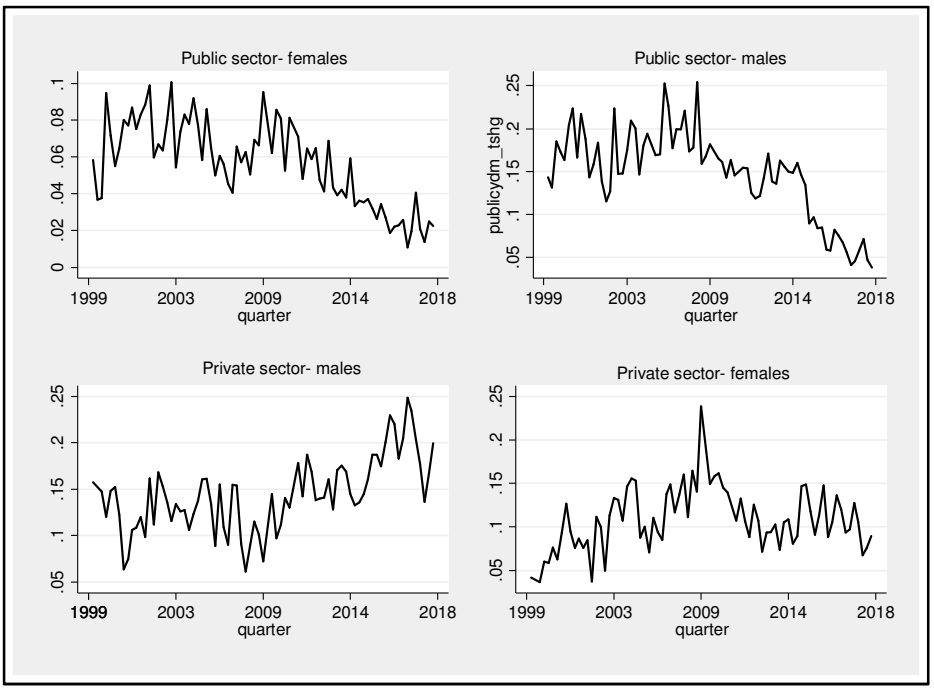
Figure (6): Changes in the Unemployment Rate for Educated Individuals in the Gaza Strip: 1999-2018



Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals within an age boundary of 19-29 years old, while the older cohort includes those within an age boundary of 30-64. The educated cohort includes individuals with tertiary education.

While LFPR for young educated females has dropped in the West Bank as unemployment rose, it displayed a different dynamic in the Gaza Strip, where LFPR has relatively increased despite the increase in the unemployment rate. As puzzling as it may sound, economic literature suggests a theoretical justification, which is referred to as the "added worker effect (AWE)". The AWE proposes that married females may join the labor force when husbands become unemployed (see Bredtmann et al 2014). Building on this theory, it may be argued that poor economic conditions in the Gaza Strip induced more educated females to join the labor force as a coping strategy in an attempt to mitigate loss in income caused by the rising unemployment rate among male-household members. The authors will leave verifying this hypothesis for future research.

Figure (7): Changes in the Employment Share for Young Educated Cohorts in the Private and Public Sector of the West Bank: 1999-2018



Source of data: PCBS labor force survey: quarterly data-1999 to 2018.
The young cohort includes individuals with an age boundary of 19 and 29, while older cohort includes those with an age boundary of 30 and 64. Educated (low educated) cohort includes those with tertiary education (less than tertiary education).

To further highlight the correlation between the unemployment rate and LFPR in the West Bank, differences in labor market outcomes are documented between young educated females and their male peers.[8] Differences in employment opportunities between the two cohorts may further support the correlation. Figure (7) compares changes in the share of young educated males and females employed in the public and the private sectors. The data show that the employment demand generated by the public sector has decreased for both cohorts over time (employment share in the public sector has decreased), in which the chronic financial stress that the Palestinian government operates under

[8] Both groups are considered new labor market entrants.

remains the key factor. Nevertheless, demand for young educated males in the private sector has increased, unlike the case for their female peers. This indicates that for the male cohort, the decrease in public employment has been offset by jobs generated in the private sector, while females were left behind in this respect. Given the persistent stagnation in public employment, the main policy implication of this analysis is that reversing the declining LFPR trend for educated females would require interventions that boost their demand in the private sector in particular.

2. Palestinian workers in the Israeli labor market

2.1 Educational characteristics of Palestinians working in Israel

A main characteristic of the Palestinian economy is that it is highly dependent on Israel on many levels, including trade, currency, and absorbing a large share of workers.[9] Data from PCBS's labor force survey shows that 19% of the Palestinian workers in the West Bank worked in Israel and its colonial settlements in 2017. Higher wages in the Israeli labor market, with a daily median wage of NIS 200 relative to NIS 96 in the West Bank, is the main driving factor.

The Israeli demand for Palestinian workers has mostly focused on and attracted low educated workers, mostly employed in occupations that require little to no education: crafts and elementary occupations. However, the data document a recent shift in the educational distribution of these workers (See Table 1). In 1999 the share of Palestinian workers in the Israeli labor market with tertiary education amounted to 5.7%. This share has increased over time and almost doubled by 2017.

Table (1): Educational Attainment of Palestinian Workers in Israel: 1999 & 2017

Educational attainment	1999	2017
Illiterate	2.33%	0.32%
Can Read and Write	9.08%	5.63%
Elementary	30.26%	19.13%
Preparatory	38.7%	48.63%
Secondary	13.9%	16.23%
Tertiary Education	5.73%	10.06%
Total	100%	100%

Source: PCBS labor force survey of 1999 and 2017

The question then arises, has Israeli demand shifted to more educated Palestinian workers? This can be addressed by exploring changes in the

9 The authors exclude Gaza Strip from this analysis as Israel has banned access of Gazan workers to its labor market.

occupational distribution for the low and high-educated workers in the Israeli labor market. Table (2) shows that the 1999's share of educated workers who were employed in skilled occupations (managers and professional occupations, requiring a higher level of education) has not changed; remained at 20%. Table (3) also shows that workers' distribution across sectors has not changed drastically; most of the educated and less-educated workers are still employed in the construction sector. More importantly, the change in the share of workers in the top three occupations follows the same path both for the low educated and educated workers, let alone, the share of educated workers employed in elementary occupations has increased. Put differently, if the increase in the share of educated workers reflects a higher skill demand, this should be reflected over time in a shift in the occupational distribution toward more skilled jobs. The data provide little evidence for such a shift.

Table (2): Occupational Distribution of Palestinian Workers in Israel by Educational Attainment: 1999 and 2017

Occupation	low educated 1999	educated 1999	low educated 2017	educated 2017
Managers, Professionals, Technicians, & Clerical Worker	2.84%	20.55%	2.61%	19.81%
Services & Sales Workers	3.37%	3.49%	6.5%	6.07%
Skilled-Agricultural Workers	2.54%	0	0.71%	0.64%
Craft and Related Trade Workers	33.77%	31.78%	44.75%	32.27%
Plant, Machine Operators, & Assemblers	5.53%	13.18%	8.15%	5.11%
Elementary Occupations	51.95%	31.01%	37.28%	36.1%
Total	100%	100%	100%	100%

Source: PCBS labor force survey of 1999 and 2017

Table (3): Industry Distribution of Palestinian Workers in Israel by Educational Attainment, 2017

Economic activity	Low educated	Educated
Agriculture	9.75%	11.54%
Manufacturing	13.51%	10.84%
Construction	59.37%	59.44%
Commerce-Hotels	11.3%	10.49%
Transport-storage	2.72%	1.05%
Other Services	3.35%	6.64%
Total	100%	100%

Source: PCBS labor force survey of 2017

As a further robustness check, average wages between low educated and educated Palestinian workers in the Israeli labor market are compared. Wages for more educated workers are expected to be higher if labor demand shifts toward more educated workers. To test this hypothesis, a wage regression is estimated in which the logarithmic of daily wage is regressed against six dummy variables reflecting the educational attainment of workers, including illiterate, can read and write, elementary, preparatory, secondary, and tertiary.[10] The regression model includes a number of control variables to isolate the effects that might mask economic returns to education. These include worker's age, type of industry and occupation, the period of employment, refugee status, district of residence, and place of residence. The results show no statistically significant differences in wages across educational attainment categories. So far, the findings suggest that while more educated workers are commuting to the Israeli workers, many are willing to accept employment in available low skilled (low educated) jobs to benefit from higher wages.

Existing literature suggests that increases in the inflow of Palestinian workers to the Israeli labor market come at a cost of raising wages in the Palestinian labor market (Astrup and Dessus 2002). However, the documented effect is limited to wages for low educated workers as this cohort disproportionately makes up the Palestinian workers in the Israeli labor market (Mansour 2010). If educated workers commute to the

[10] The sample excludes individuals with PhD education. This cohort includes only a few observations.

Israeli labor market more substantially, the average wages of this cohort in the West Bank are expected to rise.

2.2 Repercussions of over-dependence on the Israeli labor market: a spatial analysis

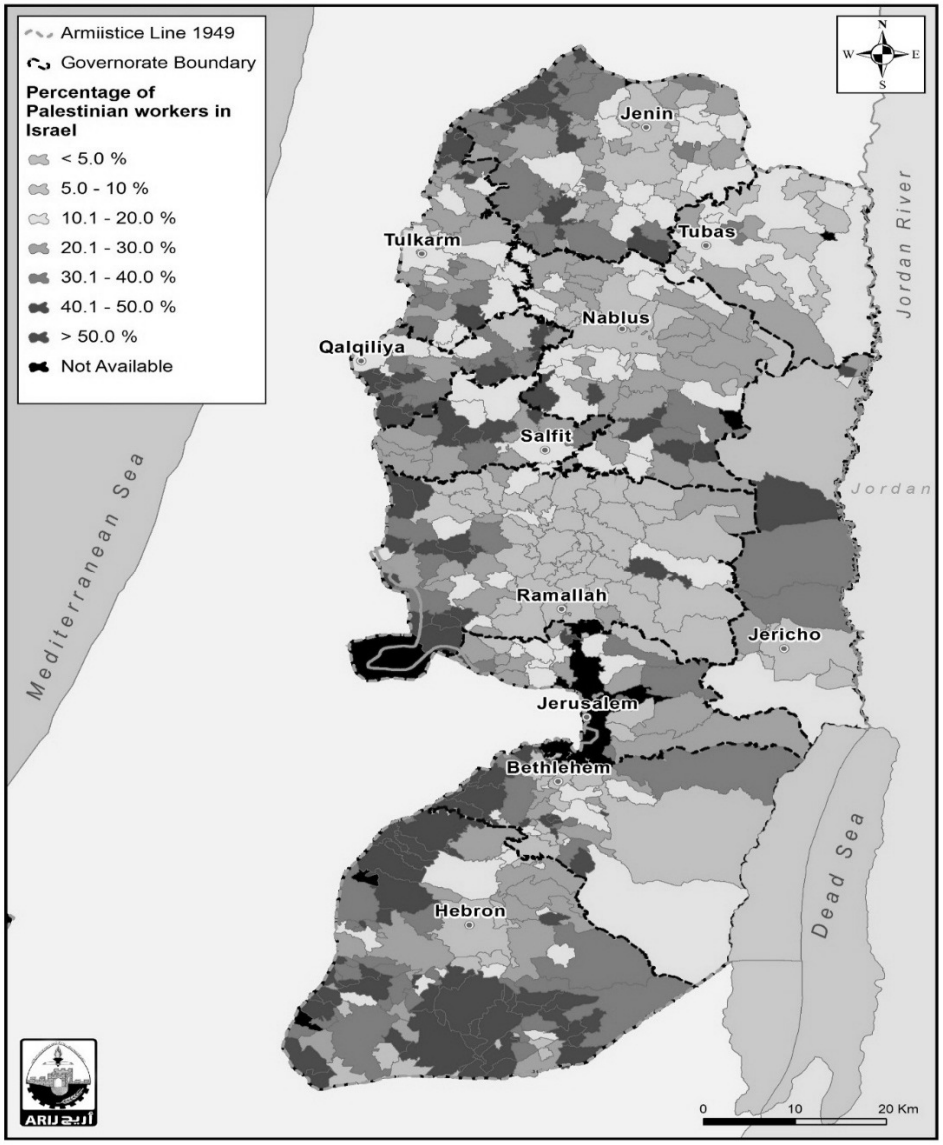
Aside from the effect on local wages, exporting the services of a large section of Palestinian workers to the Israeli labor market generates remittances that fuel local economies via enhancing demand for goods and services. According to PCBS's labor force survey, remittances from the Israeli labor market amounted to USD 1.92 billion in 2017, making up 13% of GDP, measured at current prices. Put differently, a substantial decrease in demand for Palestinian workers in the Israeli labor market is expected to cause serious economic repercussions: raising the unemployment rate and reducing the aggregate demand sharply due to lost remittances. With the prolonged Israeli occupation and chronic political uncertainty, the likelihood of such a negative shock occurring again is not negligible. The most recent severe and persistent case took place during the Second Intifada when the share of Palestinian workers in Israel dropped from 24.5% in 2000 to 13% in 2002. During this period, the unemployment rate in the West Bank rose from 12% to 28%. An even more profound shock was felt in the Gaza Strip in the same period and then after Israel definitively closed its labor market to workers from the Strip since 2005.

So far, most of the discussion on the possible effects of restricting access to the Israeli labor market has focused on the aggregate level (in the West Bank). Little attention has been dedicated to exploring the spatial distribution of this potential shock within West Bank areas. Data from PCBS's 2017 Population Census show that the share of Palestinian workers in Israel varies considerably across localities; ranging from 0% to over 80%. This indicates that a similar shock to that of the Second Intifada would have a differential economic effect (distributional effect) across localities, depending on their share of workers in Israel. While it is beyond the scope of this study to estimate the exact distributional effect, it is possible to identify where the underlying effect may be expected to be higher.

To this end, localities' shares of workers in Israel are projected on the map of the West Bank (see Figure 8[11] and also Table C in appendix B for a list of the localities with the corresponding population to highlight populated localities). As the map shows, localities in grey, mainly major urban areas, represent those with the lowest share (0-5%) of Palestinian workers in the Israeli labor market. These localities are expected to experience little *direct* effect from restricting access to the Israeli labor market. At the other end of the spectrum, localities in purple and red, those with the highest shares of 40-50% and greater than 50%, respectively, are expected to experience a significant direct negative effect. Restricting the access for workers in a given locality is also expected to generate indirect effects on other localities in which the effect positively depends on the extent of underlying trade linkages.

[11] This map was created by Applied Research Institute Jerusalem (ARIJ).

Figure (8): Spatial Distribution of Palestinian Workers in the Israeli Labor Market



Source: PCBS Population, Housing, and Establishments Census of 2017

3. Horizontal Skill Mismatch

An important aspect of an efficient allocation of economic resources is the extent to which skills required by employers and provided by workers are well-matched. Skill match is essential for both sides since it is the state at which the highest economic returns to human capital may be realized (see Somer *et al* 2016). Efficient allocation translates into goods and services being produced at a lower cost. Skill mismatch, hence, comes at an economic cost. Several studies have shown that mismatched employees show lower job satisfaction and have higher absence and quit rates (Büchel, 2002; Tsang, 1987). Other studies have also shown that skill mismatch lowers productivity and reduces wage, leading to lower economic returns to education (Quintano *et al*, 2008; McGuinness & Sloane, 2011).

Given the economic importance of skill mismatch, this section aims to:

- Explore the incidence of skill mismatch in Palestine;
- Identify demographic and socioeconomic characteristics of the mismatched employees; and
- Estimate the effect of mismatch on wages.

Economics literature identifies various types of mismatch. Broadly speaking, they are divided into two groups: vertical mismatch and horizontal mismatch. Vertical mismatch refers to individuals' level of education and its alignment with the underlying job requirements (whether the level of education fits job requirements). Horizontal mismatch, on the other hand, refers to whether fields of education are aligned with job-specific skills. This section highlights the latter and provides an overview of the literature (both at the empirical and theoretical levels) and utilizes it as a backdrop to analyze mismatch in the Palestinian labor market. Utilizing data from the PCBS's labor force survey of 2015-2017, the following aspects of horizontal mismatch in Palestine are explored:

- How horizontal mismatch is measured.
- The incidence of horizontal mismatch, and its determinants.
- The effect of horizontal mismatch on wages.
- Policy lessons/recommendations based on the analysis.

3.1 The measures of horizontal mismatch

The literature on horizontal mismatch has utilized two different types of measures: subjective and objective. The former is based on employees' self-reporting and assessment of the alignment between job requirements and the educational discipline. This information is typically found in labor force surveys. The objective measure, on the other hand, uses the information on the educational requirements for an occupation to identify the extent of mismatch with workers. Due to data availability, the analysis here is limited to the subjective horizontal measure.

Different types of questions are used to identify subjective horizontal mismatch. Some studies relied on surveys that directly ask respondents whether they believe their educational field is appropriate for their job, while others included more nuanced questions asking about the degree of matching such as "thinking about the relationship between your work and your education, to what extent is your work related to your degree?" (Bender & Heywood, 2011). In the case of the PCBS labor force survey, the relevant question is translated as follows "Did … occupation suit his/her educational qualification?". This question is posed to those who hold an associate degree or higher, and the possible answers are "yes", "no", and "not applicable". The latter refers to the less educated cohort. For the purpose of this analysis, mismatched workers are those who replied no.

3.2 Skill mismatch incidence

The results, based on the PCBS labor force survey of 2017, show that the incidence of horizontal mismatch (share of horizontally skill-mismatched workers) is 28%, i.e. over a quarter of workers who hold at minimum an associate degree and are working in local labor markets are mismatched.[12] The data also exhibits significant variation based on place of work, whereby incidence of skill mismatch amounted to 30% of those who work in the West Bank, 25% in the Gaza Strip, and 91% among those working in the Israeli labor market. As highlighted above, the latter

[12] It would be informing to compare the extent of mismatch in Palestine to other countries as a measure of labor market performance. Nonetheless, the lack of a standard measure renders such comparison highly misleading.

groups seek employment in this labor market to benefit from higher wages irrespective of the skill level of available jobs.

The data also show distinct patterns across demographic and socioeconomic characteristics. Interestingly, job mismatch is the highest among employers and the self-employed (58%) relative to wage workers (21%). In this analysis, the focus of the job mismatch analysis is limited to waged workers as this cohort is subject to suffer a wage penalty. In terms of demographic characteristics, the data show that the incidence of job mismatch is more common among male workers (26%) relative to females (13%). This can be partly explained by the fact that a high share of employed females (40%) are working in the public sector (mainly in education and health), which demands that candidates possess education in the relevant field. Interestingly, the low share of mismatched females in Gaza Strip, (8% versus 16% in the West Bank) can be (partly) attributed to the structure of economic activities: 22% of female workers in Gaza are employed by the UNRWA versus 3% in the West Bank. As is the case in public sector jobs, working with UNRWA is mainly linked to skills in education and health. The following discussion of skill mismatch is limited to workers in the private sector.

Table (4): Distribution of Skill Mismatch Across Economic Activities, 2017

Economic Activities	Male	Females
Agriculture	5%	0%
Manufacturing	17%	7%
Construction	15%	1%
Commerce	39%	19%
Transport	8%	6%
Other services	16%	67%
Total	100%	100%

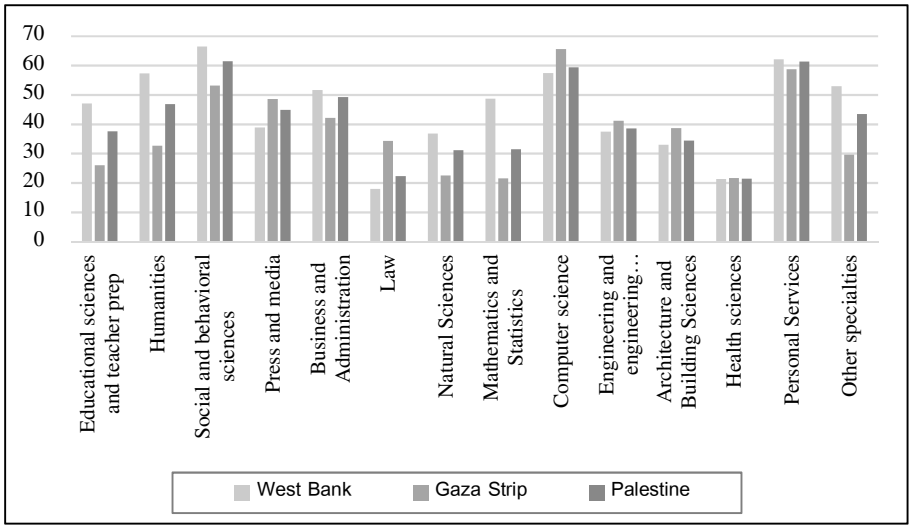
Source: PCBS labor force survey of 2017

In terms of the distribution across economic activities, the analysis is limited to the private sector. Table (4) plots the sample by gender and shows that job mismatch for male workers is disproportionately

concentrated in the commerce sector (wholesale and retail activities), followed by manufacturing and construction, respectively. As for females, it is concentrated in the "other services" sector, which mainly reflects education sub-sectors. It seems that educated females from various fields of education seek employment in the private education subsector as a last resort for employment.

Figure (9) exhibits the distribution of skill mismatch across the field of education. The data show that the highest incidence of mismatch at the national level pertains to workers who majored in social and behavioral sciences (61.4%); personal services (61.3%); computer science (59.4%), and humanities (58%). Law and health sciences have the lowest incidence rates at 22.3% and 21.4% respectively. Figure (9) also shows the distribution of skill mismatch by region.

Figure (9): Distribution of Horizontal Skill Mismatch Across Fields of Education and Region



Source: PCBS labor force survey

3.3 The wage effect of horizontal skill mismatch

A substantial literature has addressed various aspects of mismatch effects, largely tackling productivity loss and the associated effects on wages. Economic theory suggests that mismatched employees are less

productive than their skill matched peers, and thus experience a "wage penalty". However, it is important to note that job mismatch may not impose a wage penalty in certain cases. For instance, some studies have shown that the wage effect varies depending on the reason for accepting a mismatched job. Robst (2007) shows that male (female) workers who end up working in a mismatched career due to lack of job opportunities earn lower wages of 26.5% (18.5%), whereas those who accept mismatch because of pay or promotion opportunities have a positive wage effect. The latter is the main motivation that induces educated Palestinian workers to seek employment in primary occupations of the Israeli labor market.

We follow existing literature (see Robst 2007) to model the wage effect of the horizontal job mismatch. In specific, the study utilizes a linear regression model in which the model specification and discussion are documented in Appendix A. The sample used to estimate the wage regression includes educated workers (those with an associate degree or higher) who work in non-governmental occupations. That said, workers who are employed in the Israeli labor market are excluded.

The results show that mismatched workers earn lower wages both for male and female samples. Interestingly, the magnitude of the wage penalty is higher for females, 17% relative to 10% for males. This finding indicates that job mismatch comes at an economic cost. This, along with the high incidence of skill mismatch, as documented above, suggest that the cost of this phenomenon is substantial at the macro level, warranting policy attention to reduce skill mismatch in Palestine.

3.4 Skill mismatch determinants: the effect of unemployment

One potential policy intervention is to enhance the propensity of skill matching between workers and firms. This is typically done by enhancing information sharing between the two sides. To that end, governments often devise or subsidize "employment service programs", which aim at accelerating and easing linkages between workers and employers and providing enough information about needed and supplied skills. The effectiveness of such "Active Labor Market Policies (ALMP)", however, might be conditional on the extent of the unemployment rate. Theoretically, with a higher unemployment rate,

employment competition among job seekers might induce some of them to accept available jobs irrespective of the underlying extent of skill match. In such cases, enhancing information sharing between workers and firms might not be so effective in ensuring skill-matching. To examine the effect of the unemployment rate on job mismatch, the study applies a linear probability regression (see appendix A), which is estimated separately for males and females:

The results, in Table (B) in appendix A, show that the effect of unemployment matters only for the female sample. With a positive estimated coefficient, the findings indicate that a higher unemployment rate for this cohort increases the probability of ending up in a mismatched job. This suggests that changes (increases) in the unemployment rate for females have induced some of them to accept mismatched jobs.[13]

The policy implication of the findings indicates that a high incidence of mismatch among female workers is likely to persist with the high unemployment rate and therefore information sharing policies might not *significantly* reduce skill mismatch for educated females. On the other hand, with no evidence of linkages between the male unemployment rate and job mismatch, implementing the same information-sharing policies may decrease job mismatch for educated males.

The employment service program has been utilized in Palestine. The Ministry of Labor has put in place a "labor market information system" to provide updated information on vacancies and job seekers. Nonetheless, the PCBS labor force data of 2017 shows that only 6% (2% in the West Bank and 10% in the Gaza Strip) of the overall unemployed individuals utilize such a program. When limiting the unemployed sample to educated individuals (the cohort of interest), the data shows that the share of the unemployed who use this service sums to less than 1% in the West Bank relative to 21% in the Gaza Strip. In sum, effectively activating the labor market information system, mainly, in the West Bank is a pre-requisite for an information-sharing policy to be fruitful. Besides, the government should encourage international donors to fund non-governmental initiatives to enhance skill matching.

[13] The results of the regression model also show that firm characteristics contribute to job mismatch. Workers who are employed in informal firms are more likely to end up in a mismatched job.

4. Methods of job search

Chances of finding employment are primarily related to the availability of jobs. It also depends on job search methods and the associated perceived success rate. Job search strategies also affect unemployment duration, working conditions, wages, and extent of skill match (see Boheim and Taylor 2002; Weber and Mahringer 2008).

This section aims to explore job search methods that job seekers utilize in Palestine. Note, however, that it does not attempt to explore the optimal search method (the one with a higher probability of receiving a job offer), nor to estimate the effect on wage distribution or working conditions. The lack of longitudinal data that sufficiently captures unemployment and employment status of the same workers, as well as the lack of nationally representative data on employers' strategies to fill vacancies, prevent carrying out this analysis.[14]

Utilizing the PCBS's 2017 labor force survey, the patterns of job-seeking by the level of education (low educated vs. educated workers) are explored. As shown below, job search strategies vary significantly with technological competence, where more educated workers often utilize more updated technology. The analysis then extends to identify job search methods by type of economic sector. The outcome of this exercise would inform policymakers about the need to undertake skill match (job search) strategies that suit job seekers based on their educational attainment and targeted occupation/economic sectors.

Table (5) below presents the distribution of job search strategies as identified by job seekers. The first and second columns present the results for all job seekers (regardless of educational attainment) in the West Bank and the Gaza Strip, respectively. The results show a similar distribution in the two regions. The largest share of job seekers checks directly with employers, followed by utilizing the internet and asking friends or relatives.

[14] Fallah (2019) utilizes a purposive sample from the manufacturing sector in the West Bank and the Gaza Strip and shows that employers utilize different job-filling strategies (mainly internet) than job seekers (directly checking with employers).

The results in Columns (3) to (6) distinguish workers by the level of education. The results show a distinct pattern: the largest share of educated job seekers, both in the West Bank and in the Gaza Strip, utilizes the internet. Nonetheless, most job seekers from the low-education cohort check directly with employers followed, with a wide gap, by asking friends or relatives. The results also show, as explained above, that the consulting registration office is common in Gaza Strip, unlike in the West Bank, where it is almost inactive. Furthermore, the authors split the educated cohort by gender. The results show relatively similar patterns, though educated females are more reliant on using the internet. As for educated males, they heavily weigh on using the internet and checking with employers (see Table 6).

Table (5) Distribution of Individuals' Job Search Strategies in the West Bank and the Gaza Strip, by Educational Attainment

Job Search Strategies	All		Educated		Less-educated	
	West Bank	Gaza Strip	West Bank	Gaza Strip	West Bank	Gaza Strip
	(1)	(2)	(3)	(4)	(5)	(6)
Registered at the employment office	0%	11%	1%	21%	0%	3%
Placed or answered job ads	2%	2%	6%	4%	0%	0%
Used internet	20%	18%	54%	40%	1%	1%
Checked with employer	52%	45%	15%	24%	74%	62%
Took a test or interview	7%	2%	20%	4%	0%	0%
Asked friends, relative	15%	22%	4%	7%	23%	33%
Waited at the market place	0%	0%	1%	0%	0%	0%
Applied for permit	2%	0%	0%	0%	1%	0%
Total	100%	100%	100%	100%	100%	100%

Source of data: PCBS labor force survey of 2017

Table (6): Distribution of Individuals' Job Search Strategies in the West Bank and the Gaza Strip, by Educational Attainment and Gender

Job Search Strategies	Educated Females		Educated Males	
	West Bank (1)	Gaza Strip (2)	West Bank (3)	Gaza Strip (4)
Registered at the employment office	1%	23%	0%	18%
Placed or answered job ads	6%	5%	4%	3%
Used internet	56%	46%	39%	31%
Checked with employer	11%	17%	36%	36%
Took a test or interview	23%	5%	8%	2%
Asked friends, relative	2%	4%	10%	11%
Waited at the market place	1%	0%	1%	0%
Total	100%	100%	100%	100%

Source of data: PCBS labor force survey of 2017

Tables (7) and (8) show the distribution of search methods across industries in the West Bank and the Gaza Strip, respectively. The PCBS's labor force data allows identify job history (most recent job) for those who are currently unemployed. Assuming that those who were employed in a given economic sector would search for employment in the same sector, job search methods can be classified by type of economic activities. The data shows that, for both regions, searching for a job via directly checking with the employer is the most common in all economic sectors except for "other services".[15] The second most common method for these sectors is asking friends and relatives. The results also show that for other services, mainly include public administration and education activities, checking with the employer and using the internet are the most common methods.

[15] These mainly include public administration and education activities in which utilizing the internet is also common.

Table (7) Distribution of Individuals' Job Search Strategies Across Insdustries in the West Bank

Search Strategy	Agriculture	Manufacturing	Construction	Commerce & Transport	Other services
Registered at the employment office	0%	0%	0%	0%	1%
Placed or answered job ads	0%	1%	0%	1%	4%
Used internet	1%	5%	2%	12%	36%
Checked with employer	58%	72%	71%	66%	35%
Took a test or interview	1%	0%	1%	1%	14%
Asked friends, relative	37%	19%	21%	18%	9%
Waited at marketplace	0%	0%	0%	1%	1%
Other means	4%	2%	4%	0%	0%
Total	100%	100%	100%	100%	100%

Source: PCBS labor force survey of 2017.

Table (8) Distribution of Individuals' Job Search Strategies Across Industries in the Gaza Strip

Search Strategy	Agriculture	Manufacturing	Construction	Commerce & Transportation	Other Services
Registered at the employment office	3%	0%	2%	2%	13%
Placed or answered job ads	1%	1%	0%	0%	2%
Used internet	1%	1%	1%	7%	22%
Checked with employer	65%	85%	68%	60%	40%
Took a test or interview	0%	0%	0%	0%	2%
Asked friends, relative	29%	13%	27%	29%	21%
Waited at marketplace	0%	0%	0%	0%	0%
Other means	1%	0%	1%	0%	0%
Total	100%	100%	100%	100%	100%

Source: PCBS labor force survey

So far, the analysis shows that unemployed individuals utilize various means of job search, which vary across the level of education and type

of economic activities. This finding is relevant for policymakers and other stakeholders (workers, businesses, and other unions). Policymakers should consider these differences in designing information-sharing programs between job seekers and employers; often used to reduce the unemployment rate as well as unemployment duration. When considering internet and smart applications to enhance the likelihood of finding jobs, as widely used in more developed countries, considerable efforts should be paid to raise awareness about the significance of such search functions.[16] A low utilization rate of the internet, mainly among the low educated, makes fulfilling this condition a vital requisite.

[16] See Gurtzgen et al (2018) for more discussion on the effect of using the internet on unemployment. http://conference.iza.org/conference_files/MacroEcon_2018/8579.pdf

5. Compliance with labor market regulations

This section explores the extent of compliance with Palestinian labor market regulations (LMRs) as stated in the Labor Law No. 7 of 2000. This issue was addressed in a previous study published by MAS on labor market efficiency (Fallah, 2016), but given its importance and relevance, this chapter updates the previous analysis to include three more years (2016,2017 and 2018). This exercise examines the trends in compliance over an extended period (2010-2018) to inform whether compliance has improved over time; a requisite to explore whether serious intervention is needed to effectively enhance compliance rate.[17]

In what follows, the extent of compliance is evaluated in the Palestinian private sector, for five LMRs: 1) severance payment; 2) paid annual leave; 3) sick leave; 4) maternity leave; and 5) minimum wage. Compliance is measured as the share of private-sector workers who report that they benefit from the said regulations. This exercise is undertaken separately for the West Bank and the Gaza Strip, except for the minimum wage, which is only analyzed for the West Bank.[18] The following is a brief description of each LMR, followed by the compliance analysis.

5.1 Main features of LMRs

5.1.1 Pension/end of service bonus

Article 45 of the Palestinian Labor Law (PLL) states that "a worker who completes a year at his/her work shall be entitled to an end of service bonus, the amount of which shall be one month's wage for each year of service. The bonus shall be calculated based on the last wage which he/she earned not including overtime working hours. For such purpose, the fractions of the year shall be calculated"

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17 Data on working conditions and compliance with labor market regulations are not available before 2009.

18 The minimum wage was ratified only in the West Bank, as Hamas separately formed its government in the Gaza Strip (Fallah, 2016). The deliberations and negotiations that led to determining the level of the minimum wage at NIS 1450/monthly and NIS 65 per day were largely administered by stakeholders in the West Bank, and hence reflected West Bank-specific labor market conditions.

5.1.2 Annual leave:

Article 74 of the PLL states that "the worker is entitled to a paid annual leave, the duration of which is two weeks per year that he/she spends at the same job and three weeks for the work in hazardous or health-damaging occupations and for those workers who have spent five years or more at the institution" The second paragraph of the article also states that "the worker may not waive his/her right to the annual leave."

5.1.3 Sick leave:

Article 79 states that "Based upon a report from the Medical Committee, the worker shall be entitled to a fourteen-day paid sick leave each year. The worker is also entitled to another fourteen days of sick leave, where he/she will be paid half of his/her wage"

5.1.4 Maternity leave:

As per paragraph 1 of article 103 of the PLL "The working woman who had spent a period of one hundred and eighty days at work prior to each delivery, she shall have the right to a paid maternity leave for a period of ten weeks, including at least six weeks after the delivery".

5.1.5 Minimum wage:

The cabinet decision (11) for 2012 stated that the minimum monthly wage is NIS 1450, whereas the minimum daily wage cutoff, mainly for irregular and seasonal workers, is NIS 65. The implementation date started in January 2013.

5.2 Extent of compliance with LMRs

Figure (10) shows the changes in the share of workers employed in private sector firms that comply with the following regulations; severance payment, paid vacation, and sick leave. The analysis is conducted using data from the West Bank and the Gaza Strip. The analysis also differentiates workers by gender in which the share of male (female) workers is separately calculated. For the West Bank, the results show a downward trend for paid vacations and sick leaves. The

corresponding share of severance payment is relatively stable during the overall period with a temporary decline between 2012 and 2014. Noticeably, the share of female workers employed in firms that provide maternity leave has substantially decreased from a high of 50% in 2011 to a stable rate of around 30% in the years following 2014 (see Figure 11). Though, in 2018 the share increased to 37%. Nonetheless, the corresponding shares in the Gaza Strip followed a declining path with a more volatile trend (see Figures 10 and 11).

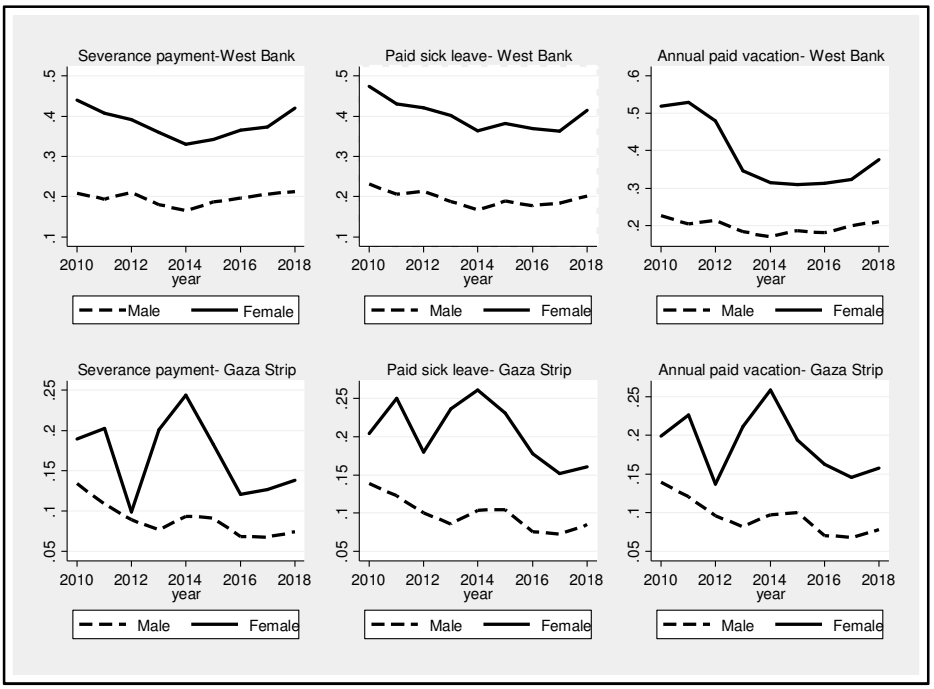
Figure (12) presents the changes in the share of workers earning below the minimum wage level in the West Bank over time. The data shows that male and female workers follow a similar trend, but with a substantial gap in levels in which more male workers are earning above minimum wage. Since 2013, the share of male workers earning below minimum wage drop from 29% to about 11%. The female share rose by 5 percentage points (from 50% to 55%) in 2013 before it has declined in the flowing years and stood at 43% in 2018. Interestingly, 2018 witnessed a substantial decline both for males and females.

Note that the declining pattern may not necessarily reflect an improvement in compliance. This can be shown via two pieces of evidence. Firstly, the decline in the share of male workers who earn below minimum wage extends back to the years preceding the implementation of the minimum wage. Most probably, it reflects changes in wages in which labor supply and demand are the driving factors. In addition, improvements in compliance are expected to raise low wages (below the minimum wage level). This is not supported by the data. To show this, the change in wage distribution is analyzed between 2018 and 2017; a period that witnessed a sharp drop in the minimum wage share. For each year, the wage data is ascendingly ordered into 100 parts (percentile[19]) and compared the change in the wage value of each ventil (see Figure 13). The data show an upward shift in the wage distribution of 2018 for males and females (the wage level for most ventils increased in 2018), reflecting an overall increase in wages rather than being limited to low earners (those earning below minimum wage).

[19] The wage ventils divide an ordered distribution of wages into a hundred parts, each containing one-hundredth of the sample.

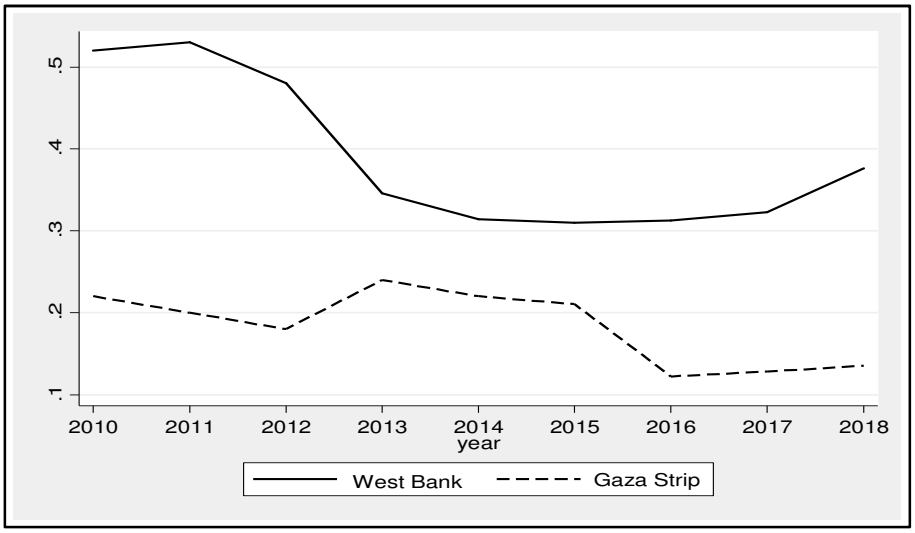
Overall, the results confirm that compliance with LMRs is weak. Fallah (2014) shows that the lack of government enforcement is the main driver. The results also provide important implications regarding the ramifications of enforcing the social security law, once revisited. Unless the enforcement level is substantially upgraded, the extent of compliance with social security is expected to be as low as the compliance with other LMRs.

Figure (10): Extent of Compliance with Non- wage LMRs in the West Bank and the Gaza Strip: 2010-2018



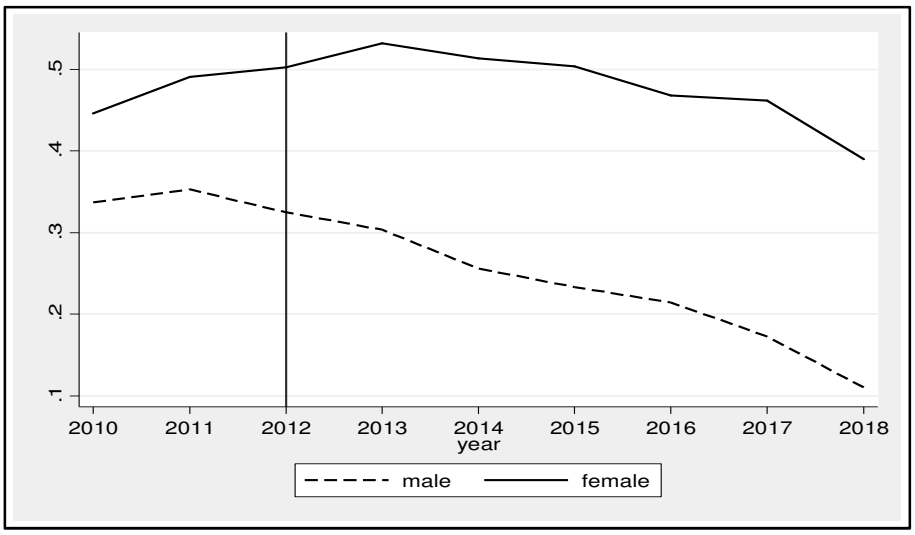
Source: PCBS labor force survey: 2010-2018

Figure (11): Extent of Compliance with Maternity Leave in the WBG: 2010-2018



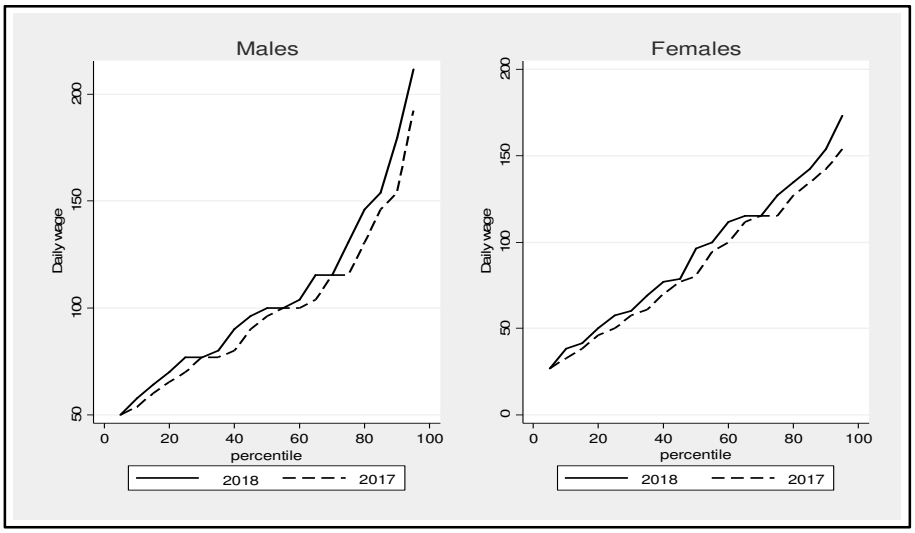
Source: PCBS labor force survey: 2010-2018

Figure (12): Share of Workers Earning below the Minimum Wage in the West Bank: 2013-2018



Source: PCBS labor force survey: 2010-2018

Figure (13): Change in Wage Distribution between 2017 and 2018



Source: PCBS labor force survey: 2010-2018
The values on the y-axis refer to the daily wage.

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Appendixes

Appendix A

A1. The wage effect of horizontal skill mismatch

The regression model, estimated separately for male and female workers, is specified as follows:

$$logWage = constant + \boldsymbol{\beta_1} mismatch + \boldsymbol{\alpha} control + e \ldots\ldots (1)$$

The main variable of interest "*mismatch*" is a dummy variable that takes a value of one for mismatched workers and zero for the matched. The estimated coefficient "$\boldsymbol{\beta_1}$ measures the mean wage differences between these two groups. The list of *control* variables includes age, educational attainment, marital status, type of economic activity, type of occupation, place of residence (urban, rural, or camp), firm's characteristics including whether a firm is formal or informal and number of workers per firm, employment status (full time, part-time, seasonal worker), governorate of residence, and the year when data was collected (2015 to 2017). Controlling for these factors ensures that the coefficient of the mismatch variable compares average wages between matched and mismatched workers with the same demographic and economic characteristics who live in the same district and place of residence.

Readers should be cautious about drawing causal inference from the estimated coefficient of the mismatch variable. It could be the case that the coefficient reflects the individual ability effect. It is widely believed that innate ability influences the likelihood of proper matching as well as other labor market outcomes. Boudarbat and Chernoff (2012) found that graduates in lower grade categories (where grades are used as a proxy for ability) are more likely to be mismatched than their classmates with higher grades. It is also widely assumed that people with higher ability would be more productive and thus receive higher wages. The effect of omitting ability from the regression, thus, introduces negative bias and leads to overestimating the (negative) true effect of mismatch on the loss of wages. Another factor that could introduce bias in equation (2) is measurement error. The fact that the subjective measure is being examined makes the analysis quite vulnerable to this type of bias.

However, if this measurement error is assumed to be of the classic type -meaning that the measurement error is not related to the value systematically- then the estimates will be biased towards zero (underestimate the size of the true effect). This means that the estimates provide a more conservative estimate than the real effect.

A2. Skill mismatch determinants: the effect of unemployment

The model is a linear probability, which is estimated separately for males and females as follows:

$$Mismatch_{idt} = constant + \boldsymbol{\beta_1} unemployment\ rate_{dy} + \boldsymbol{\alpha} controls + e_{idt} \ldots (2)$$

The dependent variable is discrete that takes the value of 1 for skill-mismatched workers and the value of zero for a skill-matched living in governorate *d* and observed in year *t*. The main independent variable is the district's unemployment rate, which measures unemployment rates for educated males in the male model and educated females in the female model. A multitude of socioeconomic and demographic control variables are the same as those included in the model (1) above.[20] Among all these explanatory variables, the focus of the discussion will be mainly limited to the effect of the unemployment rate on the probability of mismatch.

[20] For more discussion on the determinants see Somers *et al* (2016).

Table (A): Effect of Horizontal Skill Mismatch on Wages for Educated Workers

VARIABLES	(1)	(2)
	Males	Females
unmatched	-0.105***	-0.170***
	(0.026)	(0.029)
Bachelor degree[a]	0.091***	0.206***
	(0.019)	(0.036)
Higher diploma[a]	0.163*	0.094
	(0.091)	(0.177)
Master degree[a]	0.487***	0.691***
	(0.052)	(0.081)
PhD degree[a]	1.047***	1.453***
	(0.076)	(0.307)
Informal worker[b]	-0.099***	-0.137***
	(0.031)	(0.050)
Part-time worker[s]	-0.343***	-0.237
	(0.133)	(0.155)
Seasonal worker[c]	-0.171***	-0.968***
	(0.058)	(0.171)
Other controls	Yes	Yes
Observations	3,606	1,886
R-squared	0.749	0.756

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
The reported estimates are compared against workers with associate degrees
The reported estimates are compared against formal workers.
The reported estimates are compared against full-time workers.

Table (B): Effect of Unemployment Rate on Horizontal Skill Mismatch for Educated Workers

VARIABLES	(1)	(2)
	Males	Females
unemployment rate	-0.300	0.642**
	(0.266)	(0.266)
Bachelor degree[a]	0.004	0.131***
	(0.016)	(0.028)
Higher diploma[a]	-0.091*	0.21
	(0.049)	(0.179)
Master degree[a]	-0.031	-0.033
	(0.027)	(0.054)
PhD degree[a]	0.035	-0.164
	(0.025)	(0.091)
Informal worker[b]	0.066***	0.832*
	(0.019)	(0.045)
Part-time worker[s]	0.069	-0.168**
	(0.044)	(0.077)
Occasional worker	0.062**	0.462**
	(0.024)	(0.217)
Observations	3,951	2,066
R-squared	0.706	0.429

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
The reported estimates are compared against workers with associate degrees
The reported estimates are compared against formal workers.
The reported estimates are compared against full-time workers.

Appendix B

Table (C): Distribution of Population and Palestinian Workers in Israel Across Localities: 2017

locality	population	share	locality	population	share	locality	population	share
Zububa	2322	0.42	Zabda	1251	0.35	Jaba'	10413	0.34
Rummana	3637	0.38	Ya'bad	16012	0.22	Al Fandaqumiya	4265	0.26
Ti’innik	1298	0.37	Kufeirit	3068	0.46	Silat adhDhahr	7406	0.32
At Tayba	2215	0.44	Umm at Tut	1194	0.36	Bardala	1607	0.08
A’rabbuna	1025	0.31	Ash Shuhada (Mothalth Ash Shuhada)	2299	0.27	'Ein el Beida	1138	0.15
Al Jalama	2268	0.07	Jalqamus	2624	0.26	A’qqaba	8239	0.24
Silat al Harithiya	11449	0.34	Al Mughayyir	3249	0.21	Tayasir	2878	0.30
A’nin	4216	0.54	Bir al Basha	1725	0.22	Tubas	21431	0.14
A’rrana	2418	0.21	Qabatiya	24439	0.10	Ras al Far'a	1250	0.05
Deir Ghazala	1129	0.08	Arraba	11479	0.17	El Fara’a Camp	5625	0.17
Faqqu'a	4410	0.28	Mirka	2203	0.35	Wadi al Fara’a	3998	0.14
Al Yamun	20774	0.37	Raba	3915	0.16	Tammun	13117	0.29
Kafr Dan	6591	0.16	Misliya	2884	0.16	Qaffin	10690	0.54
Barta'a ash Sharqiya	4792	0.34	AZ Zababida	4261	0.08	Nazlat 'Isa	2302	0.43
Al A’raqa	2667	0.42	Fahma	3193	0.39	AnNazla ash Sharqiya	1623	0.31

locality	population	share	locality	population	share	locality	population	share
Beit Qad (Al Janubi)	1538	0.14	AZ Zawiya	1006	0.29	Baqa ash Sharqiya	4892	0.28
Tura al Gharbiya	1053	0.41	KafrRa'i	8471	0.31	AnNazla al Gharbiya	1110	0.44
Al Hashimiya	1305	0.26	A’jja	6162	0.48	Zeita	3078	0.22
Jenin	49908	0.06	A’nza	1938	0.05	Seida	3777	0.19
Jenin Camp	10417	0.08	Sanur	5036	0.28	'Illar	7456	0.29
Jalbun	2813	0.20	Ar Rama	1222	0.21	A’ttil	10367	0.18
KafrQud	1553	0.28	Meithalun	8321	0.18	Deir al Ghusun	9936	0.26
Deir Abu Da'if	7045	0.20	Al Judeida	5950	0.31	Al Jarushiya	1183	0.26
Birqin	7126	0.11	Al A’ttara	1244	0.37	Bala’a	7822	0.21
			Siris	6020	0.41	Iktaba	2997	0.15

Source: PCBS labor force survey

Table (C) con't: Distribution of Population and Palestinian Workers in Israel Across Localities: 2017

locality	population	share	locality	population	share	locality	population	share
Nur Shams Camp	6423	0.23	Zawata	2537	0.06	Odala	1566	0.22
Tulkarm Camp	9931	0.17	Qusin	2251	0.10	Huwwara	6659	0.20
Tulkarm	64532	0.14	Beit Iba	4079	0.04	'Einabus	2891	0.42
Anabta	8077	0.13	Beit Hasan	1599	0.27	Beita	11682	0.22
Kafr al Labad	4747	0.30	Beit Wazan	1312	0.07	ZeitaJamma'in	2740	0.47
'IzbatShufa	1456	0.17	'Ein Beit el Ma Camp	3588	0.06	Jamma'in	7436	0.13
Ramin	1998	0.13	A'zmut	3440	0.08	Osarin	2053	0.49
Far'un	4131	0.28	Nablus	156906	0.04	Aqraba	10024	0.35
Shufa	1350	0.25	A'skar Camp (al Qadeem)	6537	0.08	Yatma	3363	0.28
Beit Lid	5606	0.16	A'skar Camp (al Jadeed)	4767	0.09	Qabalan	8195	0.40
Kafr Sur	1288	0.26	Deir al Hatab	2838	0.23	Jurish	1541	0.38
KafrZibad	1219	0.17	Sarra	3384	0.26	Qusra	5418	0.40
KafrJammal	2855	0.35	Salim	6266	0.22	Talfit	3591	0.15
KafrA'bbush	1739	0.19	Balata Camp	14635	0.05	As Sawiya	2761	0.22
Bazzariya	2794	0.19	'Iraq Burin	1008	0.12	Majdal Bani Fadil	2907	0.48
Burqa	4152	0.20	Tell	5162	0.10	Al Lubban ash Sharqiya	2640	0.17
Yasid	2505	0.15	Beit Dajan	4460	0.25	Qaryut	2560	0.14
Beit Imrin	3323	0.26	Rujeib	5964	0.14	Duma	2674	0.21

locality	population	share	locality	population	share	locality	population	share
Sabastiya	3205	0.18	KafrQallil	3029	0.13	KafrQaddum	3280	0.09
Talluza	2795	0.18	Madama	2092	0.22	Jit	2405	0.46
AnNaqura	1786	0.26	Burin	2844	0.19	Baqat al Hatab	1943	0.20
Al Badhan	3171	0.22	Beit Furik	13477	0.27	Hajja	2659	0.34
Deir Sharaf	2949	0.15	A’sira al Qibliya	2935	0.20	Jayyus	3478	0.19
A’sira ash Shamaliya	8813	0.08	A’warta	7054	0.26	Immatin	2755	0.30
AnNassariya	1889	0.18	'Urif	3624	0.30	Al Funduq	1125	0.40

Table (C) con't: Distribution of Population and Palestinian Workers in Israel Across Localities: 2017

locality	population	share	locality	population	share	locality	population	share
Jifna	2919	0.03	Beituniya	26604	0.04	Biddu	8231	0.24
Dura al Qar'	3032	0.03	Al Ama'ri Camp	4725	0.02	Hizma	7118	0.16
At Tayba	1340	0.06	Beit Sira	3343	0.56	Beit Hanina al Balad	1107	0.20
Al Mazra'a al Qibliya	5180	0.04	Kharbatha al Misbah	6366	0.43	Qatanna	6981	0.36
Al Jalazun Camp	8201	0.04	Beit 'Ur al Fauqa	1049	0.19	Beit Surik	4025	0.28
Abu Qash	2237	0.02	At Tira	1504	0.25	Beit Iksa	1773	0.13
Deir Qaddis	2452	0.32	Beit Liqya	9304	0.42	A'nata	16919	0.27
Ni'lin	5118	0.27	Az Zubeidat	1679	0.45	Az Za'ayyem	6270	0.36
'Ein Yabrud	2515	0.01	Al Jiftlik	3100	0.10	Al 'Eizariya	21175	0.09
Kharbatha Bani Harith	3471	0.29	Fasayil	1637	0.75	Abu Dis	12251	0.08
Ras Karkar	1956	0.30	Al A'uja	5224	0.33	A'rab al Jahalin (Salamat)	1856	0.28
Surda	1308	0.02	AnNuwei'ma	1794	0.33	As Sawahira ash Sharqiya	6204	0.25
Al Janiya	1296	0.15	'Ein as Sultan Camp	4384	0.06	Ash Sheikh Sa'd	2776	0.32
Al Midya	1533	0.60	Jericho (Ariha)	20907	0.08	Al Walaja	2671	0.50
Rammun	2405	0.02	Aqbat Jaber Camp	8960	0.08	Battir	4696	0.38
KafrNi'ma	4659	0.16	Rafat	2941	0.03	Al 'Ubeidiya	14460	0.36
Bil'in	2137	0.22	Mikhmas	1363	0.00	A'yda Camp	2824	0.10
Beitin	2242	0.01	Qalandiya Camp	8336	0.05	Al A'za Camp	1523	0.04

locality	population	share	locality	population	share	locality	population	share
Deir Ibzi'	2590	0.20	Beit Duqqu	1754	0.07	KhalletHamameh	1624	0.17
Deir Dibwan	4169	0.02	Jaba'	3921	0.30	Bir Onah	1413	0.56
Al Bireh	45975	0.02	Al Judeira	2634	0.16	Beit Jala	13484	0.10
‘ein A’rik	1774	0.05	Ar Ram &Dahiyat al Bareed	15814	0.19	Dar Salah	4588	0.25
Saffa	4374	0.30	Beit A’nan	4210	0.24	Husan	7048	0.55
Ramallah	38998	0.02	Al Jib	4132	0.20	Wadi Fukin	1342	0.50
Burqa	2047	0.02	Bir Nabala	6004	0.10	Bethlehem (Beit Lahm)	28591	0.07
Beit 'Ur at Tahta	5040	0.42	Al Qubeiba	3876	0.27	Beit Sahur	13281	0.05

Table (C) con't: Distribution of Population and Palestinian Workers in Israel Across Localities: 2017

locality	population	share	locality	population	share	locality	population	share
Ad Doha	12752	0.12	Al A'rrub Camp	8941	0.12	Beit A'wwa	10436	0.24
Al Khadr	11960	0.39	Beit Ummar	16977	0.23	Dura	39336	0.20
Ad Duheisha Camp	8805	0.11	Hitta	1155	0.62	Qalqas	1709	0.04
Hindaza and Bureida'a	7517	0.16	Shuyukh al A'rrub	1958	0.20	Khursa	3481	0.39
Ash Shawawra	4161	0.12	Kharas	9139	0.57	Al Fawwar Camp	7641	0.15
Artas	5745	0.27	Nuba	5631	0.49	Al Majd	2277	0.34
Nahhalin	8741	0.54	Kuziba	1383	0.08	Hadab al Fawwar	2354	0.33
Beit Ta'mir	1596	0.24	Beit Ula	14537	0.45	As Sura	3941	0.48
Al Jaba'	1121	0.57	Sa'ir	20722	0.26	ArRihiya	5754	0.43
Za'tara	7849	0.19	Halhul	27031	0.19	Zif	1061	0.39
Al Fureidis	1095	0.14	Ash Shuyukh	12052	0.28	Deir al A'sal al Fauqa	1859	0.65
Jannatah (BaddFalouh)	7336	0.15	Tarqumiya	19311	0.45	Imreish	2208	0.35
Wadi Rahhal	1819	0.23	Beit Kahil	8880	0.21	Beit ar Rush al Fauqa	1385	0.67
Al Ma'sara	1085	0.42	Beit E'inun	1928	0.24	Karma	1781	0.34
Wadi an Nis	1001	0.62	Qla'a Zeta	1086	0.09	Beit A'mra	3607	0.49
Khirbet ad Deir	2009	0.34	Idhna	26009	0.35	Al Ka'abneh -Om Adaraj (Alzoyedeen)	1464	0.61
Jurat ash Sham'a	1778	0.28	Taffuh	15800	0.36	Khallet al Maiyya	2149	0.53
Marah Ma'alla	1072	0.08	Beit Maqdum	1109	0.42	Yatta	63511	0.50

locality	population	share	locality	population	share	locality	population	share
Umm Salamuna	1188	0.15	El Kaum	1464	0.40	ArRifa'iyya and Ad Deirat	1312	0.53
Tuqu'	8767	0.28	Al Bouaierah (Al Baqa’a)	1389	0.03	Rabud	2816	0.29
Marah Rabah	1729	0.01	Hebron (Al Khalil)	201063	0.03	Umm Lasafa and Abu Shabban	1648	0.73
Beit Fajjar	13520	0.02	Al Bouaierah (AqabatInjeleh)	1532	0.15	Al Burj and Al Bira	3205	0.41
Al Maniya	1346	0.34	KhalletEdar	2984	0.08	Al Karmil	9740	0.63
A’rabarRashayida	2060	0.11	Deir Samit	8114	0.19	AdhDhahiriya	35924	0.36
Surif	17287	0.40	Bani Na'im	24628	0.29	As Samu'	26011	0.43
						ArRamadin	4150	0.64