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FOREWORD

This special supplement to the Economic Monitor (EM) has been prepared by the Palestine Economic Policy Research Institute (MAS) in close cooperation with the Palestinian Central Bureau of Statistics (PCBS). The supplement tackles a highly sensitive and complicated topic, that is, producing accurate projections on short-term trends in the Palestinian labor market (2019), using best economic modeling methodologies and most recent and updated formal official data. This Supplement to the EM is the second component of the ILO-MAS joint project, and complements the first Supplement addressing SDG8 and principles of decent work and its application in the Palestinian context.

Section I of the report reviews the different models and methodologies used by competent Palestinian and international institutions. Section II explains the methodology used in this report and the structural and technical amendments introduced to draw focus to the labor market, based on historical data and applicable theoretical background on labor supply/demand mechanisms. Whereas, section III discusses the findings of the labor market projections in 2019, by focusing on the main indicators that can be projected from the analysis of available data. In the concluding section, the report presents a macro and sectoral policy package (the so-called Active Labor Market Policies) needed to enhance labor market performance in the medium-term on both the supply and demand sides.

It should be emphasized that the task of producing reliable, robust and useful projections of labour market performance requires not only solid data and a flexible and coherent methodology, but also an intellectual and institutional collaboration over a period of time. This is something we hope to have launched in this first effort at enhancing and streamlining Palestinian economic projection capacities, beginning with MAS and PCBS, but also engaging other essential stakeholders. Hence it was necessary in this first MAS labour market projections report to fully explain the theoretical, methodological and empirical background and steps in this exercise, as well as to exercise prudence in forecasts and in policy prescriptions. It is hoped that this collaborative effort can continue in the future and additional elaboration of methodology can achieve an even more comprehensive and targeted set of projections.

Finally, MAS extends its sincere thanks to the research team for their industrious work. A special thank you also goes to the International Labor Organization (ILO) for their support and funding this research project.

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“Forecasting is very difficult, especially with regards to the future” Neils Bohr, Danish Scientist

Introduction

Countries around the world use projections to monitor future economic trends in the short-, mid- and long-term. Such projections represent the foundations of future policies since they allow governments to make strategic decisions to achieve their desired economic goals. Projections can be used by individuals, institutions and investors to make appropriate investment, savings and consumption decisions. Projections are often based on standard economic models that correlate short- and mid-term economic variables. Long-term projections are usually deduced from the general trends of these variables. The standard models are analyzed using real data gathered over a specific amount of time. The predictions include several scenarios, ranging from the most optimistic (best case) to the most pessimistic (worst case). The range between the optimistic and the pessimistic scenarios depends on the degree of possible severity of the influence of factors affecting economic performance.

It goes without saying that, even with the best data and the most sophisticated models based on the most trusted theories that reflect the actual transactions of the economy and markets, unexpected economic or political developments can lead to results beyond the scope of predictions. Some scholars, like John Kenneth Galbraith, consider that “the only function of economic projections is to make fortune telling appear respectable.” It is henceforth essential to be cautious in dealing with any projections and to be aware that surprises are likely to occur in the future.

In an effort to understand Palestine’s labor market, this 2018 supplement of the Economic Monitor - published quarterly by the Palestinian Economic Policy Research Institute – MAS - has been prepared in close cooperation with the Palestinian Central Bureau of Statistics (PCBS), with funding from the International Labor Organization (ILO), aiming to use available Palestinian projection models to examine labor force dynamics. This report focuses on the model that has been used by PCBS for some time in an effort to enhance its ability to predict short-term trends in the Palestinian labor market. For this purpose, MAS held intensive consultations with PCBS experts and other government agencies concerned with economic projections in Palestine.

Agencies in Palestine use different models to arrive at Palestinian economic projections, which this report reviews in the next section. Following a detailed review of the available models in Section 1, the research team settled on a projection framework that was developed some time ago by the United

Nations Conference on Trade and Development (UNCTAD), and which was updated ten years ago (UNCTAD, 2006), since when PCBS adopted a refined version of this model. In addition to reviewing the different modeling techniques, the report proposes structural and technical amendments to the models and data, which will be discussed in the second section. The structural amendments focus on adding variables and formulas to the model. The technical amendments aim to eliminate the restrictions imposed by some parts of the model. The proposed structural changes aim to provide a detailed revision of the indicators of the Palestinian labor market, such as the unemployment rate, jobs growth, and average wages.

Section three discusses the findings of the projections based on the amended model, and presents three possible scenarios. In general, the projections are coherent with PCBS aggregate economic prediction and reveal continued regression of economic growth, a rising unemployment rate, and decreasing wages in 2019, according to the baseline scenario. This is attributed to the presumption that external funding will continue to decrease while the restrictions imposed by the occupation will continue. Section four suggests the broad policy package needed to stimulate and enhance labor market performance in the medium-term.

1. Review of Palestinian Economic Projection Models Introduction

A number of agencies calculate projections for the Palestinian economy, namely the Palestinian Central Bureau of Statistics (PCBS), the Palestinian Monetary Authority (PMA), and the International Monetary Fund (IMF), as well as the World Bank. Each agency adopts its own methodology to analyze the Palestinian economy, corresponding to its specific purposes. The IMF uses its predictions to determine its public finance policy advice for Palestine each year. Its internationally applied methodology (IMF, 2018), assesses the external balance (EBA-lite), and analyzes the gaps in the current results using a regression analysis informed by the observed exchange rate. The PMA produces annual projections to monitor the economic influences on the banking and monetary sector (Aref, Khalil and Bsharat, 2013). It analyzes gaps in the results using a regression analysis formula that relies on available data. The World Bank focuses in its analyses on mid-and long-term developmental trends (Computable General Equilibrium - CGE models). These are traditional theoretical models that presume balance in the markets. PCBS uses a different methodology, applying an assessment model based on the behavior of the Palestinian economy as derived from data series of at least 30 years. It is thus a Keynesian rather than a classic model and does not presume market equilibrium. The differences between the four models are detailed below.

The models differ in their scope and in their definitions of different economic sectors. The World Bank's Computable General Equilibrium Model divides the economy into seventeen economic sectors. This is reflected in their calculation of the growth and number of employees of each sector, but it presumes equal pay (wages) in all sectors. In a previous World Bank Model (Astrup and Dessus, 2005), the economy was divided into seven sectors: agriculture, mining, manufacturing, construction, trade, transportation, private services, and public services. This same model divides investment into productive investment and non-productive investment. This division of investment explains that the high risks for those investing in the occupied Palestinian territories pushes investment to the construction sector, which is the least risky. This is considered non-productive investment since it does not generate sustainable employment or production. According to the IMF methodology (EBA-Lite) and the IMF model, the economy is divided into only three sectors: banking, the private sector and the public sector, since these methodologies focus mainly on financial data. The PCBS model is believed to be the most detailed although it adopts a model that divides the economy into four sectors only: agriculture, manufacturing, construction, and services. But the PCBS model analyzes in detail the growth of the economy, imports and exports, employment, wages, and the price index. This division of wages by sector demonstrates the differences between different sectors in the Palestinian economy. Since this study focuses labor market projections, this methodology is

considered to be more credible because it reflects the structural realities of the economy better than the other models. Like the World Bank Model, this model also differentiates between investment in construction and investment in sectors other than construction.

The different models used for projections simulate the labor market differently depending on the theoretical background of the model. In the World Bank modeling, the labor supply (rate of participation of the labor force) is linked to average wages in Palestine, as well as to the average wages in Israel. It is based on employment rates and the level of restrictions enforced by the occupation. However, the model presumes the possibility of full employment of the labor force. This hypothesis is problematic in the case of Palestine because of the high unemployment rate, which is chronically high and fluctuating. This contrasts with the rate of participation in the labor force, which changes less in the Palestinian economy. This means that the obstacle to employment in the Palestinian economy is the demand for labor rather than the supply of labor. The modeling used by the World Bank also assumes equal pay across different sectors, which is obviously far from the reality in Palestine.

The PMA and IMF models view labor as an external variable determined outside the model. The methodology used in the PCBS models differentiates between labor supply (rate of participation in the labor force) and demand for labor (employment), and the gap between supply and demand is known as "unemployment." PCBS adopted this Keynesian model because it does not assume full employment, and consequently more accurately reflects reality.

The analysis of government expenditures also varies in the different models. The World Bank models presume that the real change in government spending is associated with population growth rate (Astrup and Dessus, 2005; Nasr Eldin, 2017). In these models, government revenues depend on taxes and economic activity and they are adjusted to attain a constant level of government deficit. In the PCBS model, government spending depends on government employment and the size of the deficit in the government budget. Government revenues depend on total commodities and services, imports, and on the rate of tax evasion. The PMA model uses public financial data to analyze gaps in production. This methodology uses more modeling of government spending and revenues. Government spending is defined as current expenditures, government capital expenditures, and government transfers. Modeling of these types of spending is done using separate equations. Government revenues are divided into two parts: tax revenues and external funding. Tax revenues are calculated according to the tax base. For instance, revenues from income tax are associated with national income while revenues from clearance tax are linked to total imports

and the number of days when Israeli occupation forces closed the entry points to the occupied Palestinian territories.

The orthodox models used by the World Bank were built using microeconomic theories. They view consumption and production behavior as similar to the behavior of a single consumer who represents all average consumers, and a single producer who represents all average producers. These models presume monopolistic behavior among producers in all sectors. Industries use constant economies of scale to integrate intermediate goods into production revenues. PCBS' model uses behavioral equations built on macro-economic theories and informed by the expertise of economists who specialize in the Palestinian economy. In the World Bank model, the demand for imports and supply of exports depend on relative prices. In PCBS' standard model, imports from states other than Israel depend on total consumption, total investment, import price deflator, and customs duties. Meanwhile, imports from Israel depend on the same variables, but customs duties are replaced by the number of days that entry points were closed down. As for exports, the standard model calculates exports to Israel using the export price index the Israeli GDP as well as average local wages. Exports to world countries are calculated using the export price index, work productivity, productive investment (in sectors other than construction), and GDP in Jordan (since most exports sent abroad go to Jordan).

The World Bank's CGE Models assume that total productive and non-productive investment equals total savings. Unlike these models, in the PCBS standard model, total investment is linked to the total income available, credit facilities, the number of days of closure of entry points, and the interest rate. Investment is split into productive and nonproductive, and the ratio of non-productive to productive investment is an internal variable. This rate is defined by the price index of construction investment compared to the price index of non-construction in addition to the time variable.

2. Amendments to Methodology and Data

The PCBS model simulates the performance of the Palestinian economy and predicts all the aspects of total demand: private and public consumption, investment, export, and the importing of goods and services. The structure of the model allows for differentiating between different types of trade according to source and destination. Consequently, the model reflects the Palestinian economy's dependency on the Israeli economy. This dependency is also captured by tracking Palestinian labor in Israel. The model can predict a change in dependence on the Israeli economy because it includes policies that play a role in the change of relative prices of tradable goods and services (including labor).

The model simulates 151 internal variables generated by thirty-five behavioral equations distributed in five blocks:

The CGE Model considers internal variables that are determined by equal supply and demand in the market, whereas the model used by the PMA links price indexes to the cost of imports. PCBS' standard model determines the price index differently based on the economy and a string of variables. The Palestinian Consumer Price Index is linked to the Israeli index, while the investment deflator in the construction sector depends on the wages of workers in the construction sector and the import price index. The productive (non-construction) investment deflator depends on labor productivity and the import prices index. Finally, the export price index is linked to labor productivity in the mining and manufacturing sectors, the exchange rate, and the import price index.

A review of the different models shows that the general equilibrium model does not require data gathered over a long period of time because it relies on supply-use tables based on data gathered over one year only. The World Bank, in its projections, depends on the supply-use tables from 2004. PMA standard model relies on quarterly data gathered in 2000, while the PCBS model uses annual data gathered since 1972. However, the data available before the establishment of the PNA in 1994 is based on UNCTAD predictions calculated from Israeli and Jordanian statistics, as well as a number of other sources.

Based on the above review, the model used by PCBS is found to be the most appropriate to project labor market indicators for the occupied Palestinian territories. This is particularly true since orthodox models presume theoretical full employment in the labor market, which is unrealistic in the Palestinian case. In contrast, the PCBS model consider labor as an externally calculated variable. The PCBS model does have a weakness since it depends on data from the period before the establishment of the PNA in 1994 that does not differentiate between the different economic sectors. Therefore, the next section proposes changes to this model to address these problems.

1. The labor and population block, which includes eleven behavioral equations and thirty-four simulators
2. The government block, which includes three behavioral equations and fourteen simulators
3. The trade and national accounts, which include ten behavioral equations and sixty-two simulators
4. The prices and deflators, which include six behavioral equations and six simulators
5. The economic value-added block, which includes four equations for the four sectors

The behavioral equations are first assessed separately. Then, they are aggregated in three sets of equations for reassessment using a three-stage-least-squares (3SLS) method or using the Seemingly Unrelated Regressions (SURE) method

to overcome the endogeneity bias. The present paper cannot cover all of the aspects of the model, and will focus only on the operation of the labor market block. The research project revealed that to make the PCBS model more accurate and useful for forming policy, long-term teamwork is needed from a number of organizations, especially PCBS, MAS and UNCTAD. Several stages of work are required to make the necessary changes. The results of this project are only a first step in this direction but will hopefully be useful for joint follow up efforts.

2.1 Developing the model's behavioral equations

The research team reviewed the behavioral equations for the labor block and discussed a number of amendments to update the model to better adapt labor market theory to the reality of the Palestinian economy. Table (1) below explains the final changes to the variables affecting the labor market variables. Furthermore, the service sector has been disaggregated into five sectors, and consequently aggregate economic value added is shared among eight rather than four sectors: agriculture; mining; manufacturing; construction; trade; transportation and storage; ICT; education, health, and restaurants; and hotels and other services. The modifications of the structural equations of the labor block detailed in Table (1) may be summarized as follows:

- Division of the service sector equations into four sub-sectors, where the independent variables for employment and wages are different for the service sector. In the previous model, the number of workers in the service sector depended on the growth of and average income in the service sector, the number of workers in the mining and manufacturing industries, the number of workers in agriculture, and a dummy variable for the year 2002. In the amended model, employment in the health and education sector, for example, depends on the population count and GDP, while employment in the transportation and storage sector depends on variables that are more appropriate for the sector, such as the price of diesel, the number of car licenses, the domestic trade product, and the number of workers in Israel and the settlements, and number of workers in the agriculture, mining, manufacturing, and dummy variable for 2002.
- Value-added equations were added to the newly divided sectors. The same independent variables used for the entire service sector were used as independent variables for the value-added equations for the disaggregated service sectors, which are the overall consumption, overall investment and overall imports of goods and services in addition to a dummy variable for the period from 1994 to 2007.
- Employment variables in specific sectors were correlated with employment variables in other sectors. For example, employment in the mining and manufacturing sectors was correlated with the employment in the construction sector. It appears there was a direct (positive) correlation with statistical significance, which means there is a complementary relationship whereby increased employment in the production sector is related to more production in the construction sector. Subsequently, there is an increase in demand for stone and other construction materials, which represent a major output of the mining and manufacturing sectors. As for employment in the construction sector, it is related to employment in the agriculture sector and employment in Israel and the settlements because these sectors require low skills. Consequently, results showed an inverse correlation (negative correlation) between employment in construction and agriculture and employment in Israel and the settlements. There is a replacement relationship between employment in these two sectors and work in Israel. In other words, increased employment in the Israeli economy adversely affects employment in construction and agriculture in the domestic economy.
- The variable of government investment was added. This variable measures government spending on development, and is added to the employment equation in the construction sector because development spending is usually expended on development of the infrastructure, which has a positive effect on the construction sector.
- The productivity variable was added to the wage equation for each sector using the economic theory of correlating wages to work productivity. In the original model, this was done only for the wage equation for the service sector.
- The variable of the wages of working women was added to the equation of women's participation in the labor force. Although this variable did not show sufficient statistical significance, it was kept because it has a positive value. This is in accordance with the theories explaining women's participation in the labor force. Thus, this variable plays a role in explaining the low participation of women in the labor force in the Occupied Palestinian Territories.
- The previous value of the lagged dependent variable was added to some equations depending on the results of the Durbin-Watson test (an autocorrelation of the residuals for a statistical regression analysis).

Table (1): Amendments to the Behavioral Equations of the Labor Block

	Original equations		Amended equations
Number of workers in the agriculture sector	<ul style="list-style-type: none"> - Value added to the agriculture sector. - Change between the average wages in the agriculture sector and wages of workers in Israel over time. - Number of workers in the mining and manufacturing and service sectors. - Dummy variable for the years 1994 to 1995. - Ratio of investment in non-construction sectors to global investment. - Number of workers in the agriculture sector in the previous year. 	Number of workers in the agriculture sector	<ul style="list-style-type: none"> - Value added to the agriculture sector. - Ratio of average wages in the agriculture sector to average wage of workers in Israel. - Dummy variable for the years 2001-2002. - Ratio of investment in construction sectors to global investment. - Number of workers in the agriculture sector in the previous year
Number of workers in mining and manufacturing sectors	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Number of workers in the construction sector. 	Number of workers in mining and manufacturing	
Number of workers in the construction sector	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Number of workers in Israel. - Ratio of investment in non-construction sectors to global investment. - Dummy variable for the years 1988, 1995, and 2002. - Number of workers in the agriculture sector and government sector. - Number of workers in the construction sector in the previous year. 	Number of workers in the construction sector	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Number of workers in Israel. - Value of investment in the sector. - Dummy variable for the years 2002 to 2007. - Number of workers in the agriculture sector. - Population. - Government investment.
Number of workers in the service sector	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Number of workers in manufacturing. - Number of workers in agriculture. - Dummy variable for the year 2002. - Number of workers in the service sector in previous year. 	Number of workers in retail and wholesale	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Number of workers in the agriculture sector. - Dummy variable for the year 2002. - Number of workers in the same sector in the previous year.
		Number of workers in the transportation and storage sector	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Number of workers in Israel. - Revenue from domestic trade. - Average diesel price. - Number of car licenses. - Number of workers in manufacturing. - Number of workers in agriculture. - Dummy variable for the year 2002. - Number of workers in the same sector in the previous year.
		Number of workers in the ICT sector	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Population.
		Number of workers in the education and health sector	<ul style="list-style-type: none"> - Population. - Real GDP.
		Number of workers in other sectors	<ul style="list-style-type: none"> - Value added to the sector. - Average wages for the sector. - Ratio of workers in Israel to workers in the domestic economy. - Number of workers in manufacturing. - Number of workers in other sectors in the previous year.

Original equations		Amended equations	
Number of workers in Israel and the settlements	<ul style="list-style-type: none"> - Ratio of average wage in Israel to average domestic wage. - GDP of Israel. - Number of days of closure of entry and exit points for workers. - Number of workers in Israel in the previous year. 	Number of workers in Israel and the settlements	<ul style="list-style-type: none"> - Ratio of average wages in Israel to average domestic wage. - Number of days of closure of entry and exit points for workers. - Number of workers in Israel in the previous year.
Rate of women's participation in the labor force	<ul style="list-style-type: none"> - Available Gross National Product (GNP). - Number of workers in the domestic economy. 	Rate of women's participation in the labor force	<ul style="list-style-type: none"> - Available GNP, - Number of workers in the domestic economy. - Average wage of women in the previous year.
Average wage in agriculture	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Average wage in agriculture in the previous year. 	Average wage in agriculture sector	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Price index in the agriculture sector. - Productivity in the agriculture sector. - Average wage in agriculture in the previous year.
Average wage in mining and manufacturing sectors	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Average wage in manufacturing sector in the previous year 	Average wage in manufacturing sector	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Productivity in the manufacturing sector. - Average wage in manufacturing sector in previous year.
Average wage in the construction sector	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Dummy variable for the years 1995 to 1998. - Average wage in the construction sector in the previous year. 	Average wage in the construction sector	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Dummy variable for the years 1995 to 1998. - Productivity of the construction sector. - Average wage in the construction sector in the previous year.
Average wage in the service sector	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Productivity of the service sector in previous year. - Government spending 	Average wage in the retail and whole sale sector	<ul style="list-style-type: none"> - Average wage of workers in Israel. - Unemployment rate. - Productivity in the trade sector in the previous year. - Average wage in the trade sector in the previous year
		Average wage in the transportation and storage sector	<ul style="list-style-type: none"> - Unemployment rate. - Productivity in the transportation and storage sector in the previous year. - Average wage in the trade sector in the previous year.
		Average wage in the ICT sector	<ul style="list-style-type: none"> - Unemployment rate. - Productivity in the ICT sector in the previous year
		Average wage in health and education sector	<ul style="list-style-type: none"> - Unemployment rate. - Productivity in health and education in the previous year. - Average wage in health and education in the previous year.
		Average wage in other service sectors	<ul style="list-style-type: none"> - Unemployment rate - Productivity in other service sectors in the previous year. - Average wage of workers in Israel.

2.2 Data

In its evaluations, UNCTAD (UNCTAD, 2006) used data from the period from 1972 to 2006. With the creation of PCBS in 1994, a new series of more detailed data became available. Previous years' data depend on official Israeli statistics and some Jordanian data. Most of this data is estimated based on surveys organized by the Israelis every four to five years. Consequently, their margin of error is very high. Therefore, PCBS, in evaluating the model, uses data from 1981 to reduce reliance on estimated data from Israeli sources. The team tried to adopt Palestinian data after 1994 (with the assumption that the framework governing the Palestinian economic activity has changed radically since the advent of the PNA). However, the number of years was not sufficient to evaluate the model in its current shape (there remains a possibility to introduce future amendments to the model design, which allows for adopting data that reflects the Palestinian economic situation since the establishment of the PNA). Therefore, data series from 1981 to 2017 were used in this project, in addition to data estimates for 2018.

The key contribution of this report is the revision of the PCBS model with the division of the service sector into several subsectors. However, there is another problem related to the pre-1994 Israeli data. The Israeli data covered only value added, wages and the number of workers in the service sector in general. Since the weight of the data from the Israeli statistical series decreases with time now that PCBS is integrating new data every year, the team decided to assess the indicators for the newly defined service sectors on the basis of the percent these subsectors made up of the total service sector in 1994. Thus, the value added, wages, and number of workers for the subsectors were assessed based on this percentage. We presumed that the percentage was constant throughout the years from 1981 to 1995 because the service sector did not go through any major changes before the establishment of the PNA.

Furthermore, the quality of the time series from the pre-1994 period has been improved. For example, there was a huge gap between Israeli and Palestinian data for the number of vehicle licenses for the period before 1994. The research team re-assessed the number of vehicle licenses for the years before 1994 using the rate of change from one year to the next based on Israeli data. They referred to the Palestinian data from 1981 to 1994 using the same change rate. Also, the Israeli data does not provide the all price indices for the pre-1994 period, but does provide the consumer price index. Therefore, this latter index can be used to estimate the former. They used the rate of change for the consumer price index and referred to the Palestinian price index for 1982 to 1994, using the rate of change for the consumer price index.

2.3 Proposed Future Amendments to the Methodology

In light of the lack of Israeli data for many of the variables deemed appropriate, and at times necessary, for certain equa-

tions, the research team suggests introducing the variables listed below. Since a new data set is added every year through PCBS, researchers will be able to gradually phase out Israeli data and assess the variables we propose to add for the pre-1994 period. Changes that may be introduced in a next phase of research include:

- Replace the variable of the number of days of prevention of workers from crossing into Israel in the equation of employment in Israel and the settlements with the number of work permits issued for Palestinian workers. This is justified by the fact that the number of days the West Bank and Gaza were closed off is quasi-constant after the construction of the Annexation Wall in the West Bank and the Israeli unilateral disengagement with the Gaza Strip in 2005. Since that date, work permits represent the main policy applied by the Israeli occupation to open or close off the West Bank. For the Gaza Strip, no work permits have been issued but we can better measure the isolation of the Gaza Strip through the number of days that entry points were closed to trade.
- Examine the possibility of introducing new variables for interpreting economic performance, for which sufficient data sets are available (like unemployment, participation in the labor market according to age group, gender, educational level, etc.)
- Add a variable measuring confiscation of land to the equations for employment and the value added in the agriculture sector.
- Add a variable measuring permits granted to traders to the equations for employment and the value added in the retail and wholesale trading sector.
- Add a variable on hotel occupancy to the equations for employment and value added in other service sectors.
- Add a construction price index to the wage equation in the construction sector.
- Calculate the behavioral equations for the model for the West Bank and Gaza separately. There is a problem with public financial data because of the split between the two in 2007. Financial data shows that the majority of the revenue was in the Gaza Strip before 2007; then it shifted to the West Bank after 2007 with the transfer of the Ministry of Finance from Gaza to Ramallah. Furthermore, there is a lack of disclosure of public financial statements from the Gaza Strip. In addition to the financial statements, there is a problem relevant to foreign trade data in the Gaza Strip, especially as regards imports. Imports do not concur with the rate of consumption because many imports are smuggled through tunnels. We therefore recommend identifying a mechanism that can assess the rate of imports to the Gaza Strip.

3. Findings of the Labor Market Projections

3.1 Model Simulation for the Years 2000-2017

For accurate evaluation of the amended projection model, the model was simulated through projections for the years 2000 to 2017 using the estimated model. The projections were first estimated using data from 1981 to 2018. Then we made projections for the years 2000 to 2017 in order to compare our projections to real values. This period was selected to simulate the model for two reasons: First, real data is available from PCBS for the years 1995 to 2017; second, pre-2000, the structure of the world market was different because the occupied Palestinian territories were more open to the Israeli labor market. Furthermore, the margin of error for the projections is high for the estimates from both models for the period between 1995 and 1999. To compare the PCBS model to the amended model, as explained in the previous section, we adjusted the Mean Absolute Error (MAE) of the projections in both models using three key variables: GDP, unemployment rate, and average daily wage. The indicator was computed as using the following equation:

MAE =

y_i : observed value

\hat{y}_i : predicted value

n : number of notes

Table (2) Average Projections MAE

	Original model	Amended model
Gross Domestic Product (GDP)	6.3%	7.1%
Unemployment rate	14.7%	7.9%
Average daily wage	4.8%	3.5%

The results shown in the table above demonstrate that the average prediction MAE decreased noticeably in the amended model for the indicators for unemployment rate and average daily wage. This means that the amended model provides more accurate predictions of the labor sector indicators. Regarding the predictions of GDP, the MAE was higher by 0.8 percent, which was expected because of the increase in the number of sectors. This is because there were more variables and more equations, which results in an increase in the standard error in assessing the model's behavioral equations.

3.2 Economic performance scenarios for the year 2019

Three scenarios are presented here: the baseline scenario, the optimistic (best case) scenario and the pessimistic (worst case) scenario. The hypotheses are based on the different factors contributing to each scenario, and have mostly been created using data from previous periods. The hypotheses are in accordance with those adopted by PCBS for 2019, which were published in December 2018. The criteria used for the scenarios proposed here reflect, to a large extent, the same prospects expected by PCBS, although we have adopted a narrower gap between the top and bottom ceilings of the possible rates of

change. In both cases, the quantified value of the different hypotheses are not predictions as much as they are a quantification of possible scenarios that could ensue if economic activity remains unchanged, or alternatively if it improves or regresses. Thus, each of the scenarios presents possibilities for the size of the economy and trends related to possible economic performance (ranging from the best to the worst).

3.2.1 Baseline Scenario

Based on the trends from the last four years, the baseline scenario assumes that the population will grow by 2.4 percent, while income tax collection will increase by 2.3 percent and VAT collection will drop by 1.9 percent, based on assessments from the Palestinian Ministry of Finance. In light of the current political situation, it is assumed in this scenario that the number of days of that trade is closed off will increase by 4 percent. Similarly, the number of days when individuals will be prevented from crossing into Israel will rise by 1.6 percent. As for financial matters, lending will increase by 8.6 percent, based on data from the PMA for the last four years. Moreover, private financial aid from abroad will drop by 7.5 percent, while government transfers will increase by 3 percent. In contrast, it is expected that government investment and development spending will rise by 10 percent with a constant rate of employment in the public sector, based on data from the Ministry of Finance from 2018 (development spending increased by 26 percent). However, with the decrease external funding to the PNA, we decided to lower this assessment for 2019.

Regarding the relationship of the economy with other states, that the assumed NIS-USD exchange rate is 3.7NIS/1 USD based on the average exchange rate for December 2018. Furthermore, inflation in Israel and in Jordan is estimated at 1.43 percent, while the observed economic growth in Israel is expected to increase by 3.5 percent, based on predictions from the Organization for Economic Cooperation and Development (OECD). In Jordan, the inflation rate is expected to be 2.3 percent with an observed economic growth of 2.5 percent, based on IMF predictions.

3.2.2 Best Case Scenario

This scenario assumes that the rate of population growth, lending, economic growth in Israel and Jordan, and the inflation rate in Jordan and Israel are the same as in the baseline scenario. But it assumes that collection of income tax will rise by 6 percent while the collection of VAT will increase by 10 percent. It also assumes that the number of days Israel closes off entry points for trade will drop by 8 percent, and for individuals it will go down by 10 percent. Regarding financial variables, the assumption here is that private financial transfers could increase by 20 percent, government transfers by 5 percent, government investment by 50 percent, and employment in the public sector would increase by 10 percent.

3.2.3 Worst Case Scenario

This scenario assumes that population growth rate, lending rate, economic growth rate in Israel and Jordan, and inflation rate in Jordan and Israel will be similar to the baseline scenario. But it assumes that collection of income tax and VAT will drop by 10 percent while the number of days Israel closes off trade will increase by 15 percent. On financial matters, it assumes that private financial transfers and government transfers will drop by 20 percent and government spending will decrease by 40 percent, while employment in the public sector will drop by 4 percent.

3.3 Labor Market Performance Projections for 2019

Palestine would be fortunate to escape recession in 2019. In the baseline scenario, the results of the projections show that the Palestinian economy will continue to slow down to the point where the growth of the GDP will be 0.7 percent (see Table 3). In the best case, growth could reach 3.5 percent, while GDP could decrease by 1.3 percent in the worst-case scenario. Unemployment would continue to rise, to 32.8 percent according to the baseline scenario, compared to 31 percent in 2018. The unemployment rate would continue to rise even in the optimistic scenario up to 31.9 percent, while it could increase to 33.8 percent in the pessimistic scenario. Unemployment will fluctuate according to the respective scenario, while participa-

tion in the labor force will remain constant for males and females at 72.4 percent and 19.8 percent respectively. This means that employment is the most susceptible to outside changes, which will decrease by 20%, by 40% in government investment, and by 4% in public employment.

The construction sector is expected to see most employment growth at a percentage of 4.6 percent, followed by the health and education sector at 3.3 percent, and the ICT sector at 3.1 percent. However, the growth of the construction sector varies widely in each scenario: it is 10.6 percent in the optimistic scenario and drops to 0.2 percent in the pessimistic scenario.

A rise in the unemployment rate has an inverse effect on wages. Average daily wages are thus expected to drop by 0.6 percent according to the baseline scenario, and to grow by 0.2 percent only in the best-case scenario. They would fall by 0.7 percent in the worst-case scenario. The sector with most expected growth in daily wages in 2019 is the ICT sector with a growth rate of 2.3 percent in the baseline scenario. This is why it is considered a promising sector for the Palestinian economy since it shows the highest growth in employment even in harsh economic conditions. Furthermore, wages in this sector continue to grow contrary to the general trend of wage regression. It is expected that the average daily wage in the transportation and storage sector will drop by 5.4 percent.

Table (3): Projections for Key Palestinian Labour Market Indicators

	Baseline scenario		Optimistic (best case) scenario		Pessimistic (worst case) scenario	
	2018	2019	2018	2019	2018	2019
GDP	13,787.9	13,889.5	13,787.9	14,272.9	13,787.9	13,602.3
Rate of economic growth		0.7%		3.5%		-1.3%
Unemployment rate	31.0%	32.8%	31.0%	31.9%	31.0%	33.8%
Female participation in the labor force	19.8%	19.8%	19.8%	19.9%	19.8%	19.7%
Male participation in the labor force	72.4%	72.4%	72.4%	72.8%	72.4%	72.1%

Table (4): Employment Projections by Economic Sector

	Baseline scenario		Optimistic (best case) scenario		Pessimistic (worst case) scenario	
	2018	2019	2018	2019	2018	2019
Thousands and Percentages						
Employed in the agriculture sector	53,353	53,812	53,353	56,740	53,353	49,641
growth rate		0.9%		6.3%		-7.0%
Employed in manufacturing	108,370	110,331	108,370	110,983	108,370	110,772
growth rate		1.8%		2.4%		2.2%
Employed in the construction sector	94,515	98,855	94,515	104,535	94,515	94,721
growth rate		4.6%		10.6%		0.2%
Employed in retail and wholesale trade	168,319	169,830	168,319	173,116	168,319	166,171
growth rate		0.9%		2.9%		-1.3%
Employed in the transportation and storage sector	49,208	50,341	49,208	50,451	49,208	50,050
growth rate		2.3%		2.5%		1.7%
Workers in the ICT sector/	10,397	10,720	10,397	10,799	10,397	10,656
growth rate		3.1%		3.9%		2.5%
Employed in health and education	129,000	133,254	129,000	133,640	129,000	133,040
growth rate		3.3%		3.6%		3.1%
Employed in other services	215,771	210,374	215,771	211,110	215,771	210,652
growth rate		-2.5%		-2.2%		-2.4%
Employed in Israel and the settlements	110,806	113,882	110,806	118,717	110,806	108,724
growth rate		2.8%		7.1%		-1.9%

Table (5): Projections for the average daily wage according sector

	Baseline scenario		Optimistic (best case) scenario		Pessimistic (worst case) scenario	
	2018	2019	2018	2019	2018	2019
Thousands and Percentages						
Average daily wage in the agriculture sector/ growth rate	12.4	12.3	12.4	12.4	12.4	12.3
		-1.3%		-0.5%		-0.9%
Average daily wage in manufacturing/ growth rate	20.1	20.2	20.1	20.3	20.1	20.2
		0.4%		0.9%		0.3%
Average daily wage in the construction sector/ growth rate	25.4	25.5	25.4	25.8	25.4	25.3
		0.3%		1.6%		-0.2%
Average daily wage in retail and wholesale trade/ growth rate	15.5	15.6	15.5	15.7	15.5	15.6
		0.8%		1.3%		0.5%
Average daily wage in the transportation and storage sector growth rate	10.3	9.7	10.3	9.8	10.3	9.7
		-5.4%		-5.1%		-6.1%
Average daily wage in the ICT sector/ growth rate	29.8	30.5	29.8	30.1	29.8	30.8
		2.3%		3.4%		1.1%
Average daily wage in health and education/ growth rate	27.2	26.7	27.2	26.9	27.2	26.5
		-2.0%		-1.0%		-2.5%
Average daily wage in other services/ growth rate	24.2	24.0	24.2	24.3	24.2	23.9
		-0.7%		0.3%		-1.2%
Average daily wage for waged labor/ growth rate	21.0	20.9	21.0	21.0	21.0	20.8
		-0.6%		0.2%		-0.7%

4. Policy Recommendations to Address the Situation in the Palestinian Labor Market

Data limitations, as well as the methodological constraints upon a sensitive projection exercise as this, call for caution not only in quantifying expected or possible changes in labour market performance, but also in drawing sector or indicator-specific policy recommendations. As implied by the Danish scientist quoted at the outset, the strength of the output of any model is only as good as (and possibly can only simulate) the historical data inputted, regardless of methodologies applied. Hence, recommendations here stem from an analysis of the indicators reviewed in the three scenarios above and focus on short-term labor issues. At this point in the research effort, which as mentioned is one that requires more time to fully mature, the numbers produced by the model adopted are adequately clear to emphasize and better delineate the scale and nature of the policy challenge ahead. What counts is the overall thrust of the predictions, rather than the exact scale of possible change.

The analysis showed that the performance of the Palestinian labor market is expected to be poor in 2019, even in the best-case scenario. There are no signs of possible improvement in the performance of labor indicators discussed here, but, in the best case, no further regression will be seen. These predictions show that no potential improvement in key indicators (unemployment and women's participation) is foreseen in the short term. Even in the optimistic best case, predicted growth

remains at merely 3.5 percent. It may be deduced from the analysis that labor sector problems (unemployment and the decrease in wages) have become structural and hard to address substantially. Such a new policy treatment needs a short- and long-term vision, targets and programs at both the micro- and macro-economic policy levels, which aim, above all, to:

- Create sustainable and decent job opportunities in the domestic economy rather than providing the unemployed with short-term jobs only.
- Promote participation in the labor market, especially women's participation.
- Preserve the stability of real wages in the domestic economy and endeavor to increase them in the future.
- Achieve the goals above without having to resort to increasing the number of workers employed in the Israeli economy.

This quadruple challenge facing the labor market require a serious and frank endeavor to formulate policies that can realize a sustainable positive effect on performance, mainly policies that remedy the root cause of these economic problems rather than treating only the symptoms. The steady regression in Palestinian labor market indicators is a sign of the huge challenges and the urgent need for short- and long-term policies to improve the performance of these indicators, especially

when it comes to unemployment.

It is therefore paramount to formulate a full package of policies that influence the supply of labor, or so-called Active Labor Market Policies. These represent a combination of government services and support for finding job opportunities that include vocational programs for the unemployed and subsidies/aid to help employ recently labor market entrants. More importantly, priority must be given to interventions and policies that generate a sustainable demand for labor, and which can address the problems of increasing employment, wages and female participation in the labor market. In fact, until now, Palestinian development plans have not focused on the demand side but instead have focused on supply. The package of policies that address the labor supply intersects with macro-trade and financial policies. Thus, for such policies to succeed, there is a need for high-level coordination between different components of socioeconomic policies to ensure they complement and do not duplicate each other. The key findings of the analysis and the active economic policy trend framework needed for Palestine to respond to the challenges of the labor market at the level of supply and demand for labor are presented below.

4.1 Creating Employment and Combatting Unemployment

4.1.1 The mining, manufacturing and ICT sectors have the most potential to increase employment and decrease unemployment under harsh political conditions

Findings show that the manufacturing and ICT sectors have the steadiest growth rates for employment even in the worst-case scenario. Consequently, investment in these two sectors will secure job opportunities even during crises and will mitigate the rise in unemployment rates albeit fluctuating economic conditions. Most interventions and policies proposed for these two sectors are long-term because they are promising for the near and longer future alike. Thus, the interventions are related to structural and policy issues at both the micro and macro levels.

To secure a high return on investment in both sectors, focus must be placed on labor policies on both the supply and demand sides. In addition to the supply of labor, successful investment in these sectors requires building human capacity through support for education and training. This entails starting new programs technical and vocational training with the goal of giving workers advanced applied knowledge. Furthermore, local technical education must be linked to international programs from different parts of the world, especially economically developing nations. Universities play an important role in providing theoretical and applied education through direct collaboration with the private sector to develop innovative ideas and applications in these sectors. Although Palestinians are highly educated, there is no model for matching scientific and technical knowledge with the needs of specific sectors. It is necessary in this regard to establish incubators and techno parks in universities that are closely tied to specific sectors of

manufacturing and ICT. Schools and intermediate colleges can develop vocational and technical training to provide the different economic sectors with workers with the skills and applied expertise they need.

On the demand side, the focus must be on improving productivity through increased use of technology and locally available resources. Since Palestinian law related to the promotion of investment prescribes tax exemptions over a specific number of years for high-capital businesses, the tax exemptions can be extended to small enterprises for a specific period of time as well. Moreover, funding must be made available to small enterprises in the manufacturing and ICT sectors with a reasonable interest rate. This is key for the growth of such businesses. Annual UNCTAD reports on the Palestinian economy indicate that focusing production on fulfilling local consumption needs may help such enterprises succeed, as they will be less vulnerable to Israeli border closures.

As regards competition, the manufacturing and ICT sectors need protection or at least the opportunity to secure a steady share of the domestic market without unfair competition for a certain period of time. It is important that this protection differentiates between production materials and final products. It is necessary to protect the final products while importing of production materials is encouraged. Since these sectors are promising, they may be viewed as a lever for the other economic sectors, which will have a positive effect on the increase in productivity and value added and the decrease of unemployment rates.

4.1.2 Agriculture and construction sectors have the most potential for increasing employment and decreasing unemployment when economic conditions improve

The findings show that the agriculture and construction sectors are the most likely to generate employment in the best-case scenario. This means they have high potential to generate employment and decrease unemployment. Findings showed that weak production, including in the agricultural and construction sectors, are mainly the outcome of Israeli colonial policies because of their significant effect on lowering the growth of and employment rate in the Palestinian economy.

These sectors must be supported through active policies that focus on labor supply, including government employment programs, which help workers to find job opportunities and through programs that help to retrain workers. Furthermore, technical support can be provided to investors and small enterprises in both sectors. Mainly in the agricultural sector, aid is needed to reclaim land and fertilize it and to combat agricultural pests and develop new irrigation techniques and organic farming. Efforts can be employed to promote agricultural cooperatives, as they represent an effective tool not only for production but also for establishing broad distribution networks to market and sell products.

Funding opportunities need to be enhanced through

micro-credit programs that are not limited to providing financial resources but are also extended to develop technical and administrative capacities in project management and development. This will help mitigate the risks faced by the agricultural sector, including diseases and weather conditions that may harm the crops. A fund to mitigate farming risks and insurance must be activated with a scope of work that would go beyond mere insurance against environmental risks to help protecting the agricultural sector from market distortions. In the same context, unfair competition from the Israeli agricultural sector must be addressed together with the dumping of Israeli farming products in the Palestinian market. Restrictions could be imposed on importation of such products to improve the value and distribution networks of domestic products.

4.2 Maintain the stability of real wages and increase them in time

It appears that wages in the ICT sector are the most stable in terms of a steady rise in labor wages. This means that this sector can increase employment and preserve a steady rise in wages that is higher than the inflation rate, i.e. a real increase instead of a nominal increase. In other words, investment in this sector is not only lucrative in terms of increasing the number of employees, but also in terms of the yield from employment and the distribution of this yield to workers.

4.3 Increase women's participation in the labor market and decrease their rate of unemployment

Women's unemployment is closely correlated with the ability of productive sectors to employ since they are the sectors that usually employ most women. This includes the agricultural sector, manufacturing, and ICT. Weak performance in these sectors leads to a decrease in the participation of women in the Palestinian labor force. Women believe they do not have a place in the labor market because of the weak agriculture and mining and manufacturing sectors. They opt for jobs in the service sector, but there aren't enough jobs available. Thus, further investment in these sectors will lower women's unemployment and promote their participation in the labor market.

4.4 Promote employment in the agricultural and construction sectors in the Palestinian labor market to reduce the number of workers employed in Israel

Analysis showed a replacement relationship between employment in the agriculture and construction sectors in the West Bank on one hand, and employment in Israel on the other.

Employment in these two sectors is directly affected by the opening of the Israeli labor market for Palestinian workers. Although the opening of Israeli labor markets for Palestinian workers helped reducing unemployment in the local market, it is fragile employment governed by occupation policies. In other words, it is unstable employment. Plans must be devised to reduce reliance on this employment in the medium- and long-term. The vulnerability of employment in Israel confirms the necessity to invest in the domestic agriculture sector in particular. This investment will generate more stable employment for Palestinian labor in the domestic economy. On the other hand, it must be combined with protection against unfair Israeli competition to increase profitability and boost the ability of these sectors to pay higher wages and provide more jobs.

As stated earlier, active labor market policies with a focus on government programs to secure job opportunities, micro-credits and promoting use of technical knowledge in agriculture can have concise impact on these sectors in the short-run. Furthermore, improving and organizing the value chains and distribution and marketing networks for these networks will improve productivity.

4.5 Decent Work and Labor Rights

With the expected rise in unemployment rate and the fall of wages in the baseline scenario, it is necessary to provide further protection for labor rights and endeavor to improve unions' representation and their ability to bargain collectively. Such effort will secure Palestinians decent work. But it is not possible to safeguard labor rights without efforts to establish a fair social security system that ensures social safety and protects labor rights while providing unemployment insurance.

The expected rise in unemployment means that officials need to pay greater attention to other aspects of decent work like disability insurance, enforcement of the minimum wage, and other labor rights, including annual leave. These rights are often overlooked when there is more labor supply than demand. It should be noted here that endeavors to achieve the sustainable development goals intersect with ensuring the enforcement of decent employment. Lowering unemployment and maintaining the stability of real wages with increased participation of women in the labor market requires the full application of labor rights. These are all associated with a sound legal and institutional framework that identifies obstacles to the enforcement of labor law and reinforces Labor Ministry inspections to prevent violations committed in the labor sector.

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