Palestinian Economy, Policy Framework and Growth Prospects:
A Modeling Perspective

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To be presented at EconModNet, Free University of Brussels
Conference on

Middle East and North African Economies:
Past Perspectives and Future Challenges

Brussels, June 2-4, 2005

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## Introduction

The Palestinian economy continues to be engulfed in the economic crises sparked by the Israeli incursions in the occupied Palestinian Territory since the outbreak of the Al-Aqsa Intifada in September 2000. There was a substantial decline in the performance of different socioeconomic indicators, which have reached alarming levels in 2002. In 2003, the Palestinian economy began to show signs of recovery and adjustment to the crisis after two years of unprecedented regression. For example, real gross domestic product (GDP) in 2003 experienced a growth rate of 4.5% compared to 2002 by reaching US$ 4011 million at constant 97 prices after a decline by 11.1% compared to 1999 (PCBS 2004a). Drastic changes have also been witnessed at the sectoral level. Value added by sector in 2003 was close to the level in 1999 for the best performing sector (construction) and much below the 1999 level for all other sectors.

Previous models of the Palestinian economy such as UNCTAD (1994 and 2000), and the World Bank (2001) CGE model, as well as others, lack the economic changes that took place as a result of the Paris Protocol and the recent havoc since 2000. This paper presents an integrated macroeconometric model of the Palestinian economy. The model covers the details of national accounts, trade, labor and demography relationships over the period 1972-2002. In addition, the model follows the input-output approach to bridge between the demand and supply sides of the economy. The latter is modeled in four productive sectors: agriculture, industry, construction and services. This framework does not only aim at estimating some important elasticities but attempts to simulate the economy to assess the impact of alternative policy frameworks/scenarios.

One of the primary markets that attract attention is the labor market. The ever-renewed interest in the labor market stems from its segmentation on one hand, and its connection to the political stability or lack thereof on the other. Employment in Israel, as is often the case, pays higher wages and requires little to no education. At its peak, Palestinian employment in Israel accounted for about 25 % of the labor force. Following the eruption of the second Intifada in September 2000, this figure dropped substantially, raising unemployment from 14% to above 30%. As a result, domestic employment distribution is altered, with agriculture and, to a lesser extent, services sector acting as the economy's shock absorber. Increasing pressure is also placed on the budgets of Palestinian National Authority in terms of hiring and social services.

The model addresses these issues by showing that employment in Israel, although it pays higher wages, is not totally driven by wage differential. Israeli restrictive measures in the occupied Palestinian territory and domestic labor supply play important roles. The effect of wage offered to Palestinians employed in Israel on domestic sectoral wage is strongest in agriculture, followed by construction and then industry. Agriculture and industry wages are more sensitive to unemployment than construction and services. Among the policy scenarios that could be assessed by this analytical framework is the impact of sectoral employment generation programs and the effects of tax on Palestinian employment in Israel on unemployment, employment in Israel, income and trade balance.

The model also considers the impact of the Israeli closure policy, which directly reduces net factor income owing to lower employment in Israel. This policy also restricts the movement of domestically produced goods more severely than it does for imports from Israel. As a matter of fact, the results indicate that the closure policy simultaneously reduces Palestinian exports and increases their imports. These mechanisms are more evident in the case of trade with Israel than trade with the rest of the world. As a result, within the past three years the Palestinian trade deficit with Israel grew faster than that with the rest of the world. Furthermore, depreciation of the New Israeli Shekel, a policy instrument not available to the Palestinian policy maker, seems to have had little impact on exports to the rest of the world. Thus, it could be advantageous for the Palestinians to consider a more diversified trade regime, such as regional/international free trade agreements, rather than an asymmetric custom union.

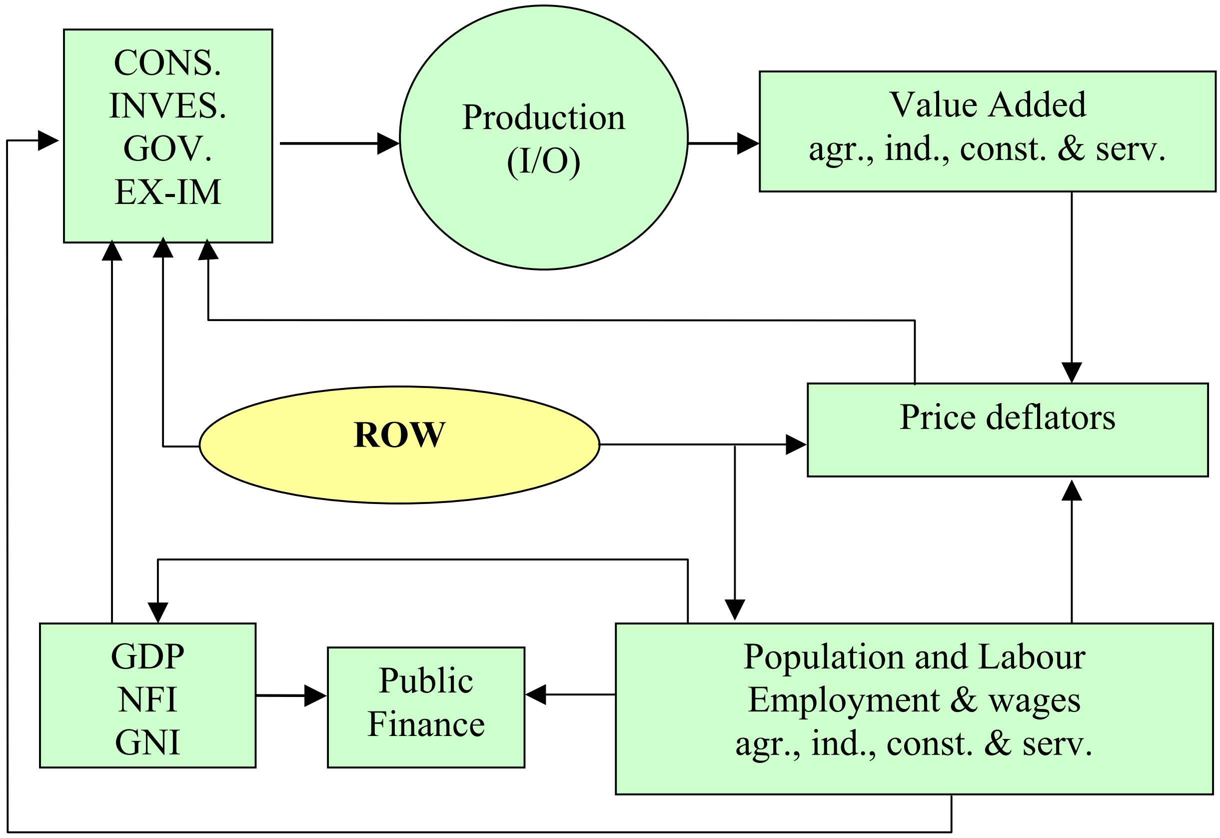
The objective of this paper is to assess a wide range of policy options, which helps in the formulation of alternative strategies for the future of Palestinian economic relations and policies. Specifically, the paper will focus on future macroeconomic, labor and trade policies. This will require an assessment of the concerned sectors and the present policy framework. To quantify the impact of the alternative sectoral and macroeconomic policies, an integrated analytical framework will be developed. The proposed model aims to reflect the present Palestinian economic reality by incorporating current available data and new modeling techniques, as well as build on the experience of previous models. An additional goal is to quantify the impact of both trade and labor policies, the increase in the number of returnees, taxes and transfers policy, investment programs, debt and foreign saving.

A time series database was constructed based on the UNCTAD's 1972-2002 database. The current model added other variables as needed. Data compiled and presented are in constant (1997) prices. Data used were retrieved from, among others, the Palestinian Central Bureau of Statistics (PCBS) and the *Statistical Abstract of Israel*. Israeli published data had been subjected to key modifications to make them consistent with data published by PCBS. All data in Israeli Shekels (NIS), as reported by the Israeli Central Bureau of Statistics (ICBS), are converted into US$ using an average annual exchange rate estimated by the World Bank. Data are verified on a global basis through a constant analysis of the variables against their historical trends, as well as through team-work and internal double-checking. In conclusion, these checks confirm the overall good quality of the database.

**The Model**

The model consists of 35 behavioral equations and 119 identities; the two main blocks are 1) demography and labor markets and, 2) trade and national accounts. In addition, there are three other blocks, namely government, prices and sectoral value added. The structure of the model reflects a high degree of dependency by the Palestinian economy on that of the Israeli economy for employment and trade. During the period 1967-2000, exports to Israel averaged approximately 59% of the total Palestinian exports, while imports from Israel averaged about 63% of the total. Concerning the labor market, employment in Israel continued to be over 30% of the labor supply until 1993, after which it declined to less that 10% in 2002. Following Elkhafif (1996) in his work on the Egyptian economy, the model incorporates supply and demand factors rather than being solely demand driven or supply determined. Final demand variables work through value added equations, which in turn affect sectoral employment. Figure 1 below shows the structure of the Palestinian economy model.

**Figure 1: A simplified flow chart of the Palestinian economy model**




No Palestinian government, in the national sense, was present from 1967 to 1993; therefore data from the Israeli Civil Administration (ICA) for this time span is consulted for the government sector. This period is characterized by Israel's collection of taxes coupled with an almost total lack of implementing programs for the development of the Palestinian territory. The expenditure that did take place was primarily for the running of the health, educational, postal and local governmental staff. In 1992 the ICA budget was in surplus by $17 million[1] (Khader 1999). With the establishment of the Palestinian National Authority (PNA) in 1994, the term "government" took on a different meaning. The PNA developed a centralized budget with only partial fiscal policy tools. Despite the fact that in the early years the PNA seldom performed any fiscal management in the macroeconomic sense, it did contribute to the absorption of thousands of employees, especially in times of restricted access to the Israeli labour markets. It also implemented many employment generation schemes.[2] Daoud (2002) points out that the PNA's fiscal actions were not consistent with GDP movements over time nor were they responsive to private sector development needs. The spending structure of the Palestinian budget has experienced significant growth on per capita bases.

[1] The current data set shows a deficit of $ 45 million in 1991 and $ 137 million in 1992.
[2] For the better part of 1996, the Holst Fund administered by the World Bank and implemented by PECDAR were not subject to the Ministry of Finance budgetary procedures.

**Figure 2: Total Government Revenues (GRTR) and Total Government Expenditures (GETR)/million 1997 US$**

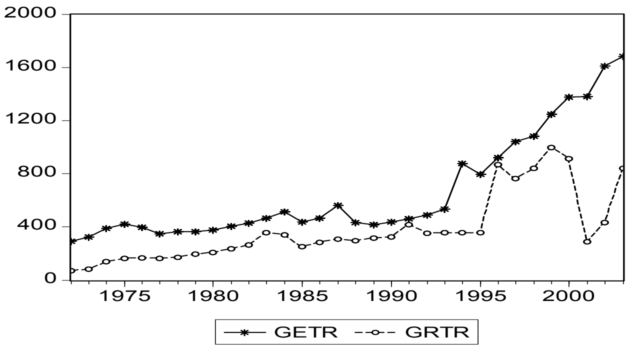



Figure 2 reflects the historical trends of both government revenues and expenditures. The expanded budget was in part due to the retention of large customs clearances which were historically kept by Israel. The donor community also stepped up their contributions to help the newly established PNA with significant contributions to capital expenditure. It is evident that the deficit reached new proportions with the beginning of the second Intifada when Israel withheld all clearances that accrued to the PNA.

Some of the studies that modeled the government are Al-Naqib (1996), UNCTAD (1994a), El-Jaafari (1998), Arnon, Luski, Spivak, and Weinblatt (1997) Fishelson (1989), and Baums (1989). Most of these studies treated government as exogenous. In this model government consumption, other revenues and net indirect taxes and subsides are endogenous. Public consumption is thought of to be influenced by public employment, lagged deficit, PNA dummy and lagged dependent variable. Public investment is exogenous/policy variable, other government expenditures were also left as exogenous. On the revenue side, VAT revenues were estimated twice as identities. The first is the effective VAT rate multiplied by GDP at factor cost, and the second is an identity as 17% of value added. The difference between the two is an estimate of the fiscal leakage which could be a source of revenues if reduced. The leakage is in turn used to explain other revenues along with imports from the rest of the world (ROW). Income tax revenues are decomposed into domestic and income taxes imposed on Palestinian employment in Israel.

The government's fiscal policy has been focused on the improvement of revenue collection. Despite large improvement in that regard, fiscal leakage is still substantial. On the other hand, government fiscal policy is governed by the economic agreement (Paris Protocol) which gives the PNA little maneuvering space to change tax rates. The PNA did not actually use any of the allowed tax setting policies by the agreement. The model allows changes in tax/subsidy switches on trade and wages to explore their effects.

The monetary sector is noticeably absent from the model because of the lack of monetary policy options available to the Palestine Monetary Authority (PMA) as well as the non-existence of a Palestinian currency. The financial sector is only considered to show the effects of credit extension and lending rate on investment. While the first instrument is available to the Palestinian policy maker, the latter is beyond their reach as it is determined by the Bank of Israel. It is commonly found in the literature that private investment is not as sensitive to interest rates as much as the political instability in the Palestinian Territory.[3]

In the absence of a Palestinian monetary policy to combat inflation, Israeli prices are transmitted by way of the large proportion of trade with Israel. The closure policy also affects Palestinian prices through the supply bottlenecks; intermediate goods imported from Israel affect domestic production and thus creates shortages. Price deflators are introduced in some detail to account for inflation dynamics in Palestine and to investigate the effects of labor productivity, the NIS exchange rate (another policy variable beyond the reach of Palestinian policy makers) and prices in Jordan. The deflators covered are: prices of consumption, investment (construction and non-construction), exports (goods and services), and imports (goods and services).

The primary objectives of the model are twofold: first, to show the effects of exogenous shocks on the primary dependent variables and secondly, to provide a baseline forecast scenario to which various policy shocks can be compared. Chief among Palestinian concerns is the separation wall and its impact on the freedom of movement of goods and labor services. The closure policy has often been a major source of labor market distortion since the beginning of the 1990's. Employment in Israel provides short term relief as evidenced by the relative share of net factor income. The long run drawback is that Palestinian employment in Israel is not conducive to technology transfer, and thus may hamper Palestinian long term growth prospects (Ruppert Bulmer (2003)).

**Estimation**

The time series were first visually checked for structural breaks; many such cases were found and were incorporated into the model. The augmented Dickey-Fuller test was applied to all series with different specifications and time lags. The non-stationary null was not rejected for all variables. In such cases the use of Johansen's (1988) Vector Error Correction Model (VECM) would be the appropriate procedure. It was not used, however, because of data limitations. The model was estimated by Zellner's (1968) *seemingly unrelated regression* to gain the efficiency from cross equation correlations. This is valid as long as the purpose of the regression is for forecasting and policy simulation. It needs to be noted that, in line with the prior selection process, variables were not necessarily included based upon their t-statistics and standard errors. Rather, emphasis was on theoretical consistency which required at times the inclusion of variables that were not necessarily statistically significantly. The estimated coefficients of the model equations are presented in Tables 2-6.

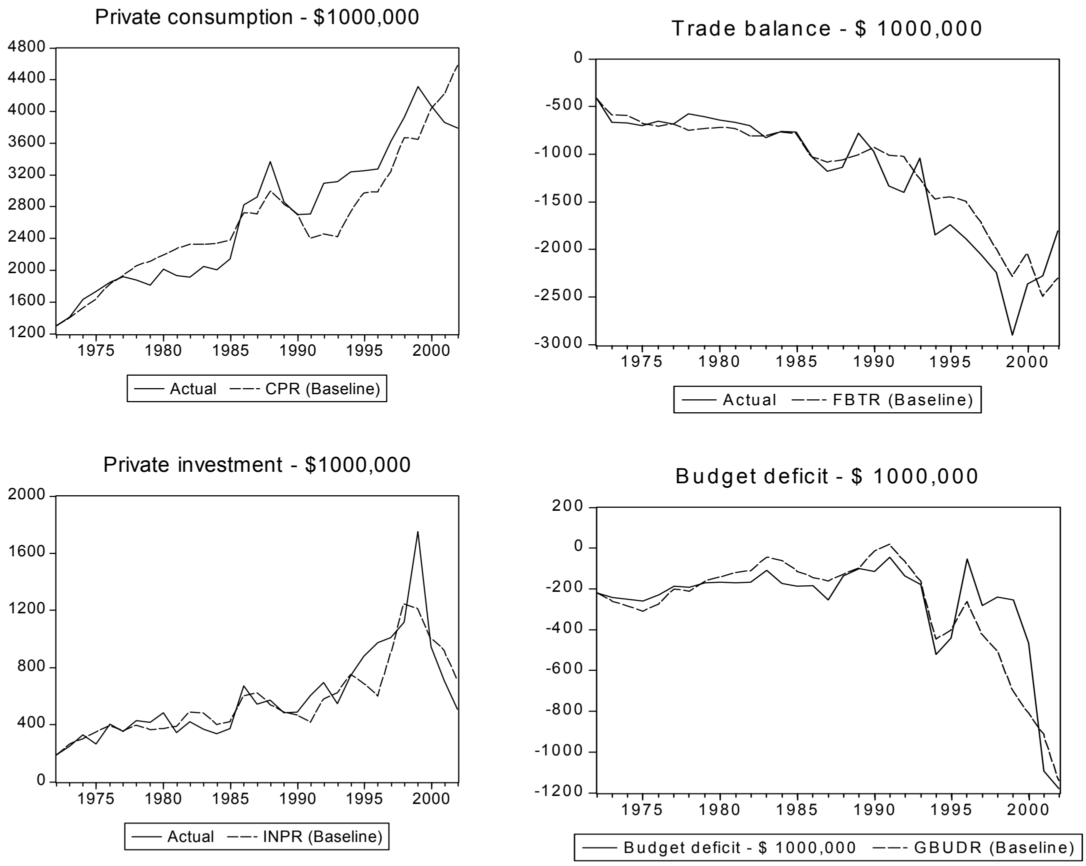
The model was estimated for the entire 1972 – 2002 period; dynamic simulations provided the predicted values to compute the Mean Absolute Percent Error (MAPE) and Theil's inequality coefficient. Table 1 below shows that except for the female participation rates and male participation rates, the match is very good. Figure 3 shows the time series plot for some of the dependent variables. Evidently the model tracks the historical data quite nicely. The models performance was less accurate in the prediction of male and female participation rates (not shown).

[3] See for example Hamed (1999)

**Table 1: MAPE and Theil's inequality coefficient.**

| Dependent Variable | MAPE | Theil |
|---|---|---|
| Total employment | 0.0890 | 0.0000 |
| Domestic employment in agriculture | 0.1266 | 0.0000 |
| Domestic employment in industry | 0.1473 | 0.0000 |
| Domestic employment in construction | 0.1854 | 0.0000 |
| Domestic employment in services | 0.1426 | 0.0000 |
| Employment in Israel | 0.0634 | 0.0000 |
| Female participation rate | 0.1763 | 2.1437 |
| Male participation rate | 0.0607 | 0.1089 |
| Exports of G & S to Israel | 0.1845 | 0.0008 |
| Exports of G & S to the ROW | 0.1752 | 0.0009 |
| Imports of G & S to Israel | 0.1432 | 0.0002 |
| Imports of G & S to the ROW | 0.0868 | 0.0002 |
| Net factor income | 0.1074 | 0.0002 |
| Government consumption | 0.0728 | 0.0001 |
| Net indirect taxes and subsidies | 0.7703 | 0.0024 |
| Government other revenues | 0.3107 | 0.0023 |
| Private investment | 0.1587 | 0.0004 |
| Private consumption | 0.1122 | 0.1623 |
| Wage in agriculture | 0.1176 | 0.0139 |
| Wage in industry | 0.1085 | 0.0102 |
| Wage in construction | 0.0720 | 0.0049 |
| Wage in services | 0.0961 | 0.0075 |
| Overall wages | 0.0836 | 0.0074 |

**Figure 3: Simulated and actual series for some variables**



## Table 2: Estimates of labor market relations*

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Employment in Israel | Constant | 5.8597 | 0.6147 | 9.5329 | 0.0000 | 0.877 |
| | Palestinians wage in Israel relative to average domestic wage | 0.0402 | 0.0036 | 11.1591 | 0.0000 | |
| | Labor supply | 0.4690 | 0.0531 | 8.8329 | 0.0000 | |
| | Closure days+ | -0.0042 | 0.0002 | -19.1421 | 0.0000 | |
| | Government investment | -0.0646 | 0.0189 | -3.4192 | 0.0007 | |
| | 95,96 dummy+ | -0.2746 | 0.0271 | -10.1483 | 0.0000 | |
| Employment in Agriculture | Constant | 5.1046 | 0.7066 | 7.2239 | 0.0000 | 0.855 |
| | Value added in agriculture | 0.1942 | 0.0361 | 5.3841 | 0.0000 | |
| | Agriculture wage | -0.1297 | 0.0353 | -3.6774 | 0.0003 | |
| | Employment in industry | -0.3549 | 0.0953 | -3.7252 | 0.0002 | |
| | Employment in services | 0.5386 | 0.0890 | 6.0553 | 0.0000 | |
| | Change in employment in Israel to domestic employment ratio+ | -1.1015 | 0.2407 | -4.5753 | 0.0000 | |
| | 94-95 dummy+ | 0.2260 | 0.0289 | 7.8217 | 0.0000 | |
| | Share of non-construction investment+ | 0.0616 | 0.0528 | 1.1665 | 0.2437 | |
| | Lagged dep. Variable | 0.1737 | 0.0608 | 2.8568 | 0.0044 | |
| Employment in Industry | Constant | 1.9985 | 0.1857 | 10.7622 | 0.0000 | 0.989 |
| | Value added in industry | 0.1368 | 0.0251 | 5.4453 | 0.0000 | |
| | Industry wage | -0.0400 | | | | |
| | Employment in construction | 0.1838 | 0.0165 | 11.1237 | 0.0000 | |
| | Employment in services | 0.2177 | 0.0366 | 5.9429 | 0.0000 | |
| | Lagged dep. Variable | 0.3267 | 0.0369 | 8.8530 | 0.0000 | |
| Employment in Construction | Constant | -7.6084 | 0.7657 | -9.9367 | 0.0000 | 0.98 |
| | Value added in construction | 0.3951 | 0.0310 | 12.7624 | 0.0000 | |
| | Construction wage | -0.2813 | 0.0530 | -5.3095 | 0.0000 | |
| | Population | 1.0997 | 0.0687 | 16.0085 | 0.0000 | |
| | Employment In Israel | -0.1364 | 0.0401 | -3.3994 | 0.0007 | |
| | Share of non-construction investment+ | -0.3000 | 0.0536 | -5.5943 | 0.0000 | |
| | 94,95,97,98 dummy+ | 0.4103 | 0.0154 | 26.6389 | 0.0000 | |
| | Lagged dep. Variable | 0.1806 | 0.0392 | 4.6093 | 0.0000 | |
| Employment in Services | Constant | -0.0592 | 0.2103 | -0.2814 | 0.7784 | 0.99 |
| | Value added in services | 0.3880 | 0.0162 | 23.8969 | 0.0000 | |
| | Services wage | -0.0247 | 0.0162 | -1.5216 | 0.1285 | |
| | Employment in agriculture | 0.2890 | 0.0151 | 19.0843 | 0.0000 | |
| | Employment in industry | 0.3886 | 0.0250 | 15.5384 | 0.0000 | |
| | Employment in construction | -0.0619 | 0.0093 | -6.6467 | 0.0000 | |
| | Employment in Israel to domestic employment ratio+ | -0.8097 | 0.0705 | -11.4873 | 0.0000 | |
| | Government employment | 0.2464 | 0.0100 | 24.7196 | 0.0000 | |
| | 95 dummy+ | 0.1727 | 0.0128 | 13.4613 | 0.0000 | |
| Participation Rate Male | Constant | 0.2979 | 0.0755 | 3.9439 | 0.0001 | 0.87 |
| | Wage | 0.0051 | 0.0086 | 0.6009 | 0.5481 | |
| | GDP at factor cost | 0.0444 | 0.0082 | 5.4408 | 0.0000 | |
| | Closure days+ | -0.0001 | 0.0000 | -3.6035 | 0.0003 | |
| | AR(1) | 0.9200 | 0.0310 | 29.6840 | 0.0000 | |

## Table 2: Estimates of labor market relations* - Continued

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Participation Rate – Female | Constant | 0.0320 | 0.0408 | 0.7827 | 0.4340 | 0.63 |
| | Per-capita GNDI | -0.0079 | 0.0066 | -1.1982 | 0.2312 | |
| | Domestic employment rate | 0.0198 | 0.0168 | 1.1797 | 0.2384 | |
| | AR(1) | 0.8027 | 0.0375 | 21.3823 | 0.0000 | |
| Wage in Agriculture | Constant | 1.2728 | 0.1293 | 9.8446 | 0.0000 | 0.76 |
| | Wage; Palestinian employment in Israel | 0.4053 | 0.0370 | 10.9526 | 0.0000 | |
| | Domestic unemployment rate+ | -0.6937 | 0.1324 | -5.2375 | 0.0000 | |
| | AR(1) | 0.5858 | 0.0365 | 16.0531 | 0.0000 | |
| Wage in Industry | Constant | 1.5750 | 0.1548 | 10.1774 | 0.0000 | 0.859 |
| | Wage; Palestinian employment in Israel | 0.3320 | 0.0395 | 8.4031 | 0.0000 | |
| | Domestic unemployment rate+ | -0.2292 | 0.0955 | -2.4005 | 0.0166 | |
| | AR(1) | 0.8098 | 0.0330 | 24.5136 | 0.0000 | |
| Wage in Construction | Constant | 1.1981 | 0.1104 | 10.8479 | 0.0000 | 0.836 |
| | Wage; Palestinian employment in Israel | 0.3360 | 0.0241 | 13.9536 | 0.0000 | |
| | Labor productivity in construction | 0.0666 | 0.0059 | 11.2123 | 0.0000 | |
| | AR(1) | 0.7632 | 0.0373 | 20.4494 | 0.0000 | |
| Wage in Services | Constant | -1.4791 | 0.8541 | -1.7318 | 0.0837 | 0.686 |
| | Unemployment rate+ | -0.2220 | 0.1804 | -1.2309 | 0.2187 | |
| | Labor productivity in services | 0.3034 | 0.0630 | 4.8179 | 0.0000 | |
| | Government consumption | 0.1272 | 0.0586 | 2.1693 | 0.0303 | |
| | Wage; Palestinian employment in Israel | 0.2006 | 0.0467 | 4.2956 | 0.0000 | |
| | AR(1) | 0.6928 | 0.0554 | 12.5002 | 0.0000 | |

** All variables are in logs unless denoted by +*

## Table 3: Estimates of government block relations*

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Government Consumption | Constant | -0.4139 | 0.1942 | -2.1309 | 0.0334 | 0.976 |
| | Government employment | 0.3628 | 0.0266 | 13.6364 | 0.0000 | |
| | Lagged deficit | 0.0588 | 0.0167 | 3.5225 | 0.0005 | |
| | 93-02 dummy | 0.1353 | 0.0235 | 5.7502 | 0.0000 | |
| | Lagged dep. Variable | 0.4460 | 0.0325 | 13.7272 | 0.0000 | |
| Gov't other Revenues | Constant | 6.5981 | 0.7556 | 8.7325 | 0.0000 | 0.823 |
| | Imports pf goods and services | 0.4412 | 0.0685 | 6.4367 | 0.0000 | |
| | Fiscal leakage | -0.7308 | 0.0713 | -10.2525 | 0.0000 | |
| | AR(1) | 0.8418 | 0.0329 | 25.6254 | 0.0000 | |
| Net Ind. Taxes & Subsidies | Constant | -0.3406 | 0.3963 | -0.8596 | 0.3902 | 0.774 |
| | Gov't other revenues | 0.9769 | 0.0798 | 12.2491 | 0.0000 | |
| | 88,89,94 dummy+ | 3.0134 | 0.1097 | 27.4608 | 0.0000 | |

** All variables are in logs unless denoted by +*

## Table 4: Regression results for trade block*

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Imports of G & S from Israel | Constant | 0.2695 | 0.4592 | 0.5868 | 0.5575 | 0.952 |
| | Consumption | 0.3058 | 0.0852 | 3.5886 | 0.0004 | |
| | Investment | 0.3331 | 0.0522 | 6.3833 | 0.0000 | |
| | Import deflator | -0.0554 | 0.0540 | -1.0257 | 0.3053 | |
| | Closure days+ | 0.0010 | 0.0002 | 4.6051 | 0.0000 | |
| | Share of goods to total imports+ | 2.4779 | 0.2339 | 10.5957 | 0.0000 | |
| | Share of non-construction investment+ | -0.0769 | 0.1576 | -0.4881 | 0.6256 | |
| Imports of G & S from ROW | Constant | 0.8314 | 0.3963 | 2.0981 | 0.0362 | 0.917 |
| | Consumption | 0.3411 | 0.0803 | 4.2475 | 0.0000 | |
| | Investment | 0.4171 | 0.0472 | 8.8449 | 0.0000 | |
| | Import deflator | -0.0800 | | | | |
| | 99 dummy+ | 0.4292 | 0.0337 | 12.7307 | 0.0000 | |
| | Closure days+ | 0.0009 | 0.0002 | 4.1306 | 0.0000 | |
| Goods/Services Import Ratio | Constant | 1.3167 | 0.2153 | 6.1161 | 0.0000 | 0.816 |
| | Relative price | -3.0234 | 0.2076 | -14.5646 | 0.0000 | |
| | Trend+ | 0.0124 | 0.0097 | 1.2749 | 0.2027 | |
| | AR(1) | 0.7731 | 0.0459 | 16.8600 | 0.0000 | |
| Exports of G&S to Israel | Constant | 1.1510 | 1.0346 | 1.1125 | 0.2662 | 0.856 |
| | Average domestic wage | -0.7187 | 0.1184 | -6.0687 | 0.0000 | |
| | Israeli GDP | 0.5790 | 0.1017 | 5.6959 | 0.0000 | |
| | Export deflator | -0.0800 | | | | |
| | 93 dummy+ | -2.2215 | 0.0398 | -55.8118 | 0.0000 | |
| | closure days+ | -0.0021 | 0.0004 | -5.6832 | 0.0000 | |
| | AR(1) | 0.3523 | 0.0319 | 11.0482 | 0.0000 | |
| Exports of G&S to ROW | Constant | -5.0641 | 1.7866 | -2.8345 | 0.0047 | 0.865 |
| | Export deflator | -0.0800 | | | | |
| | Labor productivity | 0.3951 | 0.1193 | 3.3130 | 0.0010 | |
| | 93-02 dummy+ | 0.7127 | 0.0347 | 20.5480 | 0.0000 | |
| | Jordan's GDP | 0.7162 | 0.2000 | 3.5809 | 0.0004 | |
| | Closure days+ | -0.0013 | 0.0004 | -3.4953 | 0.0005 | |
| | AR(1) | 0.8560 | 0.0378 | 22.6645 | 0.0000 | |
| Goods/Services Export Ratio | Constant | 1.8016 | 0.1093 | 16.4871 | 0.0000 | 0.685 |
| | Goods/services relative price | -7.9953 | 0.3303 | -24.2038 | 0.0000 | |
| | Trend+ | 0.0245 | 0.0052 | 4.7452 | 0.0000 | |
| | AR(1) | 0.3742 | 0.0401 | 9.3272 | 0.0000 | |
| Net Factor Income | Constant | 0.9366 | 0.4285 | 2.1856 | 0.0291 | 0.9 |
| | Emp. in Israel | 0.2673 | 0.0482 | 5.5482 | 0.0000 | |
| | Jordan's GDP | 0.3297 | 0.0279 | 11.8362 | 0.0000 | |
| | Closure days+ | -0.0054 | 0.0002 | -22.5263 | 0.0000 | |
| | 94, 2000 dummy+ | -0.3239 | 0.0241 | -13.4223 | 0.0000 | |

** All variables are in logs unless denoted by +*

## Table 5: Regression results of demand and price equations*

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Private Consumption | Constant | 0.0034 | 0.2014 | 0.0169 | 0.9865 | 0.961 |
| | Gross private disposable income | 0.4400 | 0.0369 | 11.9168 | 0.0000 | |
| | 86,88,99 dummy+ | 0.0840 | 0.0079 | 10.6063 | 0.0000 | |
| | 94-2002 dummy+ | 0.0926 | 0.0141 | 6.5631 | 0.0000 | |
| | Lagged dep. Variable | 0.5440 | 0.0318 | 17.1192 | 0.0000 | |
| Private Investment | Constant | -4.3969 | 0.5629 | -7.8109 | 0.0000 | 0.848 |
| | Gross national disposable income less government investment | 1.1549 | 0.0711 | 16.2326 | 0.0000 | |
| | Government investment | 0.2829 | 0.0233 | 12.1603 | 0.0000 | |
| | Change in credit extension+ | 0.1200 | 0.0230 | 5.2077 | 0.0000 | |
| | Closure days+ | -0.0015 | 0.0003 | -5.7602 | 0.0000 | |
| | Lending rate+ | -0.0326 | 0.0047 | -7.0123 | 0.0000 | |
| | 2000 dummy+ | -0.2702 | 0.0387 | -6.9838 | 0.0000 | |
| Relative Share of Construction /Non-constr. Investment | Constant | 1.8239 | 0.1374 | 13.2779 | 0.0000 | 0.784 |
| | Construction/Non-construction investment relative price | -1.7733 | 0.3817 | -4.6458 | 0.0000 | |
| | Trend+ | -0.05 | | | | |
| | AR(1) | 0.8151 | 0.0254 | 32.0993 | 0.0000 | |
| Private Consumption Deflator | Constant | -0.0094 | 0.0207 | -0.4531 | 0.6506 | 0.988 |
| | Israel price index | 0.0352 | 0.0039 | 9.1242 | 0.0000 | |
| | Import deflator | 0.8272 | 0.0386 | 21.4324 | 0.0000 | |
| | 72-80,84-85 dummy+ | 0.1034 | 0.0074 | 13.9889 | 0.0000 | |
| | Lagged dep. variable | 0.3656 | 0.0274 | 13.3290 | 0.0000 | |
| | AR(1) | 0.6592 | 0.0225 | 29.2702 | 0.0000 | |
| Construction Investment Deflator | Constant | -0.5872 | 0.0661 | -8.8802 | 0.0000 | 0.96 |
| | W3 (1-t3) | 0.1848 | 0.0222 | 8.3176 | 0.0000 | |
| | Goods' imports deflator | 0.3821 | 0.0551 | 6.9289 | 0.0000 | |
| | Exchange rate | 0.0314 | 0.0040 | 7.9197 | 0.0000 | |
| | 85 dummy+ | -0.1719 | 0.0253 | -6.8003 | 0.0000 | |
| | Lagged dep. variable | 0.2790 | 0.0407 | 6.8469 | 0.0000 | |
| Non-construction Investment Deflator | Constant | 0.5529 | 0.1707 | 3.2399 | 0.0012 | 0.97 |
| | Labor productivity | -0.0709 | 0.0184 | -3.8486 | 0.0001 | |
| | Goods' imports deflator | 0.3990 | 0.0463 | 8.6185 | 0.0000 | |
| | Exchange rate | 0.0388 | 0.0033 | 11.9063 | 0.0000 | |
| | 85 dummy+ | -0.2258 | 0.0213 | -10.6089 | 0.0000 | |
| | Lagged dep. variable | 0.2541 | 0.0395 | 6.4322 | 0.0000 | |
| Service-exports Price Deflator | Constant | 0.6691 | 0.1551 | 4.3147 | 0.0000 | 0.978 |
| | Labor productivity - services | -0.0649 | 0.0162 | -4.0025 | 0.0001 | |
| | Exchange rate | -0.0065 | 0.0023 | -2.8195 | 0.0049 | |
| | Import price deflator | 0.8138 | 0.0277 | 29.3801 | 0.0000 | |
| | 93-02 dummy+ | -0.0585 | 0.0080 | -7.2631 | 0.0000 | |
| | Lagged dep. variable | 0.1943 | 0.0307 | 6.3327 | 0.0000 | |
| | AR(1) | 0.4950 | 0.0465 | 10.6466 | 0.0000 | |

## Table 5: Regression results of demand and price equations - Continued

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Goods-exports Price Deflator | Constant | 0.6841 | 0.0902 | 7.5832 | 0.0000 | 0.98 |
| | Labor productivity - industry | -0.0731 | 0.0100 | -7.3425 | 0.0000 | |
| | Exchange rate | -0.0038 | 0.0016 | -2.3253 | 0.0203 | |
| | Import price deflator | 0.7992 | 0.0290 | 27.6029 | 0.0000 | |
| | 84-93,94-02 dummy+ | 0.0149 | 0.0034 | 4.3521 | 0.0000 | |
| | Lagged dep. variable | 0.1665 | 0.0227 | 7.3466 | 0.0000 | |
| Service-imports Price Deflator | Constant | -0.0135 | 0.0147 | -0.9215 | 0.3570 | 0.938 |
| | Israel price index | 0.0097 | 0.0025 | 3.8329 | 0.0001 | |
| | Jordan price index | 0.0409 | 0.0211 | 1.9365 | 0.0531 | |
| | 72-80 dummy+ | 0.0780 | 0.0090 | 8.6189 | 0.0000 | |
| | Lagged dep. variable | 0.7337 | 0.0353 | 20.8083 | 0.0000 | |
| Goods-imports Price Deflator | Constant | -0.0602 | 0.0467 | -1.2895 | 0.1976 | 0.933 |
| | Jordan price index | 0.1332 | 0.0411 | 3.2365 | 0.0013 | |
| | AR(1) | 0.7305 | 0.0306 | 23.8773 | 0.0000 | |

** All variables are in logs unless denoted by +*

## Table 6: Regression results of value added equations*

| Dep. Var | Independent variables | Coefficient | Std. err | t-statistic | Pr. | $R^2$ |
|---|---|---|---|---|---|---|
| Value Added in Agriculture | Constant | 2.7541 | 0.7686 | 3.5833 | 0.0004 | 0.884 |
| | Consumption | 0.4509 | 0.1184 | 3.8102 | 0.0001 | |
| | Invetsment | 0.3865 | 0.0455 | 8.4877 | 0.0000 | |
| | Exports of goods and services | 0.4367 | 0.0427 | 10.2157 | 0.0000 | |
| | Imports of goods and services | -0.6639 | 0.0734 | -9.0490 | 0.0000 | |
| | Trend+ | -0.0148 | 0.0040 | -3.6823 | 0.0002 | |
| | Agriculture dummy+ | 0.1573 | 0.0101 | 15.5579 | 0.0000 | |
| | 94-02 dummy+ | -0.3276 | 0.0365 | -8.9771 | 0.0000 | |
| | 86,87,88 dummy+ | 0.2075 | 0.0255 | 8.1279 | 0.0000 | |
| Value Added in Industry | Constant | 0.1984 | 0.6672 | 0.2974 | 0.7662 | 0.971 |
| | Private consumption | 0.5731 | 0.1083 | 5.2912 | 0.0000 | |
| | Private investment | 0.2235 | 0.0459 | 4.8733 | 0.0000 | |
| | Government investment | 0.0781 | 0.0284 | 2.7474 | 0.0061 | |
| | Exports of goods and services | 0.1104 | 0.0531 | 2.0808 | 0.0377 | |
| | Imports of goods and services | -0.2704 | 0.0950 | -2.8475 | 0.0045 | |
| | Trend | 0.0088 | 0.0042 | 2.1195 | 0.0343 | |
| | 94-02 dummy | 0.6600 | 0.0465 | 14.2015 | 0.0000 | |
| Value Added in Construction | Constant | 4.4082 | 1.0787 | 4.0867 | 0.0000 | 0.872 |
| | Private consumption | 0.2713 | 0.1432 | 1.8945 | 0.0585 | |
| | Private investment | 0.2469 | 0.0541 | 4.5635 | 0.0000 | |
| | Government investment | 0.4789 | 0.0338 | 14.1898 | 0.0000 | |
| | Imports of goods and services | -0.3007 | 0.0844 | -3.5607 | 0.0004 | |
| | Trend+ | -0.7716 | 0.2340 | -3.2971 | 0.0010 | |
| | 99 dummy+ | 0.7466 | 0.0421 | 17.7156 | 0.0000 | |
| | 94-02 dummy+ | -0.8438 | 0.0730 | -11.5600 | 0.0000 | |
| | AR(1) | 0.8087 | 0.0198 | 40.8764 | 0.0000 | |
| Value Added in Services | Constant | 3.9365 | 0.2666 | 14.7673 | 0.0000 | 0.986 |
| | Private consumption | 0.2392 | 0.0456 | 5.2514 | 0.0000 | |
| | Government consumption | 0.1654 | 0.0262 | 6.3148 | 0.0000 | |
| | Private investment | 0.0218 | 0.0197 | 1.1019 | 0.2708 | |
| | Government investment | 0.0929 | 0.0121 | 7.6986 | 0.0000 | |
| | Exports of goods and services | 0.1560 | 0.0211 | 7.3912 | 0.0000 | |
| | Imports of goods and services | -0.2300 | 0.0367 | -6.2595 | 0.0000 | |
| | Trend+ | 0.0381 | 0.0017 | 22.2064 | 0.0000 | |
| | 94-02 dummy+ | -0.2282 | 0.0220 | -10.3899 | 0.0000 | |

** All variables are in logs unless denoted by +*

## In/Out-of-Sample Simulation: Cost of Closures[4]

As indicated earlier, the severe impact of the Israeli restrictive security measures coupled with the prolonged closure policy has resulted in a drastic economic decline that has assisted in an upsurge in both poverty and unemployment rates never before experienced since the Israel first occupied the West Bank and Gaza in 1967. A number of international organizations, including the United Nations Conference on Trade and Development (UNCTAD), the Office of the United Nations Special Coordinator in the Occupied Territories (UNSCO) and the World Bank,[5] have been monitoring and evaluating the impact of the Israeli closure policy on Palestinian economic and social indicators. However, there was no systematic assessment to quantify the economic cost of such a policy. This section presents the results of in-sample simulations used to evaluate the economic opportunity cost of the closure policy starting In September 2000 with the eruption of the second Intifada. One of the endogenous variables in the model is the number of closure days/year (CDX). This annual figure represents the number of curfew/closure days per year where the Israeli authorities have fully or partially restricted the movement of man and goods within/from/to the West Bank and Gaza.[6] The analysis compares the simulated values of the model's endogenous variables for two scenarios over the period 2000-2004. While the first (*baseline*) reproduces all the endogenous variables using the exogenous variables actual historical values, the second scenario (*less closure*) assumes actual values for all exogenous variables except for two: number of closure days and foreign net current transfers (FNCTR). The reason for assuming different values for FNCTR is the increase seen during 2000-2004 was directly related to the closure policy, when the international community had substantially increased its support to the Palestinian people to help them cope with the crisis. Table 7 shows the actual and assumed levels for CDX and FNCTR. The *less closure* scenario assumes that (i) number of closure days during 2000-2004 stayed constant at a level close to the average of the previous three years (40 days/year); and (ii) foreign net current transfers increased at a rate of 5% per year.

**Table 7: Assumptions for cost of closure simulation**

| | Number of closure days/year | | Net current transfers 1997 US$ million | |
|---|---|---|---|---|
| | Actual | Assumed | Actual | Assumed |
| 1992 | 0 | 0 | 263.2 | 263.2 |
| 1993 | 26 | 26 | 333.3 | 333.3 |
| 1994 | 76 | 76 | 484.6 | 484.6 |
| 1995 | 102 | 102 | 410.3 | 410.3 |
| 1996 | 138 | 138 | 459.1 | 459.1 |
| 1997 | 85 | 85 | 395.1 | 395.1 |
| 1998 | 48 | 48 | 373.7 | 373.7 |
| 1999 | 12 | 12 | 403.4 | 403.4 |
| *2000* | *64* | *40* | *599.7* | *423.6* |
| *2001* | *210* | *40* | *991.2* | *444.7* |
| *2002* | *260* | *40* | *1173.9* | *467.0* |
| *2003* | *130* | *40* | *1496.6* | *490.3* |
| *2004* | *220* | *40* | *1400.0* | *514.9* |

[4] Model estimation is based on the period 1972-2002. 2003 and 2004 are out of the estimation sample.
[5] See UNCTAD (2004), UNSCO (2002) and the World Bank (2004 and 2003).
[6] Number of closure days for 1993-2002 was monitored by UNSCO. The figures for 2003 and 2004 are based on the assumption that closures in these two years were, respectively, 50% and 15% less than was the case in 2002, when the closures reached a peak and economic contraction was the most since 2000.

**Figure 4: Economic and employment impact of Israeli closure policy, 2000-2004**

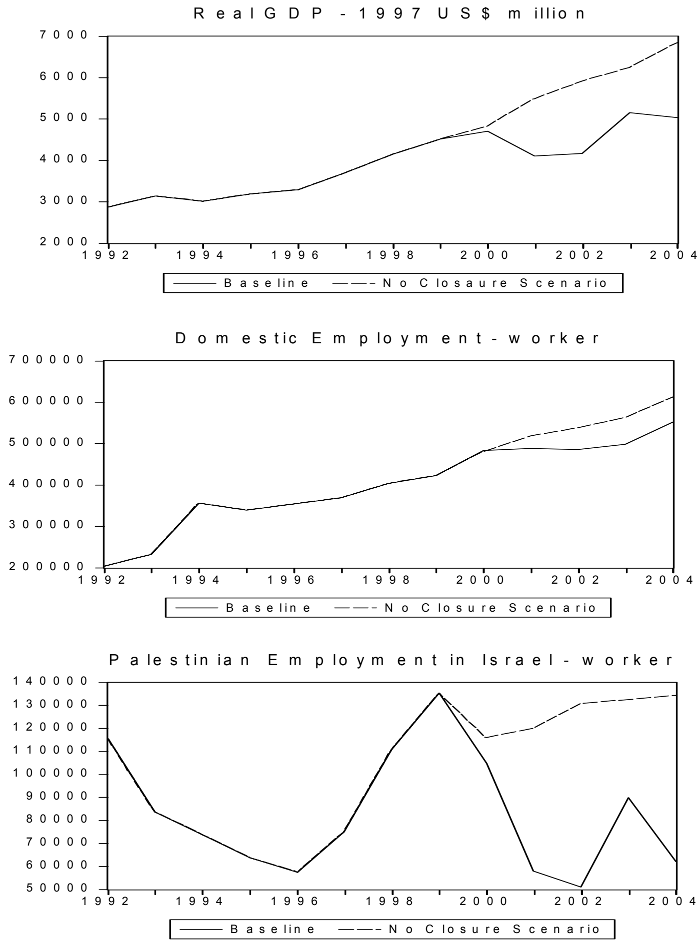



Figure 4 exhibits the impact of the closure policy on the economy and total Palestinian employment. As expected, Palestinian employment in Israel has received the severest impact. Table 8 shows that during 2000-2004 Palestinians lost 268 thousands full-time job in the Israeli market and 207 thousands job in the domestic market, a total of almost half a million jobs. These results suggest that the availability of the Israeli market for excess Palestinian labor is politically sensitive and, therefore, the Palestinian policy makers should not consider this as a sustainable option for reducing future unemployment rates.

**Table 8: Employment cost of Israeli security and closure measures**

| | Domestic employment | | | | Palestinian employment in Israel | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Baseline | *less closure* | Loss | % to *less closure* | Baseline | *less closure* | Loss | % to *less closure* | Loss | % to *less closure* |
| 2000 | 483125 | 480792 | 2333 | 0.5 | 104724 | 116017 | -11293 | -9.7 | -8961 | -1.5 |
| 2001 | 488472 | 518684 | -30212 | -5.8 | 57985 | 120068 | -62083 | -51.7 | -92295 | -14.4 |
| 2002 | 484990 | 538607 | -53617 | -10.0 | 51008 | 130841 | -79833 | -61.0 | -133450 | -19.9 |
| 2003 | 498013 | 562917 | -64904 | -11.5 | 89974 | 132541 | -42567 | -32.1 | -107471 | -15.5 |
| 2004 | 551917 | 612539 | -60622 | -9.9 | 62106 | 134313 | -72207 | -53.8 | -132829 | -17.8 |
| **Cumulative** | | | **-207023** | | | | **-267983** | | **-475006** | |

**Table 9: Economic opportunity cost of Israeli security and closure measures – 1997 US$ million**

| | GDP at factor cost 1997 US$ mill. | | | | Allocation of economic loss - % | | | | Impact on economic structure - % | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Agriculture | | Industry | | Construction | | Services | |
| | Base -line | *less closure* | Loss | % to *less closure* | Agric | Ind. | Const | Serv. | Base-line | *less* closure | Base-line | *less* closure | Base-line | *less* closure | Base-line | *less* closure |
| 2000 | 4374 | 4514 | -140 | -3.1 | 21.9 | 18.3 | 7.2 | 52.6 | 12.4 | 12.7 | 16.2 | 16.3 | 7.5 | 7.5 | 63.9 | 63.5 |
| 2001 | 3834 | 5273 | -1439 | -27.3 | 16.3 | 21.6 | 7.2 | 54.9 | 9.2 | 11.2 | 16.3 | 17.7 | 6.7 | 6.8 | 67.8 | 64.3 |
| 2002 | 3918 | 5724 | -1806 | -31.6 | 19.3 | 21.9 | 4.5 | 54.3 | 10.1 | 13.0 | 16.1 | 17.9 | 4.2 | 4.3 | 69.6 | 64.8 |
| 2003 | 4763 | 5918 | -1155 | -19.5 | 15.2 | 22.5 | 4.4 | 57.9 | 10.0 | 11.0 | 17.5 | 18.5 | 4.5 | 4.5 | 68.0 | 66.1 |
| 2004 | 4734 | 6601 | -1868 | -28.3 | 18.1 | 22.2 | 4.4 | 55.3 | 10.0 | 12.3 | 16.7 | 18.3 | 4.2 | 4.3 | 69.0 | 65.1 |
| **Cumulative** | | | **-6407** | **-22.8** | **17.6** | **21.9** | **5.1** | **55.3** | | | | | | | | |

Table 9 summarizes the economic opportunity cost of the Israeli closure policy. The cumulative economic opportunity cost of 5 years of closure policy is estimated to be around US$ 6.4 billion. This is equivalent to almost 23% of the GDP that would have been produced in these five years had there been no closures. The table also shows that the services sector received the largest share of this loss, i.e., 55% of the cumulative damage. Agriculture and construction received the smallest share of total cumulative loss, 17.6% and 5.1% respectively. Based on this Palestinian policy makers should give more attention to the agriculture sector as the economy shock absorber.

**Out-of-Sample Simulations: Baseline Scenario**

The following section will attempt to evaluate the impact of a number of proposed economic policies for Palestine. To conduct such evaluations a benchmark is required to measure the effects of the alternative scenarios. This section discusses the assumptions and the forecast of this benchmark. However, it should be emphasized that with the past history and political instability that the Palestinian economy has experienced, and most likely will continue to experience in the next few years, the objective of this baseline scenario is not to forecast the growth of the Palestinian economy. The objective is, therefore, strictly to provide decision makers with some policy recommendations regarding the effectiveness of alternative options that are at their disposal.

Table 10 summarizes the baseline forecast assumptions for the model's exogenous variables (policy and external factors) over the period 2005-2015. Most of the data for 2004 are either actual or preliminary estimates from PCBS or the IMF's most recent *World Economic Outlook* publication. The overall political assumptions that influence the future behaviour of all exogenous variables in the baseline scenario are: (i) a movement towards some sort of a settlement between the PNA and Israel in 2005-06; (ii) the international community will maintain a high level of financial aid in 2005-06 to support the PNA efforts to revive the economy; (iii) more mobility of goods and labor within/from/to the West Bank and Gaza, but with the understanding that it will not be 100% free, thus similar to the 1994-2000 experience; and (iv) trade and fiscal arrangements between the PNA and Israel and the ROW will return to those which prevailed between 1994 and September 2000, keeping in line with the 1994 Protocol on Economic Relations between the Government of Israel and the

**Table 10: Baseline forecast assumptions, 2004-2015**

| | Internal policy/exogenous variables | | | | | | | External exogenous variables | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Public investment | Gov. transfers | Public employ. | Credit extension | Population | Income tax rate | VAT rate | Current transfers 97$ mill | Closure days/year | Israel lending rate | Exchange rate | Israel GDP | Israel CPI | Jordan GDP |
| | Annual average growth rate | | | | | Annual average | | Annual average | | | NIS/US$ | Ann. average growth rate | | |
| 1988-93 | 14.6 | 4.5 | -0.5 | 19.8 | 5.4 | 3.4 | 2.7 | 227 | 11 | 0.271 | 2.18 | 5.3 | 15.8 | 2.0 |
| 1994-99 | 1.3 | 0.0 | 15.6 | 60.2 | 4.3 | 1.8 | 5.9 | 421 | 77 | 0.183 | 3.43 | 0.0 | 0.0 | 0.0 |
| 2000-03 | -26.0 | -201.8 | 1.7 | -6.5 | 4.6 | 1.0 | 6.0 | 1132 | 177 | 0.108 | 4.42 | -0.1 | 2.4 | 4.1 |
| 2004 | 13.0 | 2.9 | 2.4 | 13.0 | 3.6 | 1.0 | 9.2 | 1400 | 220 | 0.103 | 4.52 | 3.8 | 0.2 | 4.8 |
| 2005 | 8.0 | 10.3 | 2.0 | 8.0 | 4.3 | 1.0 | 9.2 | 1300 | 155 | 0.108 | 4.53 | 3.7 | 2.4 | 4.9 |
| 2006 | 7.0 | 5.8 | 1.5 | 7.0 | 4.3 | 1.5 | 9.2 | 900 | 90 | 0.118 | 4.55 | 3.6 | 2.4 | 4.7 |
| 2007 | 5.0 | 5.1 | 1.5 | 6.0 | 4.2 | 3.0 | 9.2 | 850 | 45 | 0.110 | 4.61 | 4.1 | 2.5 | 4.6 |
| 2008 | 4.0 | 4.0 | 1.5 | 5.0 | 4.0 | 3.0 | 9.2 | 800 | 45 | 0.105 | 4.67 | 4.2 | 2.6 | 4.4 |
| 2009-15 | 3.0 | 3.6 | 1.5 | 4.0 | 3.6 | 3.0 | 9.2 | 700 | 45 | 0.093 | 4.93 | 3.3 | 2.9 | 4.0 |

**Table 11: Baseline forecast, 2004-2015 - Main indicators**

| | GDP | | GDP per capita | | Un-employ | Domes. employm't | | Employm't in Israel | | Employment | | Trade balance | | Public |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 97$ mill | % chng | 97$ | % chng | rate | worker | % chng | worker | % chng | domstc | In Israel | total | Isarel | deficit |
| | end-period | ann. avg. | end-period | Ann. avg. | End-period | end-period | ann. avg. | end-period | ann. avg. | % in total emp. | | % of GDP - end-period | | |
| 1994 | 3012 | -4.0 | 1406 | -20.2 | 10.5 | 355800 | 53.3 | 73750 | -11.9 | 82.8 | 17.2 | -61.3 | -44.3 | -17.3 |
| 1994-1999 | 4512 | 6.2 | 1612 | -1.5 | 17.0 | 422300 | 10.5 | 135500 | 8.4 | 75.7 | 24.3 | -64.2 | -36.2 | -5.6 |
| 2000-2002 | 3839 | -5.2 | 1189 | -9.6 | 31.4 | 435000 | 1.0 | 50250 | -28.2 | 89.6 | 10.4 | -46.9 | -26.8 | -30.7 |
| 2003 | 4011 | 4.5 | 1185 | -0.4 | 25.6 | 534000 | 22.8 | 57000 | 13.4 | 90.4 | 9.6 | -62.0 | -36.6 | -21.0 |
| 2004 | 3908 | -2.6 | 1114 | -6.0 | 27.9 | 547512 | 2.5 | 50028 | -12.2 | 91.6 | 8.4 | -71.1 | -42.2 | -25.1 |
| 2005 | 4204 | 7.6 | 1149 | 3.1 | 25.7 | 564421 | 3.1 | 61073 | 22.1 | 90.2 | 9.8 | -67.8 | -40.0 | -23.3 |
| 2006 | 4728 | 12.5 | 1240 | 7.9 | 22.7 | 601815 | 6.6 | 81705 | 33.8 | 88.0 | 12.0 | -58.4 | -34.0 | -20.2 |
| 2003-2007 | 5339 | 6.8 | 1344 | 2.5 | 18.6 | 654172 | 8.5 | 100582 | 14.9 | 86.7 | 13.3 | -52.9 | -30.4 | -15.9 |
| 2008-2015 | 7596 | 4.5 | 1434 | 0.8 | 16.5 | 926180 | 4.4 | 114535 | 1.6 | 89.0 | 11.0 | -45.5 | -25.7 | -11.8 |

Palestine Liberation Organization (Paris Protocol). The last assumption implies the continuations of the quasi-custom union with Israel. This indicates that all Israeli trade agreements with the ROW (with some minor exceptions) also apply to Palestinian trade and that Israel will continue to collect the VAT and customs dues on Palestinian imports on behalf of the PNA.

**Figure 5: Baseline forecast, 2004-2015 - Main indicators**

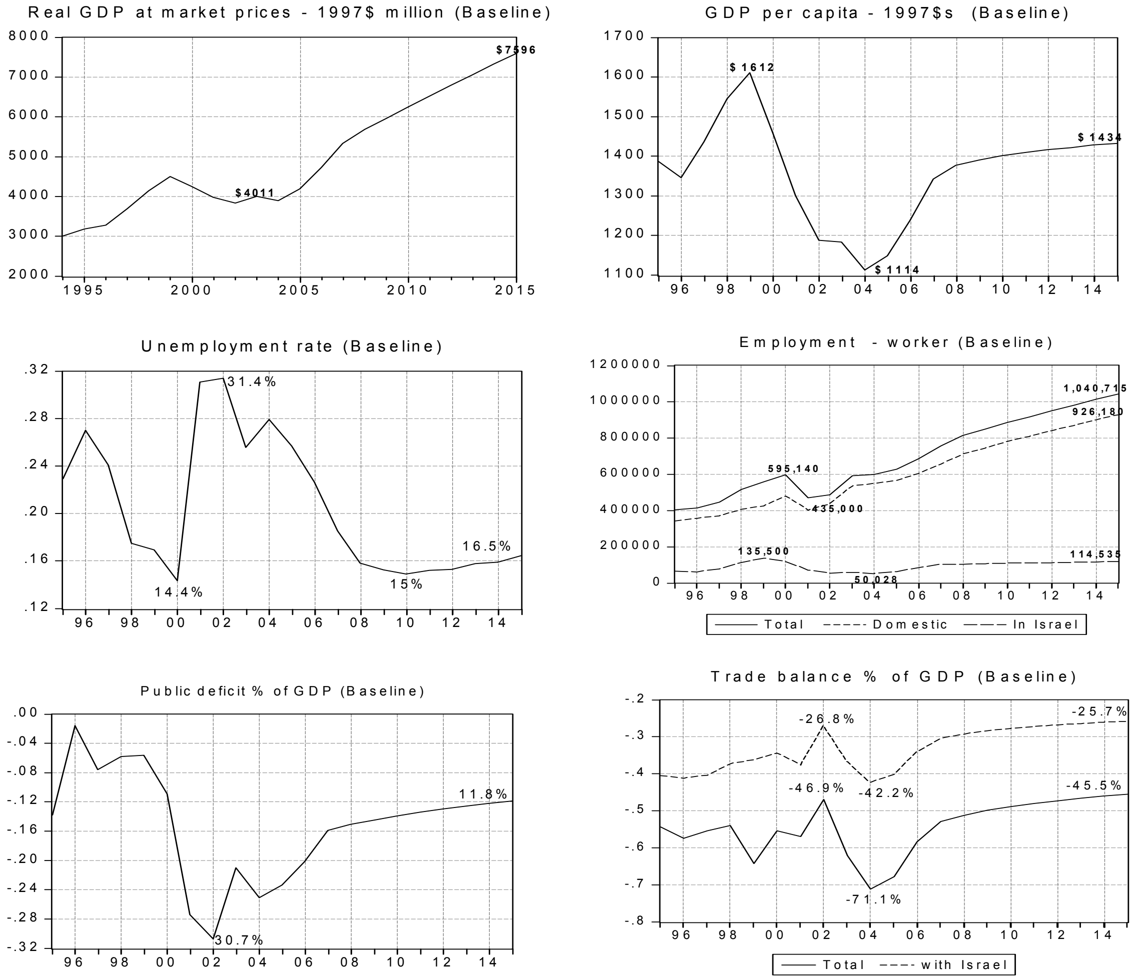



Table 11 and Figure 5 present the result of the baseline forecast scenario for the economy's main indicators over the period 2004-2015. What is worth noting is that the economy will respond aggressively with the easing of closures and the injection of a substantial amount of current transfers from abroad. The average annual economic growth rate in the first period of the forecast (2003-2007) drops from 6.8% to 4.5 in the second period (2008-2015). Growth of GDP per capita also declines from 2.5% per year to less than 1%. The unemployment rate declines from the present level of almost 28% to reach bottom at 15% in 2010. This rate, however, starts to climb up again to top almost 17% by the end of the forecast period. Improvements in the public and trade deficits slow down significantly after 2008. Palestinian labor will continue to depend on the Israeli market with 11% of Palestinian employment projected to work in Israel by the end of the forecast period.

These figures suggest that easing the Israeli closures and movement towards some sort of a settlement with initial increase in donor support will lead to a rebound in the West Bank and Gaza's economic activities in the short term. However, a return to the pre-Intifada framework of economic relations and conditions will not position the economy on a path of sustained growth capable of raising income per capita to significant levels and reducing the unemployment rate to a single digit. This requires some serious thinking on the part of the Palestinian decision makers in order to develop an integrated and comprehensive economic policy framework package. Such a package should reconsider all the existing arrangements including trade, fiscal and labor and should be the base for future economic negotiations with the Israel and bordering Arab States.

**Out-of-Sample Simulations: Alternative Policy Scenarios**

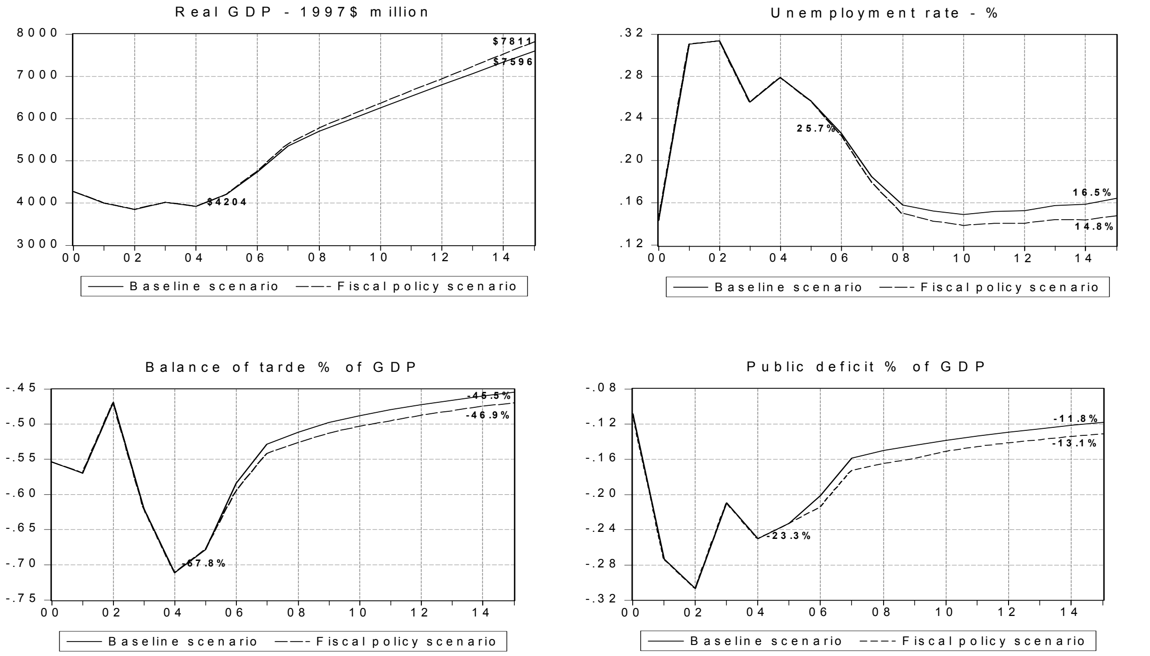
This section assesses the impact of three alternative policies in the areas of public finance and investment, labor and trade. The aim of this application is neither to propose a policy package that includes combined instruments from the three policies, nor to shock the economy with a single policy to bring it to sustainable internal and external balances during a certain period of time. Rather the objective is to provide policy makers with some sense of the expected impact each policy will have separately, after shocking the model with a moderate change in the relevant policy instrument. Therefore, the following analysis focuses on the independent evaluation of each policy against the baseline scenario.

*Fiscal Policy Scenario*

As discussed in previous sections, although the scope of the fiscal policy in the occupied Palestinian territory has expanded after the establishment of the PNA, it is still constrained by limited public revenue sources. In the past four years the PNA’s fiscal position has deteriorated considerably as a result of the crisis and the sever economic contraction it has caused. In addition, the PNA does not have control over one of the most, if not *the* most, important sources of public revenue, namely revenue from tariff and VAT on Palestinian imports. According to the Paris Protocol between the PNA and the Israeli government, the latter collects these revenues on behalf of the former. The baseline scenario assumes that this arrangement will continue and therefore it further assumes that a very non-aggressive public spending policy will prevail. As an alternative, this proposed fiscal policy scenario advises an increase of 10% and 5% in public investment and government transfers, respectively, above their levels in the baseline scenario for every year in the forecast period. Furthermore, the government will implement a “distortion correction scheme” targeting non-construction investment, which is assumed to cause a gradual decline in non-construction investment price deflator from 100% in 2005 to 90% in 2009 and beyond. Finally, the fiscal policy scenario assumes there will be some improvement in the collection of VAT, leading to an increase in its average effective rate gradually from the assumed 9.2% in the baseline in 2005 to reach 10% in 2011and beyond.

Figure 6 shows the impact of this policy scenario on GDP, unemployment rate, and fiscal and trade balances. The comparison between this scenario and the baseline indicates that the proposed fiscal measures could increase 2015 GDP level and reduce the unemployment rate by 2.8% and 1.7 %, respectively. The cost of this improvement is a 1.5% increase in the trade deficit to GDP ratio, and a 1.3% increase in the public deficit to GDP ratio. This suggests that while there is a need to pursue aggressive expansionary fiscal policy to increase income and reduce unemployment, the sustainability of this policy will depend on increasing the sources of public revenues and improving the efficiency of its collection. In this regard, the present arrangements of VAT and import tariff collection need to be reconsidered.

**Figure 6: Fiscal policy scenario, 2004-2015 - Main indicators**



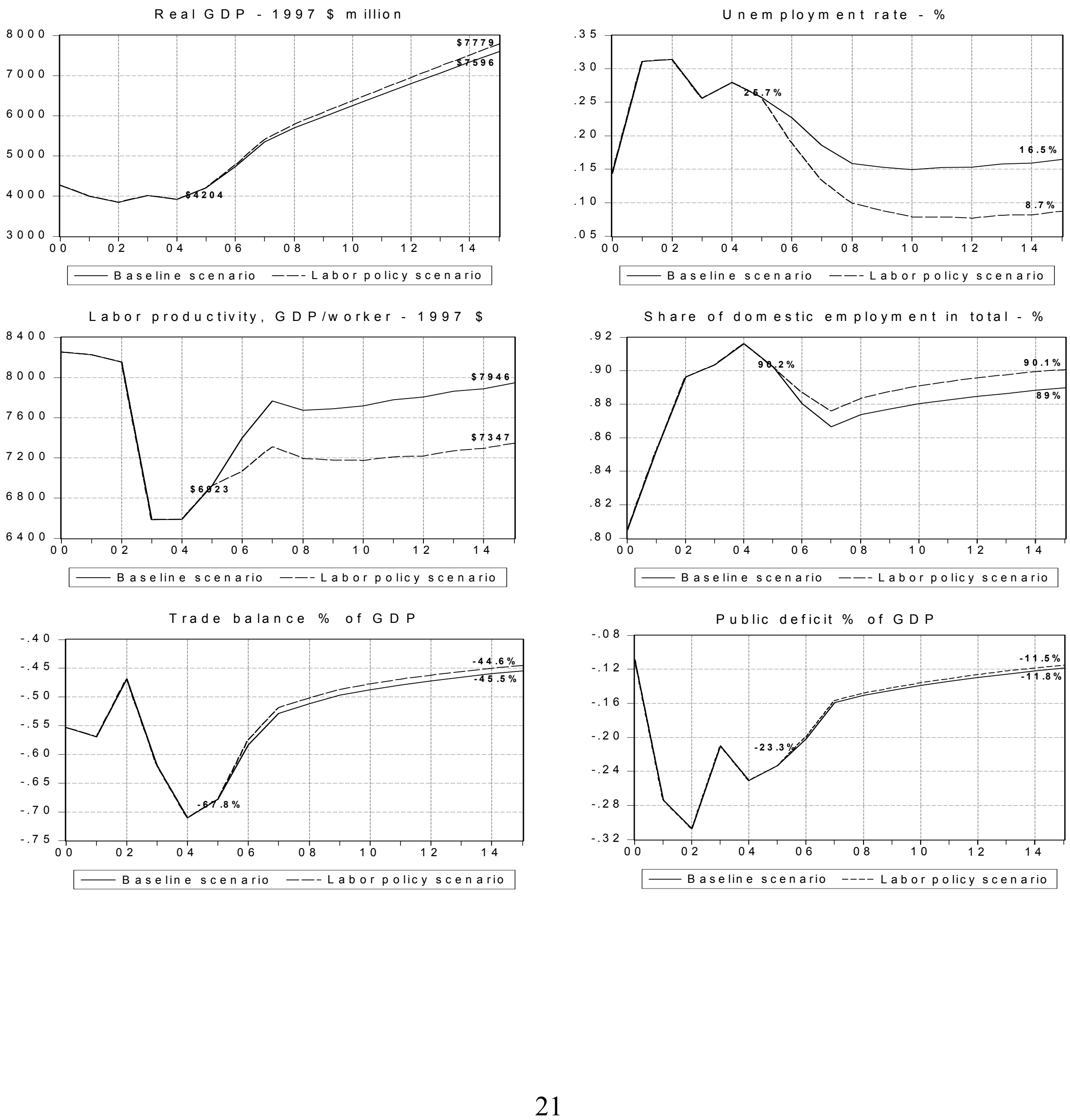

*Labor Policy Scenario*

While the Palestinian labor market is mostly unregulated from the PNA side, supply of Palestinian workers in Israel is strictly restricted by closures and controlled by a permit system implemented by the Israeli authorities. However, as Bulmer (2003) indicates, the actual number of Palestinians working in Israel is always larger than the number of permits granted. Farsakh (1999) also shows that Israel has institutionalized the discrimination against Palestinian labor. The marginal payroll tax rates for Palestinian workers in the formal sectors are 8-20 points higher than for guest workers. Nonetheless, wage of Palestinians working in Israel continues to be at least 35% higher than the average domestic wage.

This labor policy scenario considers a PNA tax on the wages of Palestinians working in Israel. The objective of this tax is not only to discourage Palestinian employment in Israel, but to promote domestic employment through sectoral employment generation schemes financed from the revenue of this tax. Therefore, this scenario assumes a revenue neutral tax where all collections are totally allocated to domestic employment generation programs, such as sectoral wage-sharing or any other plan that reduces the wage to the employer while the employee receives the market rate. Specifically, the scenario assumes a 28% tax on wage earnings of Palestinian employment in Israel in 2006, increasing it to 38% in 2012 on, to bring net (after tax) wages from employment in Israel close to the average domestic wage. Thus, 30%, 30% and 40% of the tax revenue is allocated to generate sectoral domestic employment in agriculture, industrial and services sectors, respectively. Construction employment is assumed to indirectly benefit for the increased employment in the other three sectors.

Figure 7 provides a snapshot of the impact of the labor scenario. The policy assessment reveals that Palestinian labor supply to the Israeli market is very in-elastic with respect to wage, but very responsive to overall labor supply and closure days. Palestinian workers in Israel are mostly unskilled workers and work mainly in agriculture and construction. They are willing to work in Israel for the same wage they would receive in Palestine in the event they could find a job in the domestic market. In other words, these are the unskilled excess labor force that cannot be employed domestically. Therefore, large tax on Palestinian employment in Israel will reduce employment in Israel only marginally. But the distribution of tax revenue on domestic sectoral employment generation schemes (agriculture, industry and service) is very effective. As a result the 2015 unemployment rate dropped from 16.5% in the baseline to 8.7% in the labor scenario. The analysis also shows that there is no internal or external balance costs associated with this policy. Actually, minor improvements in public and trade deficits are expected towards the end of the forecast period. However, the main cost of this policy is a 7.5% loss in the economy's labor productivity in 2015. Hence, it is recommended that any labor policy should be accompanied by investment promotion programs to mitigate any possible negative impact on productivity.

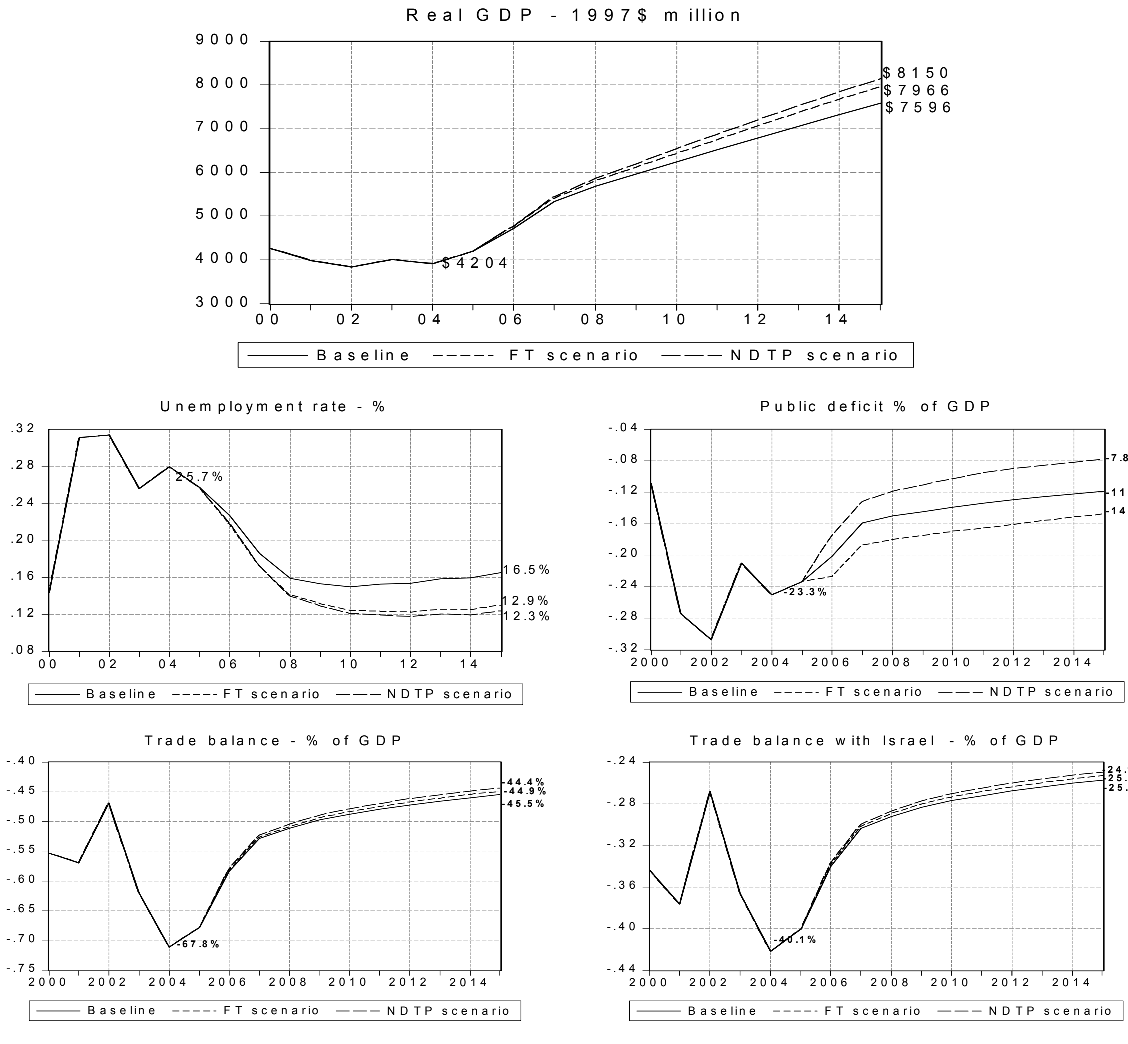
**Figure 7: Labor policy scenario, 2004-2015 - Main indicators**



*Trade Policy Scenarios*

As for Palestinian international trade, the baseline scenario assumes that the Paris Protocol quasi-custom union (QCU) between the PNA and Israel will continue in the future. The broad features of this arrangement are (i) zero tariffs on trade between Israel and Palestine; (ii) Israeli trade regime (with some exceptions: limited access to Egyptian and Jordanian markets) applies to Palestinian trade; (iii) the Israeli tariff structure applies to Palestinian imports from the ROW; and (iv) Israel collects VAT and tariff on Palestinian imports from ROW on behalf of the PNA. In regards to the third point above, in recent years Israel has significantly liberalized its trade and hence the average tariff rate for a typical Israeli import basket has been reduced to 8.3%. However, according to Astrup and Dessus (2001), this same liberalized tariff structure implies an average tariff rate of 16.6% for a typical Palestinian import basket. It is important to emphasis that this liberalized tariff structure suits more the technologically advanced Israeli economy than it does the severe distortion and structural weaknesses of an economy under occupation for more than 35 years. Actually, in any future PNA negotiations for WTO accession, Palestine could obtain a much more favorable tariff structure similar to many developing countries.

**Figure 8: Trade policy scenarios, 2004-2015 - Main indicators**



To assess the merits of the status-quo this section considers two alternative trade regimes; Non-Discriminatory Trade policy (NDTP) or Most Favorite Nation Arrangement (MFN) and Free Trade (FT) agreement with Israel.[7]

According to the NDTP regime, the same tariff rates will be applied to Palestinian imports from Israel and the ROW (no discrimination among countries). To simulate this in the model, the NDTP scenario assumes that tariffs on Palestinian imports from Israel will increase from 0% in 2005 to 16.6% in 2011, and tariffs on Israeli imports from the PNA will increase from 0% to 8.3% during the same period. Furthermore, the PNA will introduce distortion correction schemes targeting Palestinian exports to reduce export prices from 100% in 2005 to 83.4% (of the baseline) in 2011and beyond. The implementation of the NDTP will require an increase in public employment, above the baseline levels, from 0% in 2005 to 0.45% in 2011 and beyond.

In regards to a FT, trade between the PNA and Israel will be tariff free, but each party could choose any different tariff structure in line with its development strategy and any other trade agreement with a third party. This policy scenario assumes tariffs on imports from the ROW (excluding Israel) to decline gradually starting 2005 to reach 91.7% of their levels in 2011 on. Likewise, tariffs on the ROW (excluding Israel) imports from the PNA to decline to be 91.7% of their levels in 2011 and beyond. Similar to the NDTP regime the PNA will introduce distortion correction schemes targeting Palestinian exports to reduce export prices from 100% in 2005 to 83.4% (of the baseline) in 2011and beyond. Lastly, the introduction of the FT will require an increase in public employment, above the baseline levels, from 0% in 2005 to 0.67% in 2011and beyond.

Figure 8 provides a comparison between the baseline (QCU) and the two alternative trade scenarios. The results suggest that while both trade regimes are superior to the QCU, NDTP is superior to the FT regime. The former produces higher income, lower unemployment and smaller internal and external deficits. FT regime is inferior to the baseline scenario from the public finance point of view. It should be mentioned, however, that the positive impact of the NDTP could be enlarged if the PNA manage to set tariffs at rates higher than the Israelis, and closer to those rates obtained under the special and differential WTO provisions accorded to a number of less developed countries.

## Conclusion and Policy Recommendations

The previous discussion reveals that the economic opportunity cost of the Israeli closure policy in the West Bank and Gaza during the 2000-2004 period is substantial. It is estimated to be around 1997 US$ 6.4 billion or one and half times the size of the GDP in 2000. During this crisis period the agriculture sector behaved like the shock absorber of the economy, and therefore it should get more attention from the Palestinian policy makers. It is also important that they do not consider the Israeli market as a sustainable option for reducing the future unemployment rate. The focus should be on promoting domestic employment.

By easing Israeli closure measures, having movement towards some sort of a political settlement between the Palestinian National Authority and Israel, and increasing donor

[7] In a computable general equilibrium framework, Astrup and Dessus (2001b) consider these two alternative trade regimes. Their findings are in agreement with the outcome of this model.

support will help the Palestinian economy recover from its present depressed level. But these three factors combined are not sufficient to carry the economy to the path of sustainable growth. What is required is an integrated and comprehensive economic policy framework, through which all the existing arrangements including public finance and investment, trade, and labor should be reconsidered.

According to the result of the policy scenario analysis, there is a need to pursue aggressive expansionary fiscal policy to increase income and reduce unemployment. However the sustainability of such a policy is not possible under the presently available sources of public revenue and the existing fiscal arrangement. The present system of VAT and import tariff collection needs to be reconsidered.

While a tax on Palestinian workers in Israel would reduces Palestinian employment in Israel only marginally, the revenue of this tax could be very effective in reducing unemployment if it is allocated to finance sectoral employment generation schemes. However, this labor tax or any other labor policy should be accompanied by investment promotion programs to reduce any possible negative impact on productivity.

The Non-Discriminatory Trade Policy or the Most Favorite Nation treatment is the most advantageous trade regime for Palestine. However, when negotiating for WTO attainment, the PNA needs to target the special and differential provisions accorded to a number of least developed countries. This will allow the PNA to set import tariffs at rates higher than the liberalized rates of Israel, and hence help the economy to deal with the distortions and structural weaknesses caused by the long years of occupation.

Viability of the Palestinian economy and the sustainability of its future growth require merging the three policies discussed here in a single comprehensive package to reinforce the complementarities among trade, fiscal, investment and labor policies and to integrate them in a single framework. Furthermore, the policy measures proposed in all three scenarios are moderate (for illustration purposes), and thus the PNA could pursue more aggressive measures to achieve internal-external sustainability at a faster rate.

**Appendix A-1**

**Table A1: Variable definitions and data referencing**

| **Code** | ***Variable*** | ***Measurement*** |
|---|---|---|
| CDX | Number of closure days/year imposed by Israeli authority | Days |
| CEXTX | Credit Extension | Million US$ |
| CPR | Private consumption | 1997 US$ million |
| CTR | Total consumption | US$ million |
| D_UEM | Unemployment rate | % |
| D_UEMIS | Unemployment rate in Israel | % |
| DDEM | Labor demand (total employment including Israel) | Worker |
| DEM1 | Domestic employment in agriculture | Worker |
| DEM1_TD | Share of agriculture employment in domestic employment | % |
| DEM2 | Domestic employment in industry | Worker |
| DEM2_TD | Share of industry employment in domestic employment | % |
| DEM3 | Domestic employment in construction | Worker |
| DEM3_TD | Share of construction employment in domestic employment | % |
| DEM4 | Domestic employment in services | Worker |
| DEM4_TD | Share of service employment in domestic employment | % |
| DEMDT | Total domestic employment | Worker |
| DEMG | Government employment | Worker |
| DEMIS | Palestinian employment in Israel | Worker |
| DLP | Labor productivity (value added/domestic employment) | $/worker |
| DLP1 | Labor productivity in agriculture (sector 1) | $/worker |
| DLP2 | Labor productivity in industry (sector 2) | $/worker |
| DLP3 | Labor productivity in construction (sector 3) | $/worker |
| DLP4 | Labor productivity in services (sector 4) | $/worker |
| DLS | Labor supply | Worker |
| DLSF | Female labor supply | Worker |
| DLSM | Male labor supply | Worker |
| DMPW | Manpower (population 15+) | Person |
| DMPWF | Manpower – female | Person |
| DMPWM | Manpower – male | Person |
| DPARF | Female participation rate | % |
| DPARM | Male participation rate | % |
| DPOP | Population | Person |
| DPOP_MPFX | Percentage of females in working age in female population | % |
| DPOP_MPMX | Percentage of males in working age in male population | % |
| DPOP_SHFX | Share of females in total population | % |
| DPOP_SHMX | Share of males in total population | % |
| DPOPF | Female population | Person |
| DPOPGRWX | Population annual growth rate | % |
| DPOPM | Male population | Person |
| DRTRNFX | Female returnees | Person |
| DRTRNMX | Male returnees | Person |

**Table A1: Variable definitions and data referencing - Continued**

| Code | *Variable* | *Measurement* |
|---|---|---|
| EXCHX | Israeli exchange rate | NIS/US$ |
| FBTR | Balance of trade: goods and services | 1997 US$ million |
| FBTR_SH | Balance of trade – GDP ratio | % |
| FCAR | Current account | 1997 US$ million |
| FEXGDR | Exports of goods | 1997 US$ million |
| FEXGDR_SH | Share of goods in total exports | % |
| FEXISR | Exports of goods and services to Israel | 1997 US$ million |
| FEXISR_SH | Exports to Israel – GDP ratio | % |
| FEXOR | Exports of goods and services to the ROW | 1997 US$ million |
| FEXSER | Exports of services | 1997 US$ million |
| FEXSER_SH | Share of services in total exports | % |
| FEXSHG_S | Exports of goods – exports of services ratio | % |
| FEXTR | Total exports of goods and services | 1997 US$ million |
| FEXTR_SH | Total exports – GDP ratio | % |
| FIMGDR | Imports of goods | 1997 US$ million |
| FIMGDR_SH | Share of goods in total imports | % |
| FIMISR | Imports of goods and services from Israel | 1997 US$ million |
| FIMISR_SH | Imports form Israel – GDP ratio | % |
| FIMOR | Imports of goods and services from the ROW | 1997 US$ million |
| FIMSER | Imports of services | 1997 US$ million |
| FIMSER_SH | Share of services in total imports | % |
| FIMSHGD_S | Imports of goods – imports of services ratio | % |
| FIMTR | Total imports of goods and services | 1997 US$ million |
| FIMTR_SH | Total import – GDP ratio | % |
| FNCTR | Net current transfers | 1997 US$ million |
| FNFIR | Net factor income | 1997 US$ million |
| FNFIR_GDP | Openness (NFI/GDP) | % |
| GBUDR | Budget (government revenue – government expenditure) | 1997 US$ million |
| GCR | Government consumption | 1997 US$ million |
| GCR_SH | Government consumption – GDP ratio | % |
| GDPFCR | Gross domestic product at factor cost | 1997 US$ million |
| GDPIRX | Israel real GDP (1995 base year) | US$ million |
| GDPJRDRX | Jordan real GDP (1995 base year) | US$ million |
| GDPMPER | GDP error or omissions | 1997 US$ million |
| GDPR | Gross domestic product at market prices | 1997 US$ million |
| GDPR_POP | GDP per capita | 1997 US$ |
| GDPSUR | Operating surplus (GDPFCR – national wage bill) | 1997 US$ million |
| GDPSUR_ | Operating surplus - total output ratio | Ratio |
| GDPWGB_ | Share of wage bill in total output | % |
| GEPEXSR | Public expenditure on export subsidy | 1997 US$ million |
| GEPINR | Public expenditure on investment subsidy | 1997 US$ million |
| GEPWAR | Public expenditure on wage subsidy (cost of employment generation scheme) | 1997 US$ million |

**Table A1: Variable definitions and data referencing - Continued**

| Code | Variable | Measurement |
|---|---|---|
| GETR | Total government expenditure | 1997 US$ million |
| GINR | Government investment (including change in invent.) | % |
| GINR_K | Government investment capital/ratio | Ratio |
| GITAX | Income taxes revenue | 1997 US$ million |
| GITAX_X | Income tax rate | % |
| GLKR | Fiscal leakage | 1997 US$ million |
| GNDIR | Gross national disposable income | 1997 US$ million |
| GNDIR_POP | Gross national disposable income per capita | 1997 US$ |
| GNIR | Gross national income | 1997 US$ million |
| GNITXSR | Net indirect tax and subsidies | 1997 US$ million |
| GPDIR | Gross private disposable income | 1997 US$ million |
| GRO | Other public revenues | 1997 US$ million |
| GRPIMTR | Public revenue from import tariff | 1997 US$ million |
| GRPWISR | Public revenue from tax on Palestinian wage in Israel | 1997 US$ million |
| GRTR | Total government revenue | 1997 US$ million |
| GTFR | Transfers from government | 1997 US$ million |
| GVAT_X | VAT rate | % |
| GVATPR | Potential VAT = 0.17 * GDPR | 1997 US$ million |
| GVATR | Value added tax revenue | 1997 US$ million |
| GWGB | Public employment wage bill | 1997 US$ million |
| INCHINVR | Change in inventories | 1997 US$ million |
| INCNSTR | Investment (capital formation) constructions | 1997 US$ million |
| INCNSTR_SH | Share of construction investment in total investment | % |
| INNCNSTR | Investment (capital formation) non-construction | 1997 US$ million |
| INNCNSTR_SH | Share of non-construction investment in total investment | % |
| INPCNR | Private investment in non-construction | 1997 US$ million |
| INPCR | Private investment in construction | 1997 US$ million |
| INPR | Private investment (including change in inventory) | 1997 US$ million |
| INPR_K | Private investment - capital ratio | ratio |
| INSGAP | Investment-saving gap | 1997 US$ million |
| INSHCNST_N | Construction to non-construction investment ratio | Ratio |
| INTR | Total investment | 1997 US$ million |
| INTR_K | Total investment - capital ratio | Ratio |
| KST | Capital stock | 1997 US$ million |
| KSTDPR | Capital stock Depreciation Rate | % |
| NSVR | National saving | 1997 US$ million |
| OUTPUT | Total output (GDPFCR + intermediate input) | 1997 US$ million |
| PCD | Private consumption price deflator | 1997 = 1.00 |
| PCPI | CPI in Palestine | 1997 = 1.00 |
| PCPID | Inflation rate | % |
| PEX | Export price deflator | 1997 = 1.00 |
| PEXGD | Exports-goods price deflator | 1997 = 1.00 |

## Table A1: Variable definitions and data referencing - Continued

| Code | *Variable* | *Measurement* |
|---|---|---|
| PEXS | Exports-services price deflator | 1997 = 1.00 |
| PGDP | GDP deflator | 1997 = 1.00 |
| PIM | Imports price deflator | 1997 = 1.00 |
| PIMGD | Imports-goods price deflator | 1997 = 1.00 |
| PIMS | Imports-services price deflator | 1997 = 1.00 |
| PIN | Investment price deflator | 1997 = 1.00 |
| PINCNST | Investment-construction price deflator | 1997 = 1.00 |
| PINNCNST | Investment-non-construction price deflator | 1997 = 1.00 |
| PISX | Israel CPI | 1997 = 1.00 |
| RLX | Lending rate on NIS | % |
| SV_K | National saving – capital ratio | Ratio |
| T | Time trend | 1972 = 1 |
| TSFEXAD | Average rate of export subsidy by destination | % |
| TSFEXAT | Average rate of export subsidy by kind | % |
| TSFEXGDR | Rate of subsidy on export-goods | % |
| TSFEXISR | Rate of subsidy on export to Israel | % |
| TSFEXOR | Rate of subsidy on export to ROW other than Israel | % |
| TSFEXSER | Rate of subsidy on export-services | % |
| TSINAV | Average rate of investment subsidy (construction & non-construction) | % |
| TSINCNSTR | Rate of subsidy on investment-construction | % |
| TSINNCNSTR | Rate of subsidy on investment-non-construction | % |
| TSW1_WT | Share of agriculture in total wage subsidy | % |
| TSW1R | Rate of subsidy on wage in agriculture | % |
| TSW1RSUM | Cost of wage subsidy in agriculture | 1997 US$ million |
| TSW2_WT | Share of industry in total wage subsidy | % |
| TSW2R | Rate of subsidy on wage in industry | % |
| TSW2RSUM | Cost of wage subsidy in industry | 1997 US$ million |
| TSW3_WT | Share of construction in total wage subsidy | % |
| TSW3R | Rate of subsidy on wage in construction | % |
| TSW3RSUM | Cost of wage subsidy in construction | 1997 US$ million |
| TSW4_WT | Share of services in total wage subsidy | % |
| TSW4R | Rate of subsidy on wage in services | % |
| TSW4RSUM | Cost of wage subsidy in services | 1997 US$ million |
| TSWAR | Average rate of subsidy on domestic wage | % |
| TSWARSUM | Total cost of domestic wage subsidy (employment generation scheme) | 1997 US$ million |
| TXFEXISR | Rate of Israeli tariff on Palestinian exports | % |
| TXFEXOR | Rate of foreign (non-Israeli) tariff on Palestinian exports | % |
| TXFIMAD | Average rate of import tariff by destination | % |
| TXFIMAT | Average rate of import tariff by kind | % |
| TXFIMGDR | Rate of import tariff on goods | % |
| TXFIMISR | Rate of tariff on imports from Israel | % |
| TXFIMOR | Rate of tariff on imports from other than Israel | % |

**Table A1: Variable definitions and data referencing - Concluded**

| **Code** | ***Variable*** | ***Measurement*** |
|---|---|---|
| TXFIMSER | Rate of tariff on imports – services | % |
| TXWISR | Tax rate on wage of Palestinian employment in Israel | % |
| UTL_ | Utilization rate = output/capital stock | % |
| VA1_SH | Share of agriculture in GDP (factor cost) | % |
| VA1R | Value added in agriculture | 1997 US$ million |
| VA2_SH | Share of industry in GDP (factor cost) | % |
| VA2R | Value added in industry | 1997 US$ million |
| VA3_SH | Share of construction in GDP (factor cost) | % |
| VA3R | Value added in construction | 1997 US$ million |
| VA4_SH | Share of services in GDP (factor cost) | % |
| VA4PBR | Value added services – public | 1997 US$ million |
| VA4PRR | Value added services – private | 1997 US$ million |
| VA4R | Value added in services | 1997 US$ million |
| W1R | Daily wage in agriculture (average) | 1997 US$ |
| W2R | Daily wage in industry (average) | 1997 US$ |
| W3R | Daily wage in construction (average) | 1997 US$ |
| W4R | Daily wage in services (average) | 1997 US$ |
| WAR | Average daily domestic wage | 1997 US$ |
| WGB | National wage bill | 1997 US$ million |
| WIS_WA | Israel/Palestine wage ratio | Ratio |
| WISR | Average daily wage of Palestinian employment in Israel | 1997 US$ |

*All variables are in real terms unless otherwise noted*

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