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Integrated Simulation Framework for Palestinian Macroeconomic, Trade and Labour Policy *

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EXECUTIVE SUMMARY

The Paris Protocol on Economic Relations between Israel and the Palestinian Liberation Organization (1995) established the main features of the Palestinian economic policy framework and the economic policy instruments available to Palestinian decision makers upon the establishment of the Palestinian Authority (PA). As a result, the Paris Protocol has shaped the growth pattern of the occupied Palestinian territory (OPT), polarizing the economic structure around the service sectors and further concentrating trade on one main trading partner (Israel). It has also served to increase the Palestinian economy's vulnerability by aggravating deep-seated structural weaknesses arising from occupation. Intensified movement restrictions by Israel in the OPT since September 2000 have further aggravated the Palestinian economy's weakness and contributed to a prolonged economic crisis. In an effort to address the unprecedented poverty and unemployment rates, many Palestinian governmental and non-governmental institutions are reconsidering development strategies and the existing policy framework; in particular, the present fiscal, monetary and trade relations with Israel, Arab countries and the rest of the world. In this context, the PA requested the UNCTAD secretariat to provide technical assistance and advisory services on two related issues: the use of econometric techniques as an element for enhancing the PA's development planning and policy evaluation capacity; and the design of an integrated analytical framework capable of quantifying the growth prospects and development impact of alternative economic policy options.

With funding from the International Development Research Center (IDRC), Canada, UNCTAD launched a technical assistance project in late 2004 to provide Palestinian policy makers with practical tools to assess alternative policy options and to formulate responsive development strategies. This involved the design of a quantitative integrated analytical framework that is based on a computerized econometric model capable of: (i) reflecting the present Palestinian economic reality; and, (ii) assessing and simulating the impact of alternative macroeconomic and sectoral policy options in the area of macroeconomic, trade and labour policy.

The Integrated Simulation Framework (ISF) builds on UNCTAD's previous generations of econometric models for the Palestinian economy, incorporates recent data and applies new modeling techniques. It was developed in close cooperation with PA economic experts and Palestinian research institutions within the context of a participatory approach to ensure national ownership, and several training workshops were organized to ensure its effective institutionalization within the PA.

This technical study consolidates and elaborates on the results of the ISF, including the model design and estimations, as well as a projection of the development prospects of the Palestinian economy under the existing policy framework. Among the key findings derived from the estimation results is that while the Israeli closure policy, represented by the number of closure days per year, negatively affects Palestinian exports of labour services and goods to Israel and the rest of the world, it has a positive impact on Palestinian imports of Israeli goods and services. In addition, the estimation results suggest that domestic sectoral wages follow wages in Israel, with negative impacts on the competitiveness of domestically produced goods. The results also show that public investment crowds in private investment and that fiscal leakage

could be reduced substantially if the right instruments became available to and are used efficiently by the Government.

Assessment of the baseline forecast, which covers the period 2006-2015, raises major concerns. While political stability, free mobility and increased donor support are necessary to jump-start the economy and ensure recovery in the short term, they are not sufficient to sustain the high growth rates needed to reduce unemployment and poverty meaningfully in the long term. The model predicts persistent trade and budget deficits and further polarization around the services sector and a single predominant trading partner (Israel). These polarization effects and chronic deficits are extensions of the trends that arose from the economic policy framework of the Paris Protocol. This means that it is highly unlikely that a return to the pre-Intifada (2000) framework of economic agreements and relations with Israel will bring the economy to a path of sustained poverty reduction and growth.

There is therefore a need for Palestinian policy makers to design a development strategy based on a carefully considered economic development vision. The elaboration of an integrated policy package to translate this vision into action should *reconsider* existing trade, fiscal, monetary and labour policy arrangements, and should be the base for any economic negotiations or agreements that might shape future Palestinian international economic cooperation.

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ABBREVIATIONS

CGE	computable general equilibrium
CU	Customs Union
EPP	economic policy programme
GDP	gross domestic product
GNI	gross national income
ICA	Israeli civil administration
ICBS	Israeli Central Bureau of Statistics
I-O	Input-Output approach
IMF	International Monetary Fund
ISF	Integrated Simulation Framework
LDV	lagged dependent variables
MAS	Palestinian Economic Policy Research Institute
MoNE	Ministry of the National Economy
MoF	Ministry of Finance
MoL	Ministry of Labour
MSF	Macroeconomic Simulation Framework
NIS	new Israeli shekels
oPt	Occupied Palestinian Territory
PA	Palestinian Authority
PCBS	Palestinian Central Bureau of Statistics
PFESP	Palestinian Fund for Employment and Social Protection
PLC	Palestinian Legislative Council
PLO	Palestine Liberation Organization
PMA	Palestine Monetary Authority
QCU	Quasi Customs Union
QF	Quantitative Framework
ROW	rest of the world
VECM	Vector Error Correction Model
WBG	West Bank and Gaza

I. INTRODUCTION

A. Background

The intensification of the conflict in the occupied Palestinian territory (OPT) since September 2000 has resulted in profound changes in the structure and functioning of its economy. These changes have magnified deep-seated structural weaknesses and created new ones, with negative consequences for the economy's future ability to generate sustainable growth and employment. As explained in UNCTAD (2006), the West Bank and Gaza feature symptoms of a war-torn economy with occupation-related distortions and a multitude of constraints. These stem mainly from the Israeli system of movement restrictions and closure policy since September 2000, in addition to the arrangements governing the economy's relations with Israel as specified in the Paris Protocol, agreed between Israel and Palestine in 1995. Constraints include: (i) a distorted trade regime; (ii) a growing labour force, with excess supply of labour and increasingly reduced mobility in a highly segmented market; (iii) limited natural resources and high degree of resource leakage to Israel; (iv) prohibitive transaction costs; (v) a low rate of productive investment; and (vi) a low growth of total factor productivity. The development challenges imposed by these factors are aggravated by the small size of the economy and its effectively landlocked status.

The widespread economic crisis has generated a consensus among policy makers and experts on the necessity to re-evaluate existing economic relations, policies and development strategies within the newly enforced constraints. The Palestinian Authority (PA) has been reconsidering the existing trade regime with Israel and exploring new policy options for diversifying Palestinian trade in goods and services, including regional integration with the Arab countries. The sustainability of the Israeli market as an outlet for excess Palestinian labour is also being questioned.

However, the PA's renewed development efforts are being undermined by weak planning capacity. While the Ministry of Planning (MoP) has prepared a working framework for channeling donor support, namely the Medium-Term Development Plan (MTDP), there is no effective implementation mechanism. Meanwhile, the Ministry of the National Economy (MoNE) has conducted sectoral studies within the context of the Economic Policy Programme (EPP) to guide economic policy decisions. The Ministry of Finance (MoF) is considering the establishment of a macroeconomic analysis unit, and the Ministry of Labour (MoL) is seeking to play an enhanced role in economic policy processes through the Palestinian Fund for Employment and Social Protection (PFESP). Other contributors to the debate on the optimal development strategy for the OPT came from national research institutions, particularly the Palestinian Economic Policy Research Institute (MAS). The latter has an established track-record in the area of applied economic research and policy analysis, focusing on identifying developmental challenges and priorities.

Nonetheless, these efforts lack a cohesive framework for targeting structural weaknesses and ensuring complementarity among policy decisions. What is required is an integrated quantitative framework capable of outlining and assessing a future vision for the Palestinian economy, along with appropriate policies for achieving such a vision. Previous frameworks to evaluate alternative long-term policy options included the Quantitative Framework (QF),

UNCTAD's first macro econometric simulation model for the Palestinian economy. The framework was developed in 1992-1994 (UNCTAD, 1994a) and revised and updated in early 2000 to take into account the new developments following the establishment of the PA. The revised model, the Macroeconomic Simulation Framework (MSF) (UNCTAD, 2000), represents UNCTAD's second-generation model of the Palestinian economy.

The two models were designed to stimulate and project the Palestinian economy's performance under different policy assumptions. The MSF envisages a transitional period during which the economy would gradually reduce its dependence on the Israeli economy, absorb returnees and achieve higher investment rates. However, the intensification of the crisis since September 2000 created a reality more complex than could be captured by the MSF, and thus its detailed results were never disseminated. Nonetheless, and for the first time, these pioneering models set the stage for a logical understanding of the macro-economy of the Palestinian territory. The QF provides a reference framework for other international institutions, and has inspired limited models by individual Palestinian researchers since 1994. MAS has also developed a number of quantitative studies, which demonstrate relatively advanced econometric and modeling efforts.

Recent models include a Computable General Equilibrium (CGE) model developed by the World Bank in 2000-2001 (Astrup and Dessus, 2001a and 2001b). The model's primary objective is to assess the impact of specific alternative economic arrangements with Israel in the areas of trade policies and the labour market. Since it was constructed and calibrated before September 2000, it does not feature a major departure from the existing policy arrangements and does not take into account policy changes resulting from the crisis. The model also lacks Palestinian ownership in terms of its technical development and updates, as well as the policy options it examines. Any future development of this model will depend on an initiative by the World Bank.

During the interim period (1994-2000), factors such as weak economic policy coordination and ad hoc management, coupled with certain institutional weaknesses, undermined coherence and comprehensiveness in macroeconomic policy-making processes (UNCTAD 2006). However, the past years of war and economic siege, along with the imperatives and looming institutional and policy reform for the envisaged State of Palestine, have pushed the issue of adopting a more serious approach to economic policy-making to the top the PA agenda. Accordingly, the outcomes of international and national modeling efforts to date should be viewed as a process that started from zero and should be considered within the context of the dramatic political developments of the last 10 years.

Most notable is the fact that none of the previous frameworks or studies considered the economic consequences of the partial implementation of the Paris Protocol and those resulting from its increasing dysfunction since 2000. The structural impact of the prolonged crisis and the pending challenges arising from the 1994-2000 interim period are additional factors that should be considered for well-informed analysis of economic policy options in the short, medium and long terms. This requires an analytical framework with a much broader span, covering economy-wide and sectoral policy options. A new effort to strengthen the PA's planning capacity must also succeed where previous efforts met with limited success. Such an effort should ensure:

(a) The leading involvement of Palestinian expertise in design and analysis;
(b) Collaborative efforts between competent institutions;
(c) Greater dedicated resource availability;
(d) The possibility of building on the accumulated experience of the above-mentioned efforts;
(e) National ownership through government involvement at different stages and readiness to install and operate the model in relevant ministries/departments.

B. Objectives

To contribute to achieving the above, the ISF project provides Palestinian policy makers with a tool for assessing alternative policy options and formulating responsive development strategies and policies in the areas of international trade, macroeconomic policy and labour. In particular, it proposes an integrated quantitative analytical framework to quantify the impact of alternative sectoral and macroeconomic policies. The framework builds on previous models, incorporates recent data, and applies enhanced modeling techniques. It reflects the present Palestinian economic reality and is capable of providing policy makers with quantitative assessments of the medium- and long-term economic impact of a wide range of policy options and structural changes, such as:

(a) A macroeconomic package to address poverty and weak domestic demand within a sustainable fiscal balance and manageable foreign debt position;
(b) Labour policy and employment programmes to reduce the dependency on the Israeli labour market while creating employment opportunities in the domestic economy;
(c) Policies for absorbing increased numbers of returnees;
(d) Trade policy and the gradual introduction of a new trade regime to expand Palestine's international market and diversify its trading partners;
(e) Public/private investment programmes;
(f) Industrial policy targeting high-value-added sectors; and
(g) Tax and transfer (fiscal) policy and foreign debt policy.

To ensure sustainability and national ownership, the framework was designed, calibrated and simulated in full partnership between MAS and the UNCTAD secretariat. This was done within the context of an implementation plan that ensured the active participation of concerned PA ministries and national research institutions at all stages, while institutionalizing the required capacity within these institutions to utilize and further develop the framework. Direct beneficiaries of this analytical framework include Palestinian policy makers, organizational units and professionals in the Ministries of the National Economy, Labour, Finance and Planning, the Palestinian Monetary Authority, the Palestinian Central Bureau of Statistics (PCBS), and selected national academic institutions. Indirect beneficiaries include PA policy makers in other ministries, donors and international development agencies.

II. PREVIOUS PALESTINIAN ECONOMIC MODELS

This chapter briefly reviews previous efforts to quantitatively assess the long-term growth prospects of the Palestinian economy under alternative policy options. These efforts were initiated by the UNCTAD secretariat's first modeling exercise, which was followed by the World Bank's efforts about a decade later.

A. UNCTAD quantitative framework

In 1990, UNCTAD initiated an intersectoral research project on prospects for sustained development of the Palestinian economy, which entailed a series of economic and social studies that were completed in 1994. Drawing on the findings of these studies, the project investigated medium- and long-term Palestinian economic development prospects. It included the design of a computerized quantitative framework (QF), which charts and empirically evaluates the historical relationship between key macroeconomic aggregates. The framework was used to examine alternative paths for developing the Palestinian economy over the period 1990-2010, according to different assumptions of future demographic and policy variables (UNCTAD, 1994a). These paths included a baseline scenario that anticipated long-term economic and social decline, and an alternative scenario that featured a set of supply and demand side policies and factors to reveal the economy's capacity for sustained economic growth and development.

The findings of this project were confirmed and further elaborated in publications by the Palestine Liberation Organization (PLO) and by the World Bank in 1993. Together, these efforts served two important objectives at the outset of the interim period as foreseen by the Israeli-Palestinian peace accords of 1993-1994:

- Helping to build a national and international consensus on immediate priorities for Palestinian economic reconstruction and optimal policy measures;
- Demonstrating the long-term viability and development prospects of the Palestinian economy in the context of a successful Middle East peace process.

Since it was conceived and largely completed prior to the Israel-Palestine peace accords, the underlying assumptions of the econometric analysis entailed gradual removal of longstanding restrictions on the economy and an improved policy environment following a political settlement. The QF explored the long-term opportunities for a major transformation of the Palestinian economy assuming Palestinians' exercise of complete sovereignty over natural and human resources, as well as full empowerment in managing economic development.

The results of the QF reveal that, with a cohesive trade and investment policy framework addressing major structural gaps (trade, investment and employment), the Palestinian economy could recover and prosper. Projections demonstrated the economy's capacity to reverse historical trade deficits, boost national savings and investment capacities, and reduce unemployment and underemployment resulting from the labour force's dependence on external work opportunities. Moreover, the results also revealed the possibility of absorbing one million Palestinian returnees over a 10-year period, with their integration into the economy underpinned by significant inflows of international aid and investment.

In the macroeconomic block of the framework, the historical functions affecting the interplay between basic national account aggregates are calculated through multiple regression analysis of historical time series data. A simple supply system, driven by productivity and labour force, is used to project total potential output. This is compared to actual output, calculated with a set of demand equations derived from the historical regression analysis. The discrepancy between potential (i.e. projected) and actual output is reflected in the rate of unemployment (one of the main gaps depicted by the framework). Ways of reducing this gap and correcting other structural distortions are explored through alternative assumptions affecting different functions.

B. World Bank computable general equilibrium model

The World Bank's quantitative approach belongs to the CGE class of models (Astrup and Dessus, 2001a and 2001b). In general, CGE models range from relatively simple models with a few equations to comprehensive ones that are based on social accounting matrixes (SAM). They are known to be built around compromises, and their predictions are extremely sensitive to underlying assumptions.

The World Bank's model uses a "nested, two-stage optimization" approach to reflect most markets. The demand and supply functions are derived and then estimated with some sort of reduced form, or by using elasticities from other countries. For example, in calculating private consumption, at the first stage (top level), consumers are depicted as optimizing their utility functions between imported and domestically produced goods. At the second stage (lower level), and after determining the real demand for imported goods, consumers are viewed as optimizing the utility function again to determine the optimal consumption mix of imports by source, thereby making it possible to calculate the share of each region (West Bank and Gaza Strip) in Palestinian imports of consumption goods. The same approach is applied to the production sectors to determine the supply side of the economy. But the important issue from an econometric point view is that when moving from the theoretical micro-optimization analysis to the reduced form (i.e. the equations to be estimated or assumed), it is difficult to discern whether an equation from a CGE model reflects reality better than an equation from a macro/Klien type model. Both will reflect the reality as good or as bad as long as the equation comprises all relevant variables. Furthermore, the structure of the model and its parameters are not clearly described and some markets (e.g. capital) are missing.

Recently CGE models have been employed with increasing frequency, rather than alternative forms such as time series econometric models, for modeling the economies of developing countries primarily for the following two reasons:

(a) In analysing the impact of structural reforms in developing countries, economists are interested not only in the direction of change in aggregate variables, but also in distributional effects. CGE models are appropriate tools for such analysis, as they are built on market clearing assumptions. They capture all necessary changes in relative prices to achieve general equilibrium, thereby identifying the impact at the sectoral level.
(b) Most developing countries suffer from a paucity of data. In such situations, CGE models are appropriate as they are not necessarily data-intensive. CGE models do not

require long-term time series of econometric estimates. In addition to SAM parameters, CGE models are built on estimates of elasticities of substitution and transformation. These can be estimated if data are available or imposed, using estimates obtained from countries with apparently similar economic structures.

However, these two features are not obviously applicable to the Palestinian case. The challenges facing the Palestinian economy, at present and in the near future, are related not only to reforming policy regimes, but also to mobilizing resources and designing a comprehensive strategy for growth. Policy reform should therefore be based on planned growth objectives. Put differently, the present development challenges facing the Palestinian economy cannot be properly answered by comparative-static exercises of CGE models. They relate to questions of growth that are better dealt with using dynamic growth models.

Furthermore, using data from the last few years will certainly generate misleading results. The Palestinian economy has been performing under adverse conditions of distortions and disequilibria in all markets, and has been dependent on relatively large amounts of aid. Bearing in mind that a CGE model is not used to analyse short-term fluctuations, but rather to predict medium-to-long-term structural changes, it could be misleading to use data from anomalous years. Such data will produce very peculiar SAM parameters, and the actual values for annual economic variables (production, trade, employment, prices and so on) produced by model calibration will not be suitable for use as benchmarks.

Nonetheless the World Bank study made a major contribution to the ongoing policy debate on the future policy options for the Palestinian economy. In this study, the CGE model is simulated to assess the impact of three alternative trade policy regimes: the existing Israeli-Palestinian Customs Union (CU); non-discriminatory trade policy; and a free trade agreement with Israel. According to the study, it appears that the cost of the Customs Union to the Palestinian economy outweighs its benefits. Hence the study alerts all concerned parties to the negative consequences of continuing dependence on Israel as the predominant trading partner and as the main destination for Palestinian excess labour within a Customs Union that mainly serves Israeli interests.

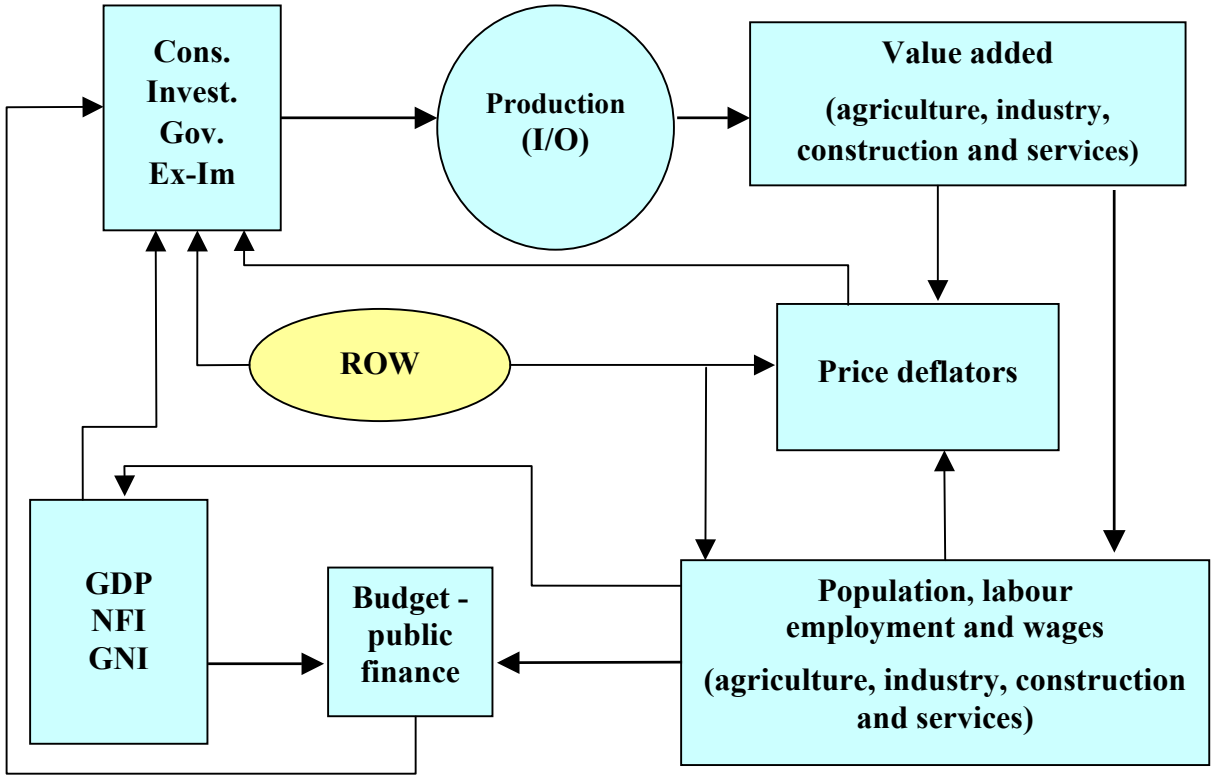
C. Other models

Earlier models were built by Israeli researchers, including a model by Gideon Fishelson (1989), "The Econometric Model of Gaza Strip", that covered the period 1969–1987. A second model was advanced by Arnon and Gottlieb (1996), "An Analysis of the Palestinian Economy the West Bank and the Gaza Strip", covering the period 1968–1991. A third model was developed by Ron Baums, "The Econometric Model of the West Bank", covering the period 1969–1986. The three models follow variations of the Klein-econometric class of models. They are not derived from a Palestinian development perspective. As far back as the late 1980s, five years before the establishment of the PA in 1994, these models simulated policies (including fiscal, trade and labour policies) to address the closure of the border to Palestinian trade with Israel, as well as to Palestinian workers seeking job opportunities in the Israeli market. It seems that the focus is more on the impact of a change of policy/border that could affect the Israeli economy.

III. INTEGRATED SIMULATION FRAMEWORK FOR PALESTINIAN MACROECEONOMIC, TRADE AND LABOUR POLICY

The Integrated Simulation Framework (ISF) builds on UNCTAD's previous models of the Palestinian economy. However, unlike its predecessors, the present version reflects Palestinian national and international economic relations after the establishment of the Palestinian Authority (PA) in 1994. The ISF is a Klein-type demand-side model. However, it goes beyond the standard demand-side approach by integrating the supply side in its structure. Following Elkhafif (1996), the ISF applies the input-output (I-O) approach to reflect the economy's productive sectors and incorporate both supply and demand factors. Final demand variables work through value-added equations, which in turn affect sectoral employment. Figure 3.1 shows a simplified structure of the Palestinian economy, as depicted by the model.

Figure 3.1 - A simplified flow chart of the ISF



Model development and estimation was based on the UNCTAD database (UNCTAD (2003)), with additional variables as required by the model structure. Data were retrieved from, among others, the Palestinian Central Bureau of Statistics (PCBS) and the Israeli Central Bureau of Statistics (ICBS). Israeli published data were subjected to key modifications to establish consistency with those published by PCBS. Real economic data are in constant 1997 dollars. The data were verified on a global basis through a constant analysis of the variables against their historical trends and internal double-checking. Annex I further elaborates on the development and quality of the database.

A. Model structure

The model includes all categories of aggregate demand: private and public consumption and investment, as well as export and import of goods and services. Its structure makes it possible to model trade by source and destination, and therefore reflects the dependence of the Palestinian economy on that of Israel. This dependence is also captured by modeling the Israeli market as a destination for Palestinian labour. The model is capable of simulating less dependence and more controlled interconnection between the two economies through the introduction of a set policy instruments (switches) that alters relative prices of tradable goods and services (including labour). The model simulates 151 endogenous variables generated from 35 behavioural equations and 116 identities. These are distributed among five blocks: (i) labour and demographic block, with 11 behavioural equations and 34 identities; (ii) government block, with 3 behavioural equations and 14 identities; (iii) trade and national accounts block, with 10 behavioural equations and 62 identities; (iv) prices and deflators block, with 7 behavioral equations and 6 identities; and (v) value added block, with 4 sectoral equations. Annex II provides the variable codes and annex III lists the structural form of the behavioural equations and identities.

Labour and demographic block

The labour block consists of 11 behavioural equations and 34 identities. The explanatory variables were selected on the basis of a priori demand and supply analysis, with emphasis on the former. This is in line with the Kaleckian and Keynesian approaches, whereby output is demand-driven and the economy can reside at levels of underemployment of available resources. That is, demand for labour is not constrained by the labour supply, and the wage does not adjust to ensure full employment. The wage might equally be considered as being determined outside the system. Given the significant dependence on Israel for employment, and the higher wage rates prevailing in its markets, Palestinian domestic wages are modeled to capture the relationship with employment in Israel. Domestic employment is thereby dependent, in part, on wage rates and/or relative wage levels offered to Palestinians employed in Israel.

Palestinian employment in Israel is modeled as a function of the ratio of wages in the Palestinian territory to Israeli wages, the number of closure days, and Palestinian labour supply, while domestic sectoral employment is a function of value added, wages and lagged employment. Male and female participation rates are functions of wage rates and the size of each group's population. Wages in the Palestinian territory are driven by the level of wages offered to Palestinians in Israel, the unemployment rate and lagged wages. In line with the a priori selection process, variables are not necessarily included on the basis of their t-statistics and standard errors. Rather, more emphasis is placed on theoretical consistency, which sometimes involved the inclusion of variables that are not statistically significant.

Government block

From 1967 to 1993, there was no national government in the West Bank and Gaza. Accordingly, data from the Israeli Civil Administration (ICA) for this time span are considered for the government sector. The period is characterized by Israeli collection of taxes, coupled with an almost total absence of programmes for the development of the Palestinian territory. The expenditure that did take place was primarily for health, educational,

postal and local governmental staff. By 1992, the ICA budget was in surplus by $17 million (Khader 1999).

With the signing of the Palestinian-Israeli peace accord and the establishment of the PA in 1994, government took on a different meaning. The term has since been used to describe the PA government, with a centralized budget and some policy tools to manage the economy. Despite the fact that the PA hardly performed any fiscal management in the macroeconomic sense in its early years, it contributed to the absorption of thousands of unemployed, especially in times of restricted access to the Israeli labour markets. It also implemented several employment generation schemes.[1] It is worth noting that existing Palestinian fiscal policy is governed by the 1994 Paris Protocol, which accords the PA limited manoeuvring space to change tax rates. However, the PA did not use any of the tax setting policies made available to it by the Protocol.

Public expenditures registered significant growth on a per capita basis with the PA's assumption of power. This growth is partially explained by donor support, through significant contributions to capital expenditures. The public budget also registered substantial expansion on the revenue side, in part due to the transfer to the PA of large customs clearances, historically retained by Israel. However, Daoud (2002) points out that the PA's fiscal decisions were not consistent with GDP growth, nor were they responsive to private sector development needs. Rather, they were generally determined by overriding political and security prerequisites of establishing and strengthening the PA

The government deficit reached unprecedented levels after September 2000, when Israel withheld customs revenues collected on behalf of the PA. This left the PA with no choice but to accumulate arrears to partly cover the accumulated recurrent deficit. In 2003, the Ministry of Finance (MoF) exerted concerted efforts to pay off arrears by limiting public employment expenditure and streamlining current expenditures (Daoud 2003). However, the weight of the ongoing crisis and the unreliability of the import revenue collected by Israel on behalf of the PA has made it increasingly difficult for the PA to balance the budget. The deficit is therefore endogenized in the ISF, with a feedback mechanism to the demand side of the economy and consequently employment.

Standard macroeconomic models treat the government sector as largely exogenous to investigate how fiscal policy affects employment, GDP and prices.[2] As a natural consequence, it is often argued that the method of financing the budget deficit can limit the effectiveness of fiscal policy. Acocella (1998) reviews the various methods of deficit financing and how they are likely to affect GDP. In addition to its macroeconomic implications, fiscal policy has other microeconomic considerations such as equity and efficiency. Naqib (1996) examined the tax structure of the PA and came to the conclusion that the tax system is largely regressive, as it is comprised mostly of a benefit-based VAT system.

The empirical literature on macro-econometric models of the Palestinian economy varies in its treatment of the government sector. UNCTAD (1994a) models government consumption and investment as functions of GDP in the aggregate demand relation, but does not tackle the public deficit and revenues. El-Jafari (1998) models revenues as depending on GNP, imports, and a lagged dependent variable. He disaggregates expenditures to current and capital. Current expenditures are depicted as functions of revenues, lagged dependent variable and foreign aid, while capital expenditures depend on a lag and government revenues. Arnon,

Luski, Spivak, and Weinblatt (1997) also depict direct taxes and indirect taxes as dependent on GNP and GDP levels respectively, and use the estimated figures to distinguish national income accounts identities. The Fishelson (1989) model of the Gaza Strip and the Baums (1989) model of the West Bank treat the government as an exogenous factor. The latter uses government consumption as well as direct taxes, indirect taxes and transfers, while the former uses government consumption only. It must be noted that in the last few years the majority of capital expenditures have been financed by foreign aid. Moreover, it seems that lagged deficit is a better explanatory variable for capital expenditure than current revenues.

The ISF model considers government consumption, other revenues, and net indirect taxes and subsides as endogenous factors. This makes it possible to introduce changes in tax/subsidy switches on trade and wages to assess their impact within the context of alternative economic policy frameworks. The government block consists of three behavioural equations and 14 identities. Public consumption is determined by public employment, lagged deficit, and PA dummy and lagged dependent variables, while public investment is exogenous (policy variable), as are other government expenditures. On the revenue side, VAT is calculated twice: the first is the effective VAT rate multiplied by GDP at factor cost (value added), and the second is 17 per cent of value added, or potential VAT. The difference between the two is an estimate of the fiscal leakage to Israel, which could be a source of revenues if reduced. This leakage also explains other revenues, along with imports from the rest of the world. Income tax revenues are decomposed into domestic and income taxes imposed on Palestinians working in Israel.

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 absence of a Palestinian currency, as agreed under the Paris Protocol. The financial sector is only considered to show the effects of credit extension and lending rates on investment. While the first instrument is available to the Palestinian policy makers, the latter is beyond their reach as it is determined by the Bank of Israel. However, the structure of the model allows for changes in export and import prices to simulate the impact of exchange rate policy on the trade balance.

Foreign trade and national accounts block

Since the Israeli occupation of the West Bank and Gaza in 1967, the Palestinian economy has become closely linked to that of Israel. Over the period 1967-2000, exports to Israel accounted for at least 60 per cent of total Palestinian exports, while imports from Israel were more than 65 per cent of total imports. The relationship between these two economies has also been affected by political instability and by Israeli policies to restrict the movement of goods and people, reflected in the ISF through a variable representing closure days. The establishment of the PA has also affected the expectations of Palestinian economic agents, which in turn affects investment decisions. Lastly, donors' contributions to the development process of the Palestinian economy have had an impact, which must not be neglected, especially during the years since 2000.

Accordingly, the approach of the mainstream macroeconomic models has been modified in the ISF to reflect the impact of these factors on the Palestinian economy. The unique Palestinian situation requires modification of mainstream approaches to ensure proper accounting of the economic impact of the mentioned factors. Determinants of foreign trade

and national income are represented through 10 behavioral equations and 62 identities. Palestinian imports from and exports to Israel are specified separately from the rest of the world to reflect the Palestinian economy's dependence on Israel. Imports are also disaggregated into goods and services with the use of a relative share of goods to services equation. The latter is a function of time and relative prices adjusted to policy instruments. Exports to Israel are expressed as a function of real wages, an export deflator, the Israeli gross domestic product, a dummy variable for 1993 and the number of closure days per year. Exports to the rest of world are expressed as a function of its price deflator, labour productivity, dummies, Jordan's GDP (the second trade partner of the OPT) and closure days. The share of goods to service exports is expressed as a function of time and relative prices.

The second set of equations in this block relate to national income. Net factor income is thought of as depending on employment in Israel, Jordan's GDP and closure days. The standard Keynesian model is slightly modified to fit the Palestinian case, where private consumption is assumed to depend on its lagged value, in addition to gross private disposable income, and a dummy variable to carry the impact of the establishment of the PA, where D = 1 for the 1994-2002 period and 0 otherwise.

Private investment is expressed as a function of credit extension, gross national income, government investment, the lending rate and closure days. It is worth noting that interest rates may be the least important factor affecting investment, given the high risk resulting from the prevailing political instability. As in the case of the government block, a number of policy switches and add-factors are incorporated into this block to allow for alternatives to the existing customs union and different tariff structures that go beyond the existing policy framework of the Paris protocol.

Prices and deflators block

In the absence of monetary policy instruments, the PA is unable to ensure price stability. Inflation is transmitted to the Palestinian economy through trade with Israel. It has been aggravated by supply shortages resulting from the Israeli movement restrictions and closure policy since September 2000. Price deflators are introduced in some detail to account for inflation dynamics in the OPT and to investigate the effects of labour productivity, the new Israeli shekel (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).

Value added block

The model reflects the production side of the economy by disaggregating the economy's total value added into four sectors: agriculture, industry, construction and services. The supply of each sector as measured by its value added is regressed on aggregate demand components: private consumption; private investment; public consumption; public investment; exports of goods and services; imports of goods and services. To carry the impact of technology, a time trend is added. This method of modelling the economy's supply side follows the input-output (I-O) approach to capture production by a Leontief fixed coefficient function (Elkhafif, 1996). Optimally standard I-O tables should have been used for this purpose. However, at the time of developing this version of the model, final I-O tables had not been released by PCBS. The same set up of the I-O approach was therefore estimated econometrically, rather than using

the I-O coefficients, to derive the economy's value added from the complete set of aggregate demand components.

B. Empirical results

The model was first estimated equation by equation, then block by block, and finally as a complete system. Many criteria were used in the selection process, including sign correctness and statistical significance, as well as goodness of fit and the ability to track history. Furthermore, individual series were checked for unit root using various lag structures, null hypothesis, and test statistics. The results suggested using the Vector Error Correction Model (VECM), but lack of observations made this task impossible. Thus a simultaneous equation model was estimated, bearing in mind that the primary goal is policy simulation and forecasting. The identification of the system as a whole was also checked. Accordingly, Zellener's (1962) Seemingly Unrelated Regression (SUR) was used to gain the efficiency from cross equation correlations. The model is:

$$[Y_t]_{35x1} = [X_t]_{35x202}[\beta_{202x1}] + e_{135x1} \quad (1)$$

with regression coefficients

$$\beta = (XV^{-1}X)^{-1}XV^{-1}Y \quad (2)$$

Where the inverse covariance is

$$V^{-1} = \Sigma^{-1} \otimes I \quad (3)$$

The following discussion presents the estimation results block by block.

The labour market and demography

The equations were mostly in double log form for the added advantage of elasticity calculations. In some cases lagged dependent variables (LDV) are included for the partial adjustment interpretation, which allows the calculation of short- and long-term elasticities.

It is evident from table 3.1 that all estimated slope coefficients have the correct sign. It is possible that the impact of the same independent variable may have a different effect when regressed against the gender-specific dependent variable. This is observed in the case of female and male participation rates. As the table shows, an increase in average daily wage increases male participation rates, but an increase in national disposable income decreases female participation rates. This is commonly known in micro studies as an income effect; higher income leads to a lesser need for the woman to work. The main features of the empirical findings are discussed in the following sections.

Table 3.1 - Estimates of labour block*

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	
	Labour 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 dependent variable (LDV)	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	
	LDV	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	
	LDV	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 3.1 - Estimates of labour block 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	
	Labour 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	
	Labour 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	

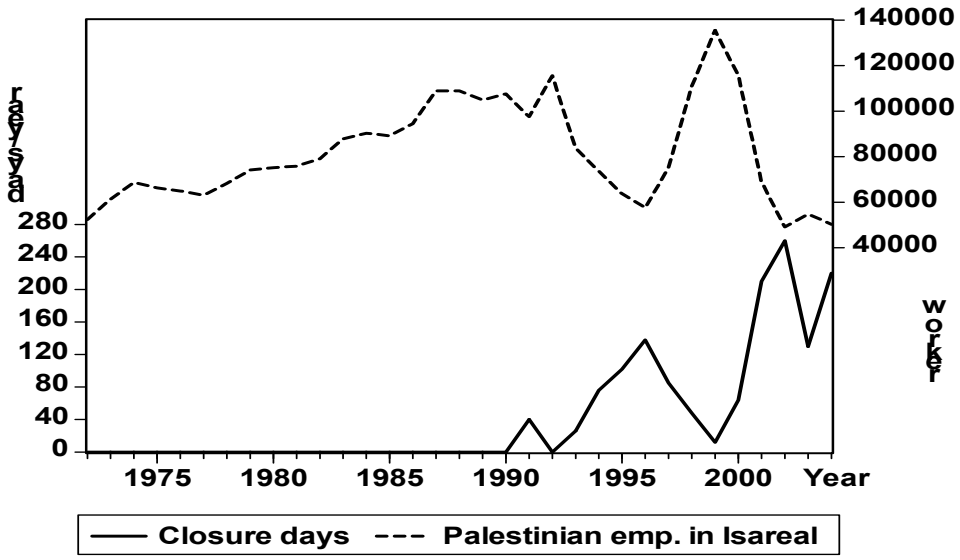
* All variables are in logs unless denoted by +

** Restricted coefficients where chosen after a number of estimations. The restriction with the highest adjusted R^2 for the respected equation was imposed.

Employment

Employment in Israel is inelastic with respect to wage ratio. The estimated elasticity suggests that a 1 per cent increase in wages available to Palestinians would increase Palestinian employment in Israel by only 0.04 per cent. This implies that employment in Israel is marginally driven by relative wages. Although wages available to Palestinians had as much as a 50 per cent premium in some years (Daoud 2005), other factors have taken precedence, especially in recent years. Palestinian labour supply seems to be more influential, though the elasticity coefficient is less than one. The number of closure days per year is another factor, with a negative impact on employment in Israel by a magnitude of -0.004 per cent per day. This figure is to some extent underestimated, since the number of closure days during most of the period 1972-1990 was zero. Taking the simple correlation coefficient for the entire period and for post-1990, the figures are -0.21 and -0.73, respectively. The stronger relation is shown in figure 3.2. Adding more recent data to this variable will produce a higher elasticity coefficient.

Figure 3.2 - Palestinian employment in Israel and closure days per year



In the case of sectoral domestic employment, own value added is among the most influential variables in explaining the behaviour of sectoral employment. However, the elasticities are less than one, which implies that a 1 per cent increase in sectoral value added would lead to less than a 1 per cent increase in labour input for all four sectors. As for the impact of wages on employment, the estimation suggests that wages in agriculture relative to those in Israel have a negative impact on agricultural employment, with a -0.13 per cent elasticity coefficient. On the other hand, a 1 per cent increase in sectoral wages leads to a 0.28 per cent reduction in construction employment and 0.02 per cent reduction in services. Thus, employment in the service sector is almost perfectly wage inelastic. Agricultural employment seems to complement employment in services, although the effect of service employment on agriculture is also positive, though stronger, and both are less than one. Construction employment is inversely related to employment in services. A 1 per cent increase in industry employment (holding other variables constant) reduces agricultural employment by 0.35 per cent. This may be explained in the context of employment in Israel: when closures take place, people previously employed in Israel seek temporary employment in services or agriculture. This can be seen in the employment in Israel coefficient in the services employment equation, where this coefficient is negative and less than one. A similar effect is found with respect to industrial employment. Expansion in industrial employment may then take place at the expense of agricultural employment as substitution between industry employment and employment in Israel is less likely. The lagged dependent variable is present in agriculture, industry and construction. This implies a long-run wage elasticity of -0.16, -0.06, and -0.34 respectively.

Labour force participation

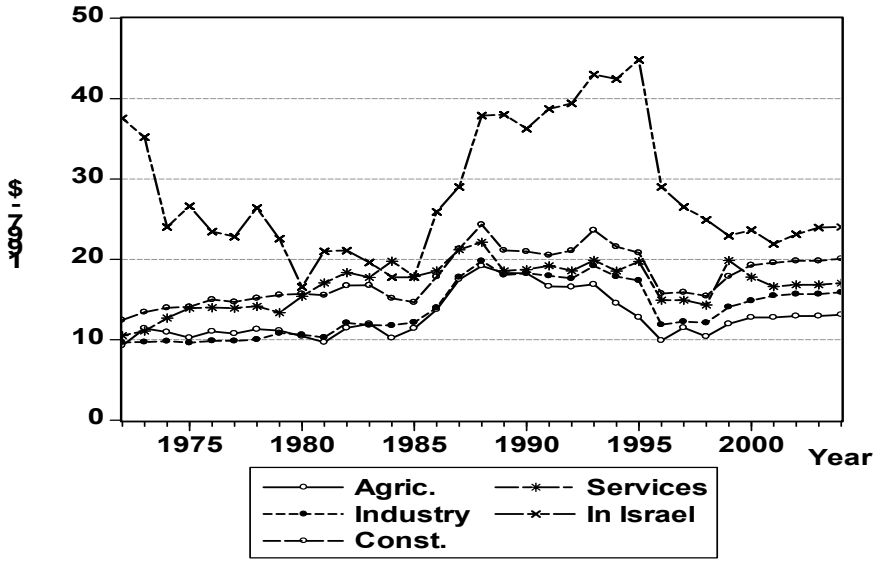
The model's ability to explain participation rates is better for males than for females. The goodness of fit is lower for the latter, with a low level of significance. The effect of daily wages on participation is of minor economic and statistical significance for males. An

increase in value added increases male participation only marginally, while closure days reduce male participation. For females, the effect of per capita gross national disposable income is negative and insignificant.

Wages

The wage equations relate sectoral wages to wages in Israel, unemployment rates, time and LDV. Historically, construction (sector 3) has had the highest premium on the four sectors, while agriculture (sector 1) has had the lowest. It is evident that work in Israel fluctuates sharply and has undergone a severe reduction since 1996. Domestic wages are closer in their co-movements (figure 3.3). However, regression results indicate that whenever wages in Israel increase, domestic wages follow suit. This relation is not strong, which could be another reason behind the weak relationship between relative wages and employment in Israel. A one per cent increase in wages in Israel leads to a less than 1 per cent increase in domestic wages for all sectors. Wage elasticity with respect to unemployment is inelastic for all sectors. Wages decrease by roughly 0.2 per cent for a one percentage point increase in unemployment in industry and services, and more so in agriculture.

Figure 3.3 - Real domestic sectoral daily wage and in Israel (1997 - dollars)



Public finance

Figure 3.4 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 its contributions to help the newly established PA, with significant contributions to capital expenditure. It is evident that the deficit reached new proportions after 2001, when Israel withheld revenues accruing to the PA. Figure 3.5 shows that the ratio of government consumption to total expenditure has taken an upward swing since the establishment of the PA. It averages 75 to 80 per cent for the period under consideration. It is therefore of particular importance to study the behaviour of government consumption.

The period 1995–1996 witnessed a reduction in the deficit until the budget was nearly balanced in 1996. After that period, an increase in the deficit was associated with higher spending. Current expenditures were dominated by the wage bill. The empirical results in table 3.2 indicate that government consumption is positively influenced by government employment, lagged deficit and own lag (LDV). The deficit coefficient indicates that current deficits tend to be followed by higher expenditure, with a long run elasticity of 1.06.

On the revenue side, other government revenues are expected to depend on imports of goods and services, and fiscal leakage (the gap between potential and actual VAT revenues). An increase in the leakage by 1 per cent leads to a 0.76 per cent reduction in other revenues, while imports increase them by 0.44 per cent. The PA's ability to reduce the leakage is evident from the simple regression of the effective rate on time. The slope coefficient shows an annual increase of two tenths of a percentage point. However, this effective rate has shown high volatility in the last few years. Figure 3.6 shows that the leakage has reached a peak of roughly US$ 600 million since 2000. It is evident that the fiscal leakage has been more than double the amount actually collected for many years. Finally, net indirect taxes and subsidies increase on a nearly one-to-one basis with government other revenues (the difference between total revenues and income tax and vat revenues).

Table 3.2 - Estimates of government block*

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
	Government 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 +

Figure 3.4 - Total Government revenues and expenditures (million 1997 - dollars)

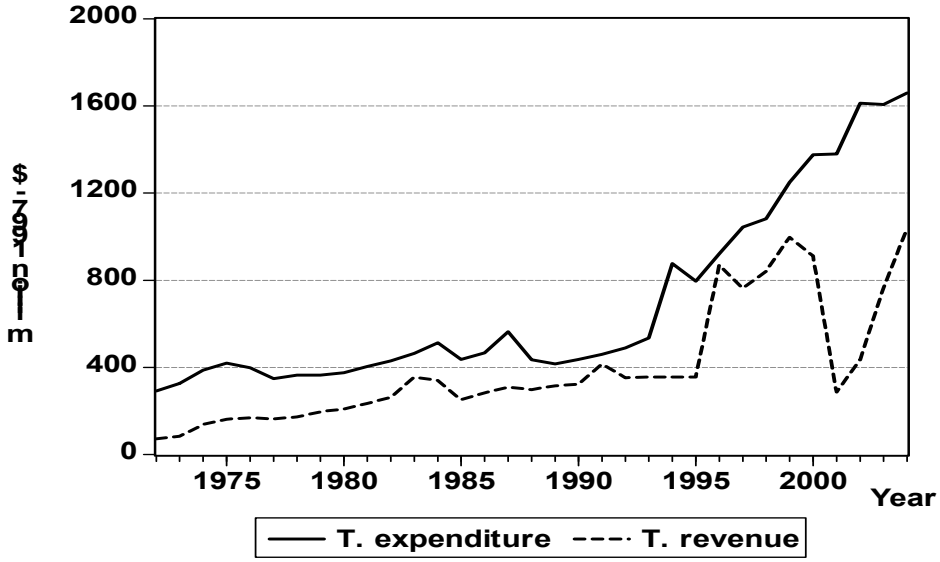


Figure 3.5 - Ratio of government consumption to total expenditure

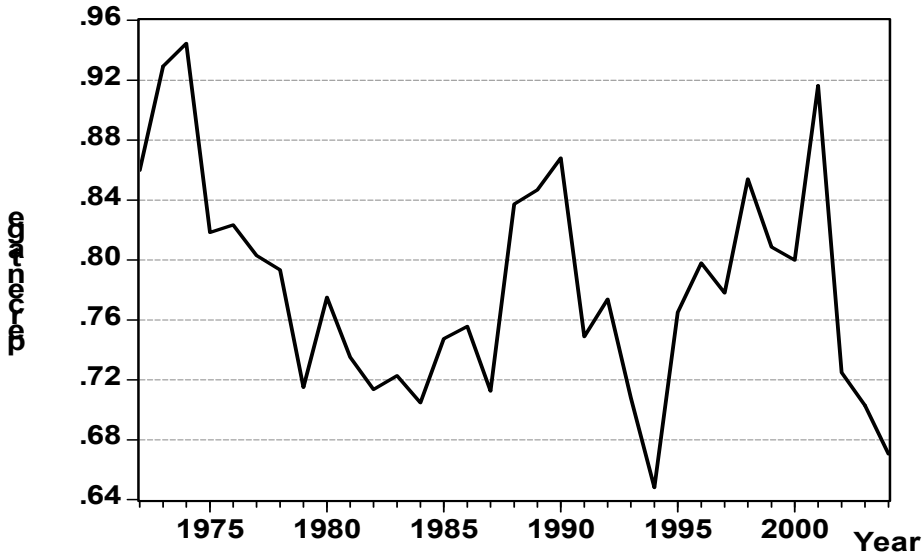
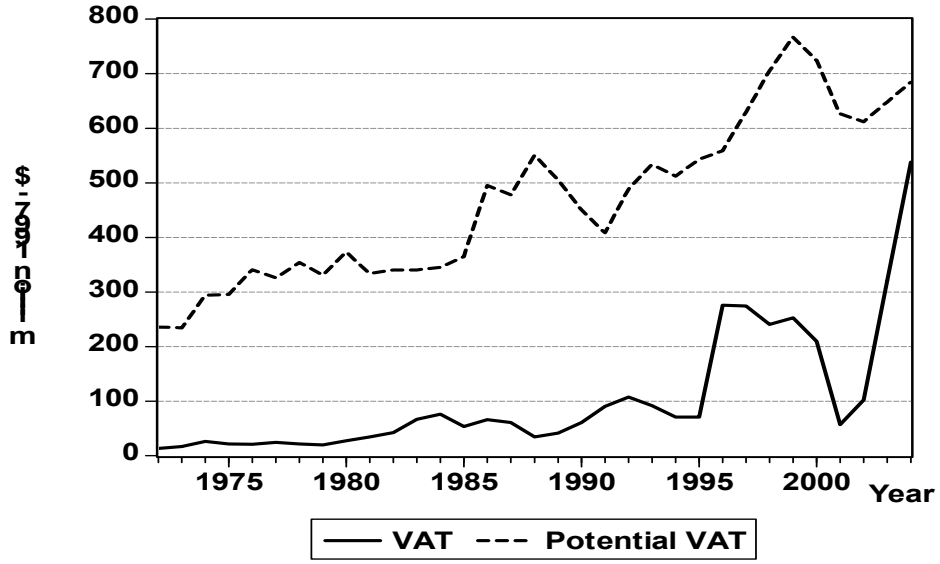


Figure 3.6 - Actual and potential value added tax revenues (million 1997 - dollars)



External sector

Total imports and exports are broken into two components: trade with Israel (as the major trading partner) and trade with the rest of the world (ROW), which was derived as a residual. The same values of imports and exports are also disaggregated into goods and services. Although exports remained relatively stable over the entire span, imports have grown substantially. Figure 3.7 shows that the trade deficit increased nearly fivefold during the study period. A closer examination shows that while imports from Israel constitute the bulk of total imports and increased during the second Intifada (September 2000), the relative importance of imports from the ROW declined.

Figure 3.7 – Imports and exports of goods and services (million 1997 - dollars)

The results of the estimated import demand and export supply equations are presented in table 3.3. The coefficients of all explanatory variables have the expected signs. It would be expected that when a closure is enforced, trade movement (both exports and imports) will be limited, but the estimated coefficients suggest that closures restrict exports and labour movement. Net factor income (mainly workers' remittances) actually drops by 0.005 per cent for an additional day of closure per year. Exports to Israel and the ROW are also reduced by closures, but imports from Israel and the ROW are affected positively. Imports from Israel are driven equally by consumption and investment. Alternatively, imports from the ROW seem to be driven more by investment than consumption. Higher domestic wages reduce exports to Israel as an indication of lack of competitiveness. However, it seems that Israeli demand for Palestinian exports is inelastic; the elasticity coefficient is 0.58 per cent increased exports to Israel for each 1 per cent increase in Israel GDP. Exports to the ROW increase with labour productivity and Jordan's GDP, as Jordan is the major partner in the ROW countries. Finally, the establishment of the PA has resulted in a reduction in net factor income. On average, net factor income was lower by 0.32 per cent in 1994 and 2000 than for the rest of the period. At the same time, exports to the rest of the world were higher by 0.71 per cent than the pre-PA period.

Table 3.3 - Estimates of the external sector*

Dep. Var	Independent variables	Coefficient	Std. err	t-statistic	Pr.	R^2
Imports of Goods and Services 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				
	Labour 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
	Employment 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 +

** Restricted coefficients where chosen after a number of estimations. The restriction with the highest adjusted R^2 for the respected equation was imposed.

National Accounts

Figure 3.8 shows the historical trend of the shares of private consumption, total investment and public consumption in GDP. Throughout the period 1972–2004, private consumption constituted almost 100 per cent of GDP. The empirical results of the estimation of consumption and investment relations are presented in table 3.4. Starting with the consumption function, it is found that the short-run marginal propensity to consume (MPC is 0.44) seems relatively low. Arnon, Luski, Spivak, and Weinblatt (1997) have estimated short-run MPC to be 0.27 for the West Bank and 0.59 for Gaza; the corresponding long-run elasticities are 0.69 and 0.77. The long-run elasticity for this model is 0.94. Consumption habits are also significant in explaining current consumption; the partial adjustment coefficient is 0.54, implying that deviation from long-run desirable consumption does not last for more than a year and a half.

The private investment relation was one of the most difficult to fit. The lending rate effect is very small (-0.03) but has the correct sign. Government investment has a positive impact on private investment, with an elasticity coefficient of 0.28. Contrary to the theoretical conviction that suggests that government investment crowds out private investment, this result indicates that, in the case of Palestine, a 10 per cent increase in government investment would lead to 2.8 per cent increase in private investment. This result can be explained by the absence of a Palestinian currency, which reduces the interest rate effect, as reflected by a marginal lending rate coefficient of -0.03.

Figure 3.8 – Share of private and public consumption and investment in GDP

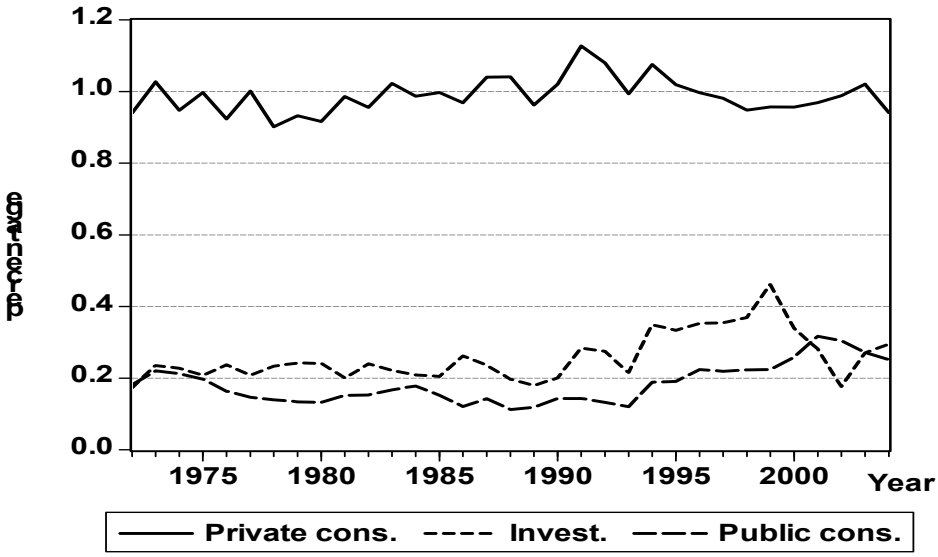


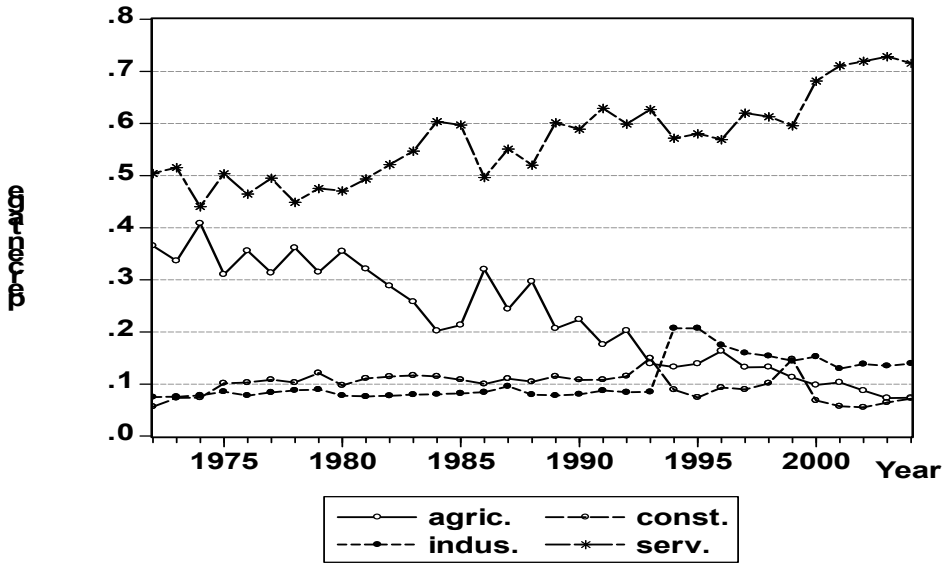
Table 3.4 – Estimates of final demand equations *

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	

Sectoral value added

As previously mentioned, the economy is disaggregated into four sectors: agriculture, industry, construction and services (Figure 3.9). Modeling sectoral value added follows the input-output (I-O) approach. However, instead of using the I-O fixed coefficients, they are estimated. The result is presented in table 3.5. Agriculture is the worst performing sector in terms of value added growth. The trend coefficient is -0.014 per cent per annum. As expected, while exports, consumption and investment increase agricultural value added, imports have the correct negative sign. Contrary to agriculture, industry has performed well following the establishment of the PA, as reflected by the coefficient of the dummy variable. It is more responsive to consumption than agriculture and less responsive to investment. Imports have a negative effect on industry value added, and the elasticity coefficient is -0.27, which is much lower than the corresponding figure for agriculture (-0.66). Construction had a nearly frozen status for most of the period prior to PA rule. With some exceptions, the Israeli occupation authorities did not approve building permits for Palestinians. A large increase in construction was noted with the establishment of the PA, and value added increased manifold. However, the outbreak of the second Intifada reversed this trend and depressed construction value added in 2003 to levels well below those of 1972. Clearly the time trend coefficient has been influenced by the protracted conflict since 2000. Finally, the services sector value added shows the strongest growth, increasing from nearly US$ 700 million to US$ 2.6 billion over the period 1972-2003. Private consumption and investment have stronger effects than their government counterparts. As expected, an increase in imports reduces value added in services but exports have the opposite effect.

Figure 3.9 – Share of sectoral value added in GDP



Prices - deflators

Estimation results of the price-deflator equations are listed in table 3.6. They suggest that the short-run elasticity for the Israeli price index is 0.035 and the long-run elasticity 0.055. This implies that almost half of Palestinian inflation comes from Israeli sources. The import deflator coefficient is much stronger at 0.82 per cent for a 1 per cent change in the price of imports. The deflator of imports of goods seems to be marginally influenced by prices in Jordan. Unlike prices of imported goods, prices of export goods are inversely affected by the exchange rate and labour productivity.

Table 3.5 – Estimates 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	
	Investment	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 +

Table 3.6 – Estimates of price/deflators equations*

Dep. Var	Independent variables	Coefficient	Std. err	t-statistic	Pr.	R^2
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
	Labour 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
	Labour 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	
Goods-exports Price Deflator	Constant	0.6841	0.0902	7.5832	0.0000	0.98
	Labour 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 +

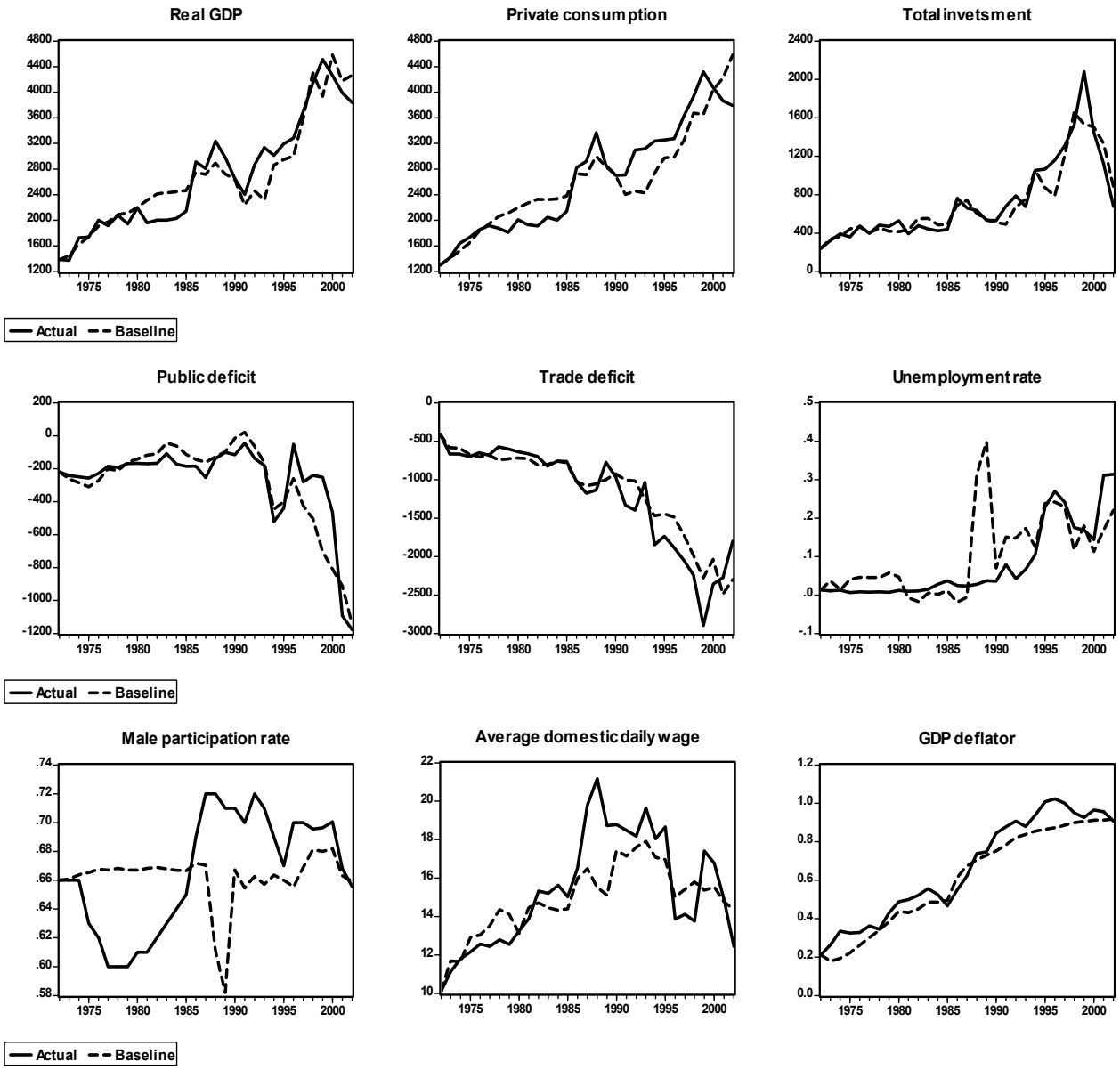
C. Model performance: In-sample simulations

In order to assess the model's performance and ability to track the historical values of the endogenous variables, a dynamic in-sample simulation was performed to produce simulated values for all endogenous variables during the period 1972–2002. From the simulated and actual values, the Mean Absolute Percent Error (MAPE) and Theil's inequality coefficient were calculated. Table 3.7 shows that, except for male and female participation rates, the match between actual and simulated values is very good. Figure 3.10 also shows how the simulated values of some of the main endogenous variables track their historical values. For the vast majority of variables the tracking is very satisfactory. As highlighted in table 3.7, the main exceptions are the simulated values for male and female participation rates. Unemployment forecasts seem to follow the actual series with a divergence between 1987 and 1990. This stems from the reduction in labour demand during the first Intifada, which was not captured by the model. As shown in figure 3.10, simulated GDP, private consumption, total investment, the government budget deficit, the trade deficit and average domestic daily wages follow the historical values closely. This suggests that the tracking of the variables that comprise these aggregates is also satisfactory.

Table 3.7 – 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 from Israel	0.1845	0.0008
Exports of G & S from 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 3.10 – Simulated and actual series for some variables



IV. MODEL FORECAST: PROSPECTS FOR THE PALESTINIAN ECONOMY

The objective of this chapter is to simulate the ISF to project the development prospects of the Palestinian economy of the West Bank and Gaza over the next 10 years (2006-2015). The simulation reflects the economy's performance under a set of assumptions that take into account the existing economic policy framework and political environment in the OPT. Given the high degree of economic and political uncertainty, it is very difficult to make assumptions about the economic and political conditions that are likely to prevail in the future. While this renders the task of formulating a baseline scenario forecast difficult, it underlines the necessity of assessing the impact of a wide range of alternative policy frameworks.

The baseline scenario presented below assumes relatively stable political conditions and an economic policy framework similar to the existing one, which was introduced after the establishment of the PA in 1994 and was maintained, with new distortions, after 2000. This overall environment controls the future behaviour of the model's exogenous and policy variables, and therefore determines the baseline assumptions. These are the factors that drive the simulation to produce the baseline forecast for the model's endogenous variables. This forecast allows for an assessment of the performance of the economy with the existing policy framework and the policy tools presently available to the Palestinian decision maker. It could also be used to assess the impact of alternative policy frameworks by comparing its forecast with the outcome of other simulations based on a different set of assumptions relevant to alternative policy frameworks. However, the focus of this study is on the existing policy framework. Evaluation of alternative policy frameworks will be the subject of a forthcoming UNCTAD paper. The following two sections present the assumptions and outcomes of the baseline scenario.

A. Baseline forecast assumption

With actual or preliminary data covering the period up to 2005, the baseline scenario assumptions and forecast start in 2006 and continue up to 2015. For the *overall political environment*, the baseline forecast assumes that there will be a movement towards a political settlement in 2006 and 2007, which will lead to some easing in the mobility of goods and labour. Put differently, mobility restrictions will be similar to those that prevailed during the period after the establishment of the PA and until the outbreak of the second Intifada (1994-2000). Trade and fiscal arrangements with Israel would be similar to those which prevailed during the period mentioned. These arrangements are formalized under the terms of the 1994 Paris Protocol. The trade regime stipulated by this Protocol can be considered as a quasi customs union (QCU), as it combines elements of free trade and a CU arrangement. It entails liberalizing trade between Israel and Palestine within a common external tariff, while maintaining subsidies, indirect taxes and non-tariff barriers applied by Israel on a range of imports.[3] Palestinian imports from the rest of the world are subject to a floor of Israeli tariff rates, except for a limited group of products imported from Egypt and Jordan within specific quantities. Palestinian VAT rates are similar to the Israel rate, with flexibility of 1-2 per cent, and tariffs and VAT on Palestinian imports are collected by Israel on behalf of the PA.

This qualitative description is translated into quantitative assumptions as summarized in tables 4.1 and 4.2. As shown in the tables, the *number of closure days/year* for goods mobility is assumed to be reduced by 25 per cent and 50 per cent successively in 2006 and 2007 to reflect some movement towards a settlement. In the period staring 2008 till the end of the forecast, the number of closure days/year are set at 45 days/year, reflecting a situation with less than 100 per cent goods mobility. Labour mobility, on the other hand, is assumed to be restricted by the construction of the separation barrier in the West Bank and the Israeli labour permit policy. Accordingly, the number of closure days/year for workers is assumed to remain at its 2006 level throughout the forecast period.

Table 4.1 – Baseline forecast assumptions: Policy/internal exogenous variables*

	Public invest't	Gov. transfers	Public employ.	Credit exten.	Pop'n	Income tax rate	VAT rate
	Annual average growth rate					*Annual avergae*	
1988-93	14.6	4.4	-0.5	19.8	5.4	3.4	2.7
1994-99	1.3	0.0	15.6	60.2	4.3	1.8	5.9
2000-04	-6.1	-8.3	-0.7	-5.3	-10.9	-2.2	6.3
2005*	17.3	-2.6	11.5	8.0	3.9	1.4	13.5
*2006***	*7.0*	*2.7*	*10.3*	*7.0*	*4.1*	*1.5*	*13.0*
2007	*5.0*	*5.1*	*1.5*	*6.0*	*4.2*	*3.0*	*13.0*
2008	*4.0*	*4.0*	*1.5*	*5.0*	*4.0*	*3.0*	*13.0*
2009-15	*3.0*	*3.6*	*1.5*	*4.0*	*3.6*	*3.0*	*13.0*

* 2005 -- Preliminary data ; 2006-2015 -- forecast assomptions

Table 4.2 - Baseline forecast assumptions: External exogenous variables*

	Net cur. transfers 97 $ mill.	Closure days/year		Israeli lending rate	Exchange rate	Israeli GDP	Israeli CPI	Jordan GDP
		Trade	Labor		*NIS/US$*	*Annual aver. growth rate*		
	Annual avergae							
1988-93	227	11	11	0.271	2.18	5.3	15.8	2.0
1994-99	421	77	77	0.183	3.43	0.0	0.0	0.0
2000-04	1130	177	177	0.105	4.41	1.1	1.7	4.3
2005**	1268	155	180	0.073	4.66	5.2	1.2	4.9
*2006**	*1000*	*120*	*180*	*0.750*	*4.65*	*3.6*	*2.0*	*4.7*
*2007**	*900*	*60*	*180*	*0.080*	*4.71*	*4.1*	*2.5*	*4.6*
*2008**	*850*	*45*	*180*	*0.080*	*4.77*	*4.2*	*2.6*	*4.4*
*2009-15**	*711*	*45*	*180*	*0.074*	*5.04*	*3.3*	*3.3*	*4.0*

* 2005 -- Preliminary data ; 2006-2015 -- forecast assomptions

In the public finance domain, the baseline scenario assumes that the growth rate of *government investment* will be 7 per cent in 2006, it will decline to 3 per cent in 2009 and it will stay at that level till the end of the forecast period in 2015. As table 4.1 shows, government transfers, including pensions, will follow a similar pattern. The moderate growth in public investment and government transfers is assumed to maintain an acceptable fiscal balance. Public employment is assumed to grow by more than 10 per cent in 2006 to reflect new government recruitment in the first quarter of the year. However, over the period 2007-2015 public employment is assumed to grow at a stable rate of 1.5 per cent annually. On the revenue side, the forecast assumes improvement in the efficiency of income and VAT tax collection. While the *effective income tax* rate is assumed to increase from 1.4 per cent of gross national income (GNI) in 2005 to 3 per cent from 2007 onward, the *effective VAT rate* will stabilize at 13 per cent of GDP throughout the forecast period. The VAT rate is politically sensitive and depends on Israel's good will. The VAT announced rate is determined according to the Paris Protocol, and a significant part of revenues from Palestinian imports are collected by Israel on behalf of the PA. However, with a different fiscal arrangement, giving the PA full authority and control over the collection and rate of VAT, this source of public revenue could go up to a maximum level set by Palestinian policy makers.

The PA has no national currency, and therefore the options for monetary and exchange rate policies are very limited. Under the present policy framework, the only monetary instrument available to the Palestinian monetary authority is *credit extension*. The baseline scenario assumes that credit extension will follow the growth pattern of real public investment and decline from 8 per cent in 2005 to 4 per cent in 2009 onwards.

The assumption affecting *net current transfers from abroad* (mainly donor support) reflects a declining trend from $1 billion in 2006 to just over two thirds of that level over the period 2009-2015. This pattern suggests that donors' contributions will decrease over time as the reconstruction and rehabilitation process unfolds, and their level as a percentage of GDP will continue to decline over time.

The *population growth rate* in the West Bank and Gaza follows the projections of the Palestinian Central Bureau of Statistics (PCBS), where it is depicted as declining from 4.1 per cent in 2006 to 3.6 per cent from 2009 onwards.

The remaining exogenous variables relate to factors external to the Palestinian economy, including economic growth in Israel and Jordan, the main Palestinian trading partners, and the exchange, interest and inflation rates in Israel. The short- and long-term patterns are summarized in table 4.2. While the short-term forecasts follow the LINK project of the United Nations Department of Economic and Social Affairs, the long-term growth rates (2008-2015) are projected on the basis of historical auto regressive time series regressions. Finally, the baseline scenario assumes that the *real wage of Palestinians working in Israel* will grow half as fast as Israeli real GDP.

B. Baseline forecast

Based on these assumptions, the ISF was simulated over the period 2006-2015 to produce projections for the model's 151 endogenous variables. Tables 4.3, 4.4 and 4.5 and figure 4.1 present a summary of the projections of the main economic indicators.

The baseline forecast depicts the economy's response to the assumed political stability along with the easing of goods mobility restrictions, increased donor support in 2006-2007 and the return to the Paris Protocol policy framework as implemented during the period 1994-2000. GDP is projected to grow at an annual average of 7.4 per cent in 2005-2010. However, the GDP annual growth rate is expected to drop to 4 per cent over the period 2010-2015, as the injection of donor funds declines. The implication of this growth pattern for poverty is reflected in the behaviour of unemployment rates and GDP per capita in table 4.3 and the relevant graphs in figure 4.1. After a significant decline from 27 per cent in 2004 to below 16 per cent in 2008, the unemployment rate starts creeping up to reach 19 per cent by the end of the forecast period. GDP per capita growth rates show a similar pattern, with the annual average growth rate dropping from 3.3 per cent in 2005-2010 to less than half a percentage point in 2010-2015.

With this growth trajectory, table 4.5 and graph 8 of figure 4.1 show that the structure of the economy is expected to move farther towards the services sector, with that sector's share increasing from 72 per cent in 2005 to 77 per cent in 2015. This gain is at the expense of construction and, to a lesser extent, agriculture. The decline in the share of construction could be a reflection of a long-standing occupation policy of restricting building permits. Industry will maintain its 14 per cent share of the economy. It is worth mentioning that the predicted polarization in economic structure is an extension of the trend established after the implementation of the Paris Protocol. This polarization has been further reinforced by Israeli mobility restrictions imposed on the West Bank and Gaza since 2000.

This suggests that, while political stability and goods mobility are necessary for economic recovery, they are not sufficient to maintain high growth rates over the long term. Donor support is also necessary in the short term, at least for the rehabilitation and reconstruction of the economy's fiscal capital, but once this external support subsides, economic growth slows to rates that cannot reduce poverty and unemployment in a meaningful and sustainable way.

As previously mentioned, the model parameters reflect the structure of the economy within the existing policy framework and in line with the present investment profile and contracted capital stock. It seems that the sufficient condition for a sustainable economic recovery and poverty reduction is an alternative policy framework, with more policy instruments at the disposal of Palestinian decision makers. Such a framework should seek to expand the economy's productive capital stock, reduce the outflow of resources to Israel and the ROW, and enable the economy to achieve greater efficiency, in terms of higher growth rates, from the same level of injected resources.

Table 4.3 - Baseline forecast: GDP and employment *

	Real GDP		GDP per capita		Unemploy't rate	Domestic employ't		Employ't in Israel	
	97$ million period end	% change ann. avg	97$ period end	% change ann. avg	period end	Job-year period end	% change ann. avg	Job-year period end	% change ann. avg
1994	3,012	-4.0	1,406	-20.2	10.5	355,800	53.3	73,750	-11.9
1994-99	4,512	6.2	1,612	-1.5	17.0	422,300	10.5	135,500	8.4
2000-02	3,839	-5.2	1,189	-9.6	31.3	427,869	0.4	49,131	-28.7
2003	4,165	8.5	1,230	3.5	25.7	509,292	19.0	54,708	11.4
2004	4,429	6.3	1,259	2.4	26.9	527,715	3.6	50,286	-8.1
2005	*4,626*	*4.4*	*1,269*	*0.8*	*23.3*	*569,394*	*7.9*	*62,471*	*24.2*
2006	*5,030*	*8.7*	*1,326*	*4.5*	*19.2*	*634,673*	*11.5*	*63,660*	*1.9*
2007	*5,583*	*11.0*	*1,412*	*6.5*	*17.5*	*690,560*	*8.8*	*65,301*	*2.6*
2005-10	*6,621*	*7.4*	*1,493*	*3.3*	*16.1*	*797,410*	*7.0*	*68,881*	*2.0*
2010-15	*8,042*	*4.0*	*1,526*	*0.4*	*19.1*	*936,891*	*3.3*	*75,063*	*1.7*

* 2005 – Preliminary data ; 2006-2015 – projections

Table 4.4 - Baseline forecast: Employment, and external and internal balance *

	Employment		Trade balance		Public deficit
	Domestic	In Israel	Total	With Isarel	
	% in total emp.		% of GDP		
1994	82.8	17.2	-61.3	-26.7	-17.3
1999	75.7	24.3	-64.2	-36.2	-5.6
2002	89.7	10.3	-46.9	-26.8	-30.7
2003	90.3	9.7	-56.1	-36.6	-20.3
2004	91.3	8.7	-48.7	-42.2	-14.1
2005	*90.1*	*9.9*	*-54.2*	*-40.0*	*-14.6*
2006	*90.9*	*9.1*	*-50.3*	*-34.0*	*-15.8*
2007	*91.4*	*8.6*	*-43.0*	*-30.4*	*-12.9*
2010	*92.0*	*8.0*	*-36.0*	*-27.7*	*-10.9*
2015	*92.6*	*7.4*	*-32.6*	*-25.7*	*-8.9*

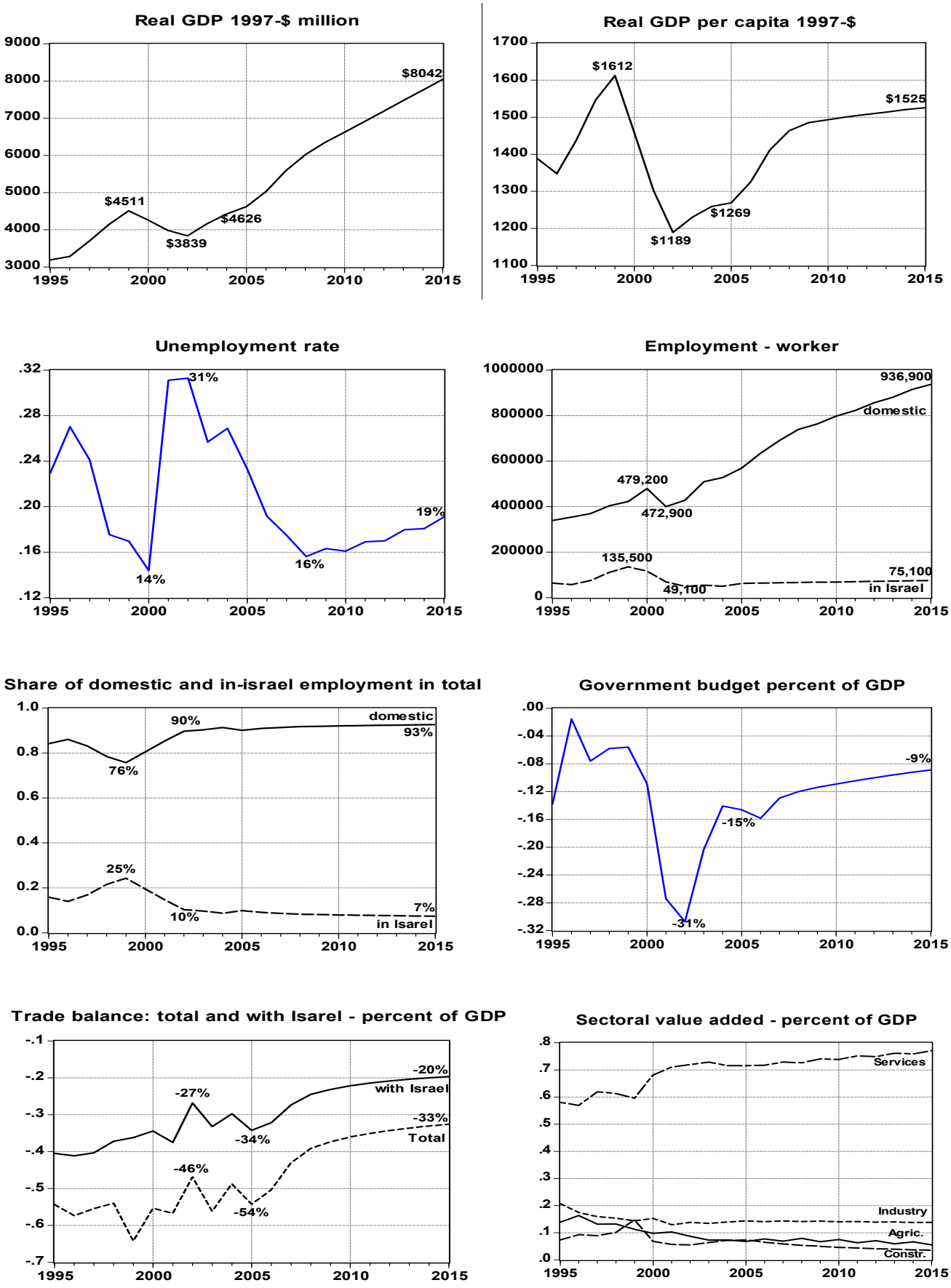
* 2005 -- Preliminary data ; 2006-2015 – projections

Table 4.5 - Baseline forecast: Economic structure (per cent of GDP) *

	Agriculture	Industry	Construction	Services
1994	13.2	20.7	8.9	57.1
1999	11.3	14.4	14.8	59.6
2002	8.7	13.8	5.5	71.9
2003	7.3	13.5	6.4	72.8
2004	7.3	13.9	7.2	71.5
2005	6.8	14.3	7.3	71.6
2006	7.8	14.1	6.5	71.7
2007	6.9	14.3	5.9	72.9
2010	7.5	14.0	4.6	73.8
2015	5.6	13.8	3.6	77.1

* 2005 -- Preliminary data ; 2006-2015 – projections

Figure 4.1 – Baseline forecast: Key economic indicators



An important factor that could contribute to more sustainable growth is the foreign sector. The model predicts that imports will grow faster than exports, leading to a slight increase in the trade deficit from US$ 2.5 billion in 2005 to US$ 2.6 billion in 2015. However, what is worth noticing is the consistently high Israel's share in the overall Palestinian trade deficit. Throughout the forecast period this share remains above the 60 per cent mark. This trend of trade concentration implies that the existing trade arrangements need to be reconsidered to allow for trade diversification and an increased contribution of the external sector to a sustainable growth pattern.

As for the government account, the focus should be on reducing the deficit and fiscal leakage. The results of the simulation show a budget deficit of $7 million throughout the forecast period and an improvement in the public deficit as a percentage of GDP. However, this rate of improvement slows after 2008 (Graph 6 of figure 4.1 and table 4.4). Again, this reflects the slow down in economic growth, which reduces the growth in public revenues. Fiscal leakage, which is the difference between 17 per cent of value added and an assumed 13 per cent of value added, increases from $185 million in 2006 to $308 million in 2015. This is more than 40 per cent of the deficit, which implies that, given appropriate policy instruments, the PA can improve the efficiency of tax collection. This in turn would allow for more fiscal leverage and more funds for the development budget.

Turning to the labour market, the real average domestic wage is expected to grow marginally from $17.3/day in 2006 to $17.8/day in 2015, reflecting slow productivity growth. While the male participation rate is expected to increase from 68 per cent in 2006 to 70 per cent in 2015, the female participation rate is expected to decline form 13 per cent to 12 per cent. Although the latter seems counter intuitive, it follows the positive relationship estimated for the impact of real income on the female participation rate.

Domestic employment is projected to increase more steadily from 569,000 jobs in 2005 to 937,000 jobs by the end of the forecast. However, this is not sufficient to reduce the unemployment rate to a single digit. On the contrary, as indicated above, the projected declining trend in unemployment rates in the first three years of the forecast is not sustainable, and is expected to reverse after 2008, thereby increasing unemployment from 16 per cent to 19 per cent in 2015. This reversal is driven by the slow-down in economic growth and the increase in the participation rate, with a consequential increase in the supply of labour during the last five year of the forecast period.

C. Concluding remarks

The ISF was designed in order to reflect on the Palestinian economy in the West Bank and Gaza from a historical perspective and was simulated with the intention of using it as an analytical tool for future policy analysis and assessment. The time series used for model estimation cover the period 1972-2004. Among the key findings of the estimation results is the inelasticity of Palestinian employment in Israel with respect to the wage of Palestinians in Israel relative to domestic wage. Also it is found that wages in all sectors follow wages in Israel to varying degrees and with a negative impact on domestic competitiveness. Population has a mixed impact on labour supply; while it reduces the latter through its negative impact on

the female participation rate, it has a direct positive impact on the labour force and hence labour supply. However, the overall impact of population growth on labour supply and unemployment is positive on the former and negative on the latter. The estimation results also suggest that, with the availability and efficient use of appropriate policy instruments, the government has a big potential to reduce fiscal leakage, which could be as large as twice the collected VAT revenues. Increasing government investment is also found to affect private investment positively, i.e. public investment crowds in private investment. The estimation of the external sector reveals that while the Israeli closure policy negatively affects Palestinian exports of labour services and goods to Israel and the ROW, it has a positive impact on Palestinian imports from Israel. And finally, about 55 per cent of Palestinian inflation is imported.

Forecasting up to 2015 raises a major concern. While political stability, goods mobility and increased donor support are necessary for economic recovery in the short term, they are not sufficient to maintain high growth rates in order to meaningfully reduce unemployment and poverty over the long term. The model indicates persistent trade and public deficits, with further polarization towards the services sector and towards a single trading partner (Israel). These negative developments are an extension of the trends established under the economic policy framework of the Paris Protocol, but with much more depth and much more debilitating effects because of the Israeli restrictive measures and closure policy since 2000.

This means that a return to the pre-2000 framework of economic agreements and relations with Israel will not position the economy on a path of sustained growth. There is a need for the Palestinian policy maker to design a development strategy based on a carefully considered economic development vision supported by an integrated economic policy package capable of achieving this vision. The latter should *reconsider* the existing trade, fiscal, monetary and labour policy arrangements, and should be the basis for any economic negotiations or agreements that might shape future Palestinian international economic cooperation.

Annex I

ECONOMIC AND DEMOGRAPHIC DATA

The original time series data were developed by the UNCTAD secretariat for the development of its first economic model of the Palestinian economy – the "Quantitative Framework". It covered the period 1970-1990. In the late 1990s the data set was expanded and extended to 1993. In 2003-2004, the database was further expanded by adding data produced by the newly established Palestinian Central Bureau of Statistics (PSBC). This last update introduced new economic and demographic variables and extended the time span to cover the period 1972-2000. UNCTAD (2003) describes the methodology of compiling and reconciling the extended data set. After the initial design of the present model and prior to its estimation, the database was updated one more time to extend the coverage period up to 2003. Additional variables were also included as needed by the model. Data are compiled on a regional basis for the Gaza Strip (GS) and the Remaining West Bank (RWB). According to PCBS, RWB refers to all of the West Bank excluding East Jerusalem. The following brief description is based on UNCTAD (2003), which further discusses the sources and methodologies applied to build up and reconcile the data sets.

A. National accounts data

The national account data are expressed in US$ in both current and real terms. The latter are expressed in 1997$, following the most recent data published by PCBS. Original data for the period 1972–1993 were in Israeli shekels and compiled from the Israeli Central Bureau of Statistics (ICBS). This set was first converted to current US$ and then constant 1997$. The conversion from shekel to dollar was implemented using average annual exchange rates from the International Monetary Fund (IMF) International Financial Statistics. As for the period 1994-2003, data were obtained directly from PCBS and introduced in the database without further transformation.

Owing to the unavailability of Palestinian specific deflators for the pre-1993 period, the process of arriving at series in constant 1997$ took a number of steps. First, implicit 95$ deflators for Israel were obtained from the World Bank-World Development Indicators. These were used to deflate the current series into constant 1995$. The deflation process has been applied to nine national account variables: final consumption expenditure; general government final consumption expenditure; gross capital formation; gross fixed capital formation; gross national expenditure; household final consumption expenditure; exports of goods and services; and imports of goods and services. However, whenever there was no deflator for a specific variable, the GDP general deflator was applied to convert from current to constant values.

Sectoral reconciliation

In the pre-1993 dataset, sectoral GDP was divided into five values added: agriculture; industry; construction; public services; and private services. However, in the post-1993 dataset, PCBS provides a higher disaggregation of value added data, with 22 sectors, in line with the 1993 Revised Standard National Accounts (SNA) format. To reconcile the two

datasets, some of the sectors in the post-1993 data were aggregated to reduce the total number to the five sectors. With regard to agriculture and fishing, and construction, the reconciliation was a straight match, as the two sectors appear in the pre-93 and post-93 datasets. As for the remaining sectors, table 3.1 shows how the post-1993 sectors are reconciled with those of the pre-1993 period.

Table A.1 – Reconciling sectoral value added

Post-1993 sectors	*Pre-1993 sectors*
Mining and quarrying	Industry
Manufacturing	Industry
Electricity and water supply	Private services
Wholesale and retail trade	Private services
Transport	Private services
Financial intermediation	Private services
Real estate, renting and business services	Private services
Community, social and personal services	Private services
Hotels and restaurants	Private services
Education	disaggregated
- Government	Public services
- Services	Private services
- UNRWA	Public service
Health and social work	disaggregated
- Government	Public services
- Services	Private services
- UNRWA	Public service
Public administration and defence	Public services
Households with employed persons	Private services
Public owned enterprises	Public services

B. Trade data

Aggregate trade data show the value of exports and imports of goods and services between the occupied Palestinian territory and abroad as reflected in the national accounts. However, the level of detail of trade by country and commodity depends on the source as follows:

- 1972-1994: total value of exports and imports of goods and services obtained from Israel Central Bureau of Statistics: exports and imports of goods classified by country: Jordan, Israel and Rest of the World (ROW);[4]
- 1995: detailed data not reported;
- 1996-2000: value of exports and imports of goods and services are based on PSCB national accounts data. Additional PCBS unpublished trade data on exports and imports of goods classified by country: 14 Arab countries, Israel, USA, European countries together

and “other countries”. Exports and imports of goods are classified by commodity 3-digit SITC. The 4-digit disaggregation is also available in the original sources but is not integrated into the present database. It is important to note that the PCBS advises that trade statistics should be used with some caution as they could be under-reported for various reasons such as the political conditions and border-crossing-reporting-related issues. In addition, values less than $500 are considered null in the original data.

The details of reconciliation of the trade date are described in UNCTAD (2003). As for the methodology used to deflate trade data, it is similar to that applied to national accounts data and described in the previous section. The approach for obtaining 97$ figures is to derive complete 95$ series using World Bank implicit deflators and apply the growth rate of constant 95$ data to arrive at the constant 97$ data.

C. Labour data

In a number of cases, original data on labour are sparse or unclear in terms of definitions. Therefore a good deal of the effort to merge pre-1993 and post-1993 data was dedicated to finding the appropriate structure for the data. Pre-1993 categorization of sectoral employment is different from that applied in the post-1993 period. Pre-1993 disaggregation includes agriculture, industry, construction and others. Post-1993 categories are agriculture, manufacturing, construction and services. While, in pre-1993 data persons employed in services are included under the category of “other”, post-1993 data explicitly include employment in “services” as a separate category and do not report the category of “other”. The sum of the four reported categories in the post-1993 data set is less than the total employment reported. The difference between the two has been allocated to the category of “other” sectors.

D. Demographic data

The set of demographic variables is simple in its structure and most series were included in the database with minor adjustments. There are missing data for the mid-year male and female populations in the period 1988–1992. These two variables were estimated based on the historical relationship between the mid-year and end-of-year values of these variables. Historically, the mid-year male and female population was 98.5 per cent and 98.6 per cent of the end-of-year population of the GS and RWB respectively. In addition, in 1993 the male population figure in GS was missing. This was estimated using its level in 1992 and the historical average annual growth rate of 5 per cent.

Annex II

VARIABLE DEFINITIONS

Table A2: Variable definitions

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	per cent
D_UEMIS	Unemployment rate in Israel	per cent
DDEM	Labour demand (total employment including Israel)	Worker
DEM1	Domestic employment in agriculture	Worker
DEM1_TD	Share of agriculture employment in domestic employment	per cent
DEM2	Domestic employment in industry	Worker
DEM2_TD	Share of industry employment in domestic employment	per cent
DEM3	Domestic employment in construction	Worker
DEM3_TD	Share of construction employment in domestic employment	per cent
DEM4	Domestic employment in services	Worker
DEM4_TD	Share of service employment in domestic employment	per cent
DEMDT	Total domestic employment	Worker
DEMG	Government employment	Worker
DEMIS	Palestinian employment in Israel	Worker
DLP	Labour productivity (value added/domestic employment)	$/worker
DLP1	Labour productivity in agriculture (sector 1)	$/worker
DLP2	Labour productivity in industry (sector 2)	$/worker
DLP3	Labour productivity in construction (sector 3)	$/worker
DLP4	Labour productivity in services (sector 4)	$/worker
DLS	Labour supply	Worker
DLSF	Female labour supply	Worker
DLSM	Male labour supply	Worker
DMPW	Manpower (population 15+)	Person
DMPWF	Manpower – female	Person
DMPWM	Manpower – male	Person
DPARF	Female participation rate	per cent
DPARM	Male participation rate	per cent
DPOP	Population	Person
DPOP_MPFX	Percentage of females of working age in female population	per cent
DPOP_MPMX	Percentage of males of working age in male population	per cent
DPOP_SHFX	Share of females in total population	per cent
DPOP_SHMX	Share of males in total population	per cent
DPOPF	Female population	Person
DPOPGRWX	Population annual growth rate	per cent
DPOPM	Male population	Person
DRTRNFX	Female returnees	Person
DRTRNMX	Male returnees	Person

Table A2: Variable definitions - 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	per cent
FCAR	Current account	1997 US$ million
FEXGDR	Exports of goods	1997 US$ million
FEXGDR_SH	Share of goods in total exports	per cent
FEXISR	Exports of goods and services to Israel	1997 US$ million
FEXISR_SH	Exports to Israel – GDP ratio	per cent
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	per cent
FEXSHG_S	Exports of goods – exports of services ratio	per cent
FEXTR	Total exports of goods and services	1997 US$ million
FEXTR_SH	Total exports – GDP ratio	per cent
FIMGDR	Imports of goods	1997 US$ million
FIMGDR_SH	Share of goods in total imports	per cent
FIMISR	Imports of goods and services from Israel	1997 US$ million
FIMISR_SH	Imports form Israel – GDP ratio	per cent
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	per cent
FIMSHGD_S	Imports of goods – imports of services ratio	per cent
FIMTR	Total imports of goods and services	1997 US$ million
FIMTR_SH	Total import – GDP ratio	per cent
FNCTR	Net current transfers	1997 US$ million
FNFIR	Net factor income	1997 US$ million
FNFIR_GDP	Openness (NFI/GDP)	per cent
GBUDR	Budget (government revenue – government expenditure)	1997 US$ million
GCR	Government consumption	1997 US$ million
GCR_SH	Government consumption – GDP ratio	per cent
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	per cent
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 A2: Variable definitions - continued

Code	Variable	*Measurement*
GETR	Total government expenditure	1997 US$ million
GINR	Government investment (including change in invent.)	1997 US$ million
GINR_K	Government investment capital/ratio	Ratio
GITAX	Income taxes revenue	1997 US$ million
GITAX_X	Income tax rate	per cent
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	per cent
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) construction	1997 US$ million
INCNSTR_SH	Share of construction investment in total investment	per cent
INNCNSTR	Investment (capital formation) non-construction	1997 US$ million
INNCNSTR_SH	Share of non-construction investment in total investment	per cent
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	per cent
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	per cent
PEX	Export price deflator	1997 = 1.00
PEXGD	Exports-goods price deflator	1997 = 1.00

Table A2: Variable definitions - 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	per cent
SV_K	National saving – capital ratio	Ratio
T	Time trend	1972 = 1
TSFEXAD	Average rate of export subsidy by destination	per cent
TSFEXAT	Average rate of export subsidy by kind	per cent
TSFEXGDR	Rate of subsidy on export-goods	per cent
TSFEXISR	Rate of subsidy on export to Israel	per cent
TSFEXOR	Rate of subsidy on export to ROW other than Israel	per cent
TSFEXSER	Rate of subsidy on export-services	per cent
TSINAV	Average rate of investment subsidy (construction & non-construction)	per cent
TSINCNSTR	Rate of subsidy on investment-construction	per cent
TSINNCNSTR	Rate of subsidy on investment-non-construction	per cent
TSW1_WT	Share of agriculture in total wage subsidy	per cent
TSW1R	Rate of subsidy on wage in agriculture	per cent
TSW1RSUM	Cost of wage subsidy in agriculture	1997 US$ million
TSW2_WT	Share of industry in total wage subsidy	per cent
TSW2R	Rate of subsidy on wage in industry	per cent
TSW2RSUM	Cost of wage subsidy in industry	1997 US$ million
TSW3_WT	Share of construction in total wage subsidy	per cent
TSW3R	Rate of subsidy on wage in construction	per cent
TSW3RSUM	Cost of wage subsidy in construction	1997 US$ million
TSW4_WT	Share of services in total wage subsidy	per cent
TSW4R	Rate of subsidy on wage in services	per cent
TSW4RSUM	Cost of wage subsidy in services	1997 US$ million
TSWAR	Average rate of subsidy on domestic wage	per cent
TSWARSUM	Total cost of domestic wage subsidy	1997 US$ million
TXFEXISR	Rate of Israeli tariff on Palestinian exports	per cent
TXFEXOR	Rate of foreign (non-Israeli) tariff on Palestinian exports	per cent
TXFIMAD	Average rate of import tariff by destination	per cent
TXFIMAT	Average rate of import tariff by kind	per cent
TXFIMGDR	Rate of import tariff on goods	per cent
TXFIMISR	Rate of tariff on imports from Israel	per cent
TXFIMOR	Rate of tariff on imports from other than Israel	per cent

Table A2: Variable definitions - concluded

Code	Variable	*Measurement*
TXFIMSER	Rate of tariff on imports – services	per cent
TXWISR	Tax rate on wage of Palestinian employment in Israel	per cent
UTL_	Utilization rate = output/capital stock	per cent
VA1_SH	Share of agriculture in GDP (factor cost)	per cent
VA1R	Value added in agriculture	1997 US$ million
VA2_SH	Share of industry in GDP (factor cost)	per cent
VA2R	Value added in industry	1997 US$ million
VA3_SH	Share of construction in GDP (factor cost)	per cent
VA3R	Value added in construction	1997 US$ million
VA4_SH	Share of services in GDP (factor cost)	per cent
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

Annex III
MODEL STRUCTURE

Please note that an equation number followed by "b" means a behavioural equation, and when the number is followed by "i" means and identity.

Labour and demographic block

(1b)	log(demis)	=	α10 + α11*log(exchx*(wisr*(1-txwisr))/(war * (1-tswar))) + α12*log(dls) + α13*cdx + α14*log(ginra) + α15*(dum95+dum96)
(2b)	log(dem1)	=	α20 + α21*log(va1r) * dlp_1x + α22* log(w1r*(1-tsw1r)/wisr*(1-txwisr)) + α23*log(dem2) + α24*log(dem4) + α25*d(demis/ddem) + α26* (dum94-dum95) + α27*log(inncnstr_sh) + α28*log(dem1t-1)
(3b)	log(dem2)	=	α30 + α31*log(va2r) * dlp_2x + (-.04)*log(w2r*(1-tsw2r)) + α33*log(dem3) + α34*log(dem4) + α35*log(dem2t-1)
(4b)	log(dem3)	=	α40 + α41*log(va3r) * dlp_3x + α42*log(w3r * (1-tsw3r)) + α43 *log(dpop) + α44*log(demis) + α45*log(inncnstr_sh) + α46*(dum94+dum95-dum97+dum98)+ α47*log(dem3t-1)
(5b)	log(dem4)	=	α50 + α51*log(va4r) * dlp_4x + α52*log(w4r * (1-tsw4r)) + α53*log(dem1) + α54*log(dem2) + α55*log(dem3) + α56*(demis/ddem) + α57*log(demg)+ α58*dum95
(6b)	dparm	=	α60 + α61*log(war) + α62*log(gdpfcr) + α63*cdx + [ar(1) = α64]
(7b)	dparf	=	α70 + α71*log(gndir/dpop) + α72*(demdt/dls) + [ar(1) = α73]
(8b)	log(w1r)	=	α80 + α81*log(wisr *(1 - txwisr)) + α82*d_uem + [ar(1) = α83]
(9b)	log(w2r)	=	α90 + α91 *log(wisr*(1 - txwisr)) + α92*d_uem + [ar(1) = α93]
(10b)	log(w3r)	=	α100 + α101*log(wisr*(1 - txwisr)) + α102*log(dlp3) + [ar(1)= α104]
(11b)	log(w4r)	=	α110 + α111*d_uem + α112*log(dlp4) + α113*log(gcr)+ α114*log(wisr*(1 - txwisr))+ [ar(1)= α115]

Labour block identities

(1i)	demdt	=	dem1 + dem2 + dem3 + dem4	
(2i)	demis_sht	=	demis/ddem	
(3i)	demdt_sht	=	demdt/ddem	
(4i - 7i)	dem_i_shd	=	dem_i/demdt	i=1,2,3,4
(8i - 11i)	$tswrsum_i$	=	gepwar * tsw_wt_i	i=1,2,3,4
(12i - 15i)	$tswr_i$	=	($tswrsum_i$ / demi) / wr_i	i=1,2,3,4
(16i)	war	=	dem1_shd * w1r + dem2_shd * w2r + dem3_shd * w3r + dem4_shd * w4r	
(17i)	tswar	=	(gepwar/demdt) / war	
(18i)	wgb	=	war*12*22*demdt / 1,000,000	
(19i)	dpop	=	dpop(-1) * (1+ dpopgrwx)	
(20i)	dpopm	=	dpop * dpop_shmx + drtrnmx	
(21i)	dpopf	=	dpop * dpop_shfx + drtrnfx	
(22i)	dmpwm	=	dpopm * dpop_mpmx	
(23i)	dmpwf	=	dpopf * dpop_mpfx	
(24i)	dmpw	=	dmpwm + dmpwf	
(25i)	dlsm	=	dmpwm * dparm	

(26i) dlsf = dmpwf * dparf

(27i) dls = dlsm + dlsf

(28i) ddem = demdt + demis

(29i) d_uem = 1 - (ddem/dls)

(30i) dlp = gdpfcr * 1,000,000/demdt

(31i-34i) dlp_i = $va_i r$ * 1,000,000/dem_i i=1,2,3,4

Government block

(12b) log(gcr) = α120 + α121*log(demg) + α122* (log(grtrt-1) - log(getrt-1)) + α123*dum9302 + α124*log(gcrt-1)

(13b) log(gro) = α130) + α131*log(fimtr) + α132*log(glkr) + [ar(1)=α133]

(14b) log(gnitxsr) = α140 + α141*log(gro) + α142*(dum88 + dum89 - dum94)

Government block identities

(35i) grpimtr = txfimisr * fimisr + txfimor * fimor + txfimser * fimser + txfimgdr * fimgdr

(36i) grpwisr = txwisr * wisr * demis

(37i) gepexsr = tsfexisr * fexisr + tsfexor * fexor + tsfexser * fexser + tsfexgdr * fexgdr

(38i) gepinr = tsincnstr*incnstr + tsinncnstr*inncnstr

(39i) gtfra = gtfr + gepexsr + gepwar

(40i) ginra = ginr + gepinr

(41i) getr = gcr + ginra + gtfra

(42i) gvatr = gdpfcr * gvatr_x

(43i) gitax = gnir * gitax_x + grpwisr

(44i) groa = gro + grpimtr

(45i) grtr = gitax + gvatr + groa

(46i) gvatpr = 0.17*gdpfcr

(47i) glkr = gvatpr - gvatr

(48i) gbudr = grtr – getr

Trade and national accounts block

(15b) log(fimisr) = α150 + α151*log(ctr) + α152*log(intr) + α153*log(pim0*(1+txfimisr)) + α154*cdx + α156*fimgdr_sh + α157*inncnstr_sh

(16b) log(fimor) = α160 + α161*log(ctr) + α162*log(intr) -0.08*log(pim0*(1+txfimor)) + α163*dum99 + α164*cdx

(17b) log(fimshgd_s) = α170 + α171 * 0.863678 * log((pimgd*(1+txfimgdr)) / (pims*(1+txfimser))) + α172*t + [ar(1)=α173]

(18b) log(fexisr) = α180 + α181*log(war * (1-tswar)) + α182*log(gdpirx) -0.08*log(pex0 *(1 - tsfexisr + txfexisr)) + α183*(dum93) + α184*cdx + [ar(1)=α187]

(19b) log(fexor) = α190 - 0.080 *log(pex0*(1 - tsfexor + txfexor)) + α191*log(dlp) + α192*(dum9302 - um91) + α193) * log(gdpjrdrx) +α194 * cdx + [ar(1)=α196]

(20b) log(fexshgd_s) = α200 + α201 * 0.918848 * log((pexgd*(1- tsfexgdr)) /(pexs*(1 - tsfexser))) + α202*t + [ar(1)=α203]

(21b) log(fnfir) = α210 + α211*log(demis) + α212*log(gdpjrdrx) + α213*cdx + α214*(dum94 + dum00)

(22b) log(cpr) = α220 + α221*log(gpdir) + α222*(dum86+dum88-dum99)+ α223*(dum9402) + α224*log(cprt-1)

(23b) log(inpr) = α230 + α231*log(gndir-ginra) + α232*log(ginra) + α233*d(log(cextx)) + α234*cdx + α235*rlx + α236*dum00

(24b) log(inshcnst_n) = α240 + α241 * 0.618549 * log((pincnst*(1-tsincnstr)) / (pinncnst*(1-tsinncnstr))) + (-0.05)*t + [ar(1) = α243]

Trade and national accounts block identities

(49i)	fimtr	=	fimisr + fimor	
(50i)	fimgdr_sh	=	fimshgd_s/(1+fimshgd_s)	
(51i)	fimser_sh	=	1 - fimgdr_sh	
(52i)	fimgdr	=	fimtr * fimgdr_sh	
(53i)	fimser	=	fimtr * fimser_sh	
(54i)	fextr	=	fexisr + fexor	
(55i)	fexgdr_sh	=	fexshgd_s/(1+fexshgd_s)	
(56i)	fexser_sh	=	1 - fexgdr_sh	
(57i)	fexgdr	=	fextr * fexgdr_sh	
(58i)	fexser	=	fextr * fexser_sh	
(59i)	fbtr	=	fextr – fimtr	
(60i)	fcar	=	fbtr + fnfir + fnctr	
(61i)	ctr	=	cpr + gcr	
(62i)	intr	=	inpr + ginra	
(63i)	incnstr_sh	=	inshcnst_n/(1 + inshcnst_n)	
(64i)	inncnstr_sh	=	1- incnstr_sh	
(65i)	incnstr	=	intr * incnstr_sh	
(66i)	inncnstr	=	intr * inncnstr_sh	
(67i)	gdpr	=	ctr + intr + fbtr	
(68i)	cpr_sh	=	cpr/gdpr	
(69i)	gcr_sh	=	gcr/gdpr	
(70i)	ctr_sh	=	ctr/gdpr	
(71i)	inpr_sh	=	inpr/gdpr	
(72i)	ginr_sh	=	ginra/gdpr	
(73i)	intr_sh	=	intr/gdpr	
(74i)	fextr_sh	=	fextr/gdpr	
(75i)	fexisr_sh	=	fexisr/gdpr	
(76i)	fimisr_sh	=	fimisr/gdpr	
(77i)	fimtr_sh	=	fimtr/gdpr	
(78i)	fbtr_sh	=	fbtr/gdpr	
(79i)	gdpfcr	=	gdpr – gnitxsr	
(80i – 83i)	va_ir_sh	=	va_ir0 / (va1r0 + va2r0 + va3r0 + va4r0)	i=1,2,3,4
(84i- 87i)	va_ir	=	va_ir_sh * gdpfcr	i=1,2,3,4
(88i)	gnir	=	gdpr + fnfir	
(89i)	gndir	=	gnir + fnctr	
(90i)	gpdir	=	gndir + gtfra - gitax - groa – gvatr	

(91i) gdpr_pop = gdpr * 1000000/dpop
(92i) gndir_pop = gndir * 1000000/dpop
(93i) nsvr = gndir – ctr
(94i) psvr = gpdir – cpr
(95i) output = 1.75*gdpfcr
(96i) kst = kst(-1)*(1-kstdpr) + intr(-1)
(97i) utl_ = output/kst
(98i) gdpsur = gdpfcr – wgb
(99i) gdpsur_ = gdpsur/output
(100i) gdpwgb_ = wgb / output
(101i) gdpwgbut = gdpwgb_ * utl_
(102i) gdpsurut = gdpsur_ * utl_
(103i) inpr_k = inpr/kst
(104i) ginr_k = ginra/kst
(105i) intr_k = inpr_k+ginr_k
(106i) tsinav = tsincnstr*incnstr_sh + tsinncnstr*inncnstr_sh
(107i) txfimad = txfimisr * (fimisr/fimtr) + txfimor * (fimor/fimtr)
(108i) txfimat = txfimser * fimser_sh + txfimgdr * fimgdr_sh
(109i) tsfexad = tsfexisr * (fexisr/fextr) + tsfexor * (fexor/fextr)
(110i) tsfexat = tsfexser * fexser_sh + tsfexgdr * fexgdr_sh

Prices/deflators block

(25b) log(pcd) = α260 + α261*log(pisx) +α262*log(pim) + α263*(dum7280-dum85-dum84) + α264*log(pcdt-1)+ [ar(1) = α265]
(26b) log(pincnst) = α270 + α271*log(w3r * (1-tsw3r)) + α272*log(pimgd*(1+txfimgdr)) + α273*log(exchx) + α274*dum85 + α275*log(pincnstt-1)
(27b) log(pinncnst) = α280 + α281*log(dlp) + α282*log(pimgd*(1+txfimgdr)) + α283*log(exchx) + α284*dum85 + α285*log(pinncnstt-1)
(28b) log(pexs) = α290 + α291*log(dlp4) + α292*log(exchx) + α293*log(pim) + α294*dum9302 + α295*log(pexst-1) + [ar(1) = α296]
(29b) log(pexgd) = α300 + α301*log(dlp2) + α302*log(exchx) + α303*log(pim) + α304*(dum8493 - dum9402)+ α305*log(pexgdt-1)
(30b) log(pims) = α310 + α311*log(pisx) + α312*log(pjrdx) + α313*(dum7280) + α314*log(pimst-1)
(31b) log(pimgd) = α320 + α321*log(pjrdx) + [ar(1)=α322]

Prices/deflators block identities

(111i) pin = (pincnst*incnstr_sh + pinncnst*inncnstr_sh) * (1 - tsinav)
(112i) pim0 = (pims*(1+txfimser) * fimser_sh + pimgd*(1+txfimgdr) * fimgdr_sh)
(113i) pim = pim0 * (1+txfimad)
(114i) pex0 = pexs * (1 - tsfexser) * fexser_sh + pexgd * (1 - tsfexgdr) * fexgdr_sh
(115i) pex = pex0 * (1 - tsfexad)
(116i) pgdp = pcd * (ctr/gdpr) + pin * (intr/gdpr) + pex * (fextr/gdpr) – pim * (fimtr/gdpr)

Value added block

(32b) log(va1r0) = α410 + α411*log(cpr+gcr) + α412*log(inpr+ginra) + α413*log(fextr) + α414*log(fimtr) + α415*(t) + α416*(dumagr-dum84) + α417*dum9402 + α418*(dum86+dum87+dum88)

(33b) log(va2r0) = α420 + α421*log(cpr) + α422*log(inpr) + α423*log(ginra) + α424*log(fextr) + α425*log(fimtr) + α426*(t) + α427*dum9402

(34b) log(va3r0) = α430 + α431*log(cpr) + α432*log(inpr) + α433*log(ginra) + α434*log(fimtr) + α435*log(T) + α436*(dum99) + α437*dum9402 + [ar(1)=α438]

(35b) log(va4r0) = α440 + α441*log(cpr) + α442*log(gcr) + α443*log(inpr) + α444*log(ginra) + α445*log(fextr) + α446*log(fimtr) + α448*(t) + α449*dum9402

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END NOTES

[1] For most of 1996, the Holst Fund administered by the World Bank and implemented by PECDAR was not subject to the Ministry Of Finance budgetary procedures.

[2] A notable exception concerns the fact that part of government revenues and expenditures are automatically tied to the status of the economy, for example transfers and tax revenues.

[3] For example, until 1998 part of Palestinian agricultural exports to Israel were subjected to quotas but there were no quotas on Israeli exports to the OPT.

[4] Trade between Remaining West Bank and Israel not reported for the period 1988-1995.