Palestine Economic Policy Research Institute

Integrated Framework for Palestinian Macroeconomic, Trade and Labour Policy (Phase I)

Preliminary Results

Research Team:

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December 2004

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FOREWORD

The Palestine Economic Policy Research Institute - MAS - is pleased to publish the preliminary results of the Integrated Framework for Palestinian Macroeconomic, Trade and Labour Policy (Phase I). This important project, conducted in partnership with UNCTAD and the ILO, aims at providing policy-making officials with an assessment of a wide range of policy options through the construction of a macro-econometric model, assisting them in formulating alternative strategies to improve Palestinian economic policies and relations, particularly in the spheres of macroeconomics, trade and labour.

The project also includes conducting an assessment of the existing policy framework in these sectors, examines the impact of alternatives, and, building on previous modelling experience, seeks to create a new modelling technique. Furthermore, the project aims to enhance the economic policy formulation and modelling capacity of the Palestinian National Authority with a built-in mechanism for the maintenance and upgrading of the integrated framework following project completion.

It is expected that with improved economic policy formulation and assessment capabilities, the PNA and research institutions will be better able to set economic and sectoral programmes that would help build a coherent Palestinian development vision. With favourable political conditions the outcome of this project will create an environment conducive to sustainable improvements in all aspects of the Palestinian economy, ultimately improving the living conditions of the Palestinian people.

I would like to thank the research team whose hard work and cooperation has made Phase I of this project a success. I also express my appreciation for the efforts and cooperation of our public-sector partners, particularly the Ministries of Labour, Finance, National Economy and Planning, the Palestinian Monetary Authority and the PCBS. With a solid analytical framework designed, built and tested, I look forward to its useful application in subsequent phases of the project. Finally, my special thanks go to the Friedrich Ebert Stiftung for their support of MAS's contribution to this valuable enterprise.

Dr. Samir Abdullah
Director General

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INTRODUCTION

Background and justification

The intensification of the crisis and the recurrent closures in the occupied Palestinian territory since September 2000 have imposed new realities on the ground and led to profound changes in the structure and functioning of all sectors of the economy. This has generated a consensus among policy makers and experts on the necessity to re-evaluate the orientation of existing and future economic relations, policies and development strategy within the new imposed constraints. The recent crisis has magnified the already existing factors and created new ones which have restrained the growth of the Palestinian economy and its future ability for employment generation. These constraints include: (i) a distorted trade regime; (ii) a growing labour force with excess supply of labour and increasingly limited access to the Israeli market; (iii) small landlocked economy with limited natural resources and high degree of leakage to Israel; (iv) very high transaction costs; (v) low rate of productive investment; and (vi) low growth of total factor productivity (TFP).

Lately 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. In addition the protracted systematic closure policy has forced a reconsideration of the sustainability of the Israeli market as a destination for excess Palestinian labour. However, the PA's economic planning capacity has been undermined by the absence of an analytical framework to guide its strategic planning process. In an effort to address this limitation the Ministry of National Economy (MoNE) has undertaken, with donor support, sectoral research within the Economic Policy Programme (EPP), the Ministry of Finance (MoF) was considering to establish 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). In the meantime, the Palestinian Economic Policy Research Institute (MAS) has a long track-record in the area of scholarly applied economic research and policy analysis, focusing on identifying developmental challenges and priorities. Recently MAS, with support from the Islamic Development Bank, completed a research programme to assess the capacity of the Palestinian economy and its relations with its Arab neighbours and Israel.

All these efforts, however, lack an integrated quantitative framework capable of outlining and assessing a future vision for Palestine macroeconomic and sectoral objectives and the policies required to achieve such a vision. In the past, efforts were made to assess alternative long-term policy options for the Palestinian economy. The Quantitative Framework (QF), UNCTAD's first macro econometric simulation model for the Palestinian economy, was conceived in 1992.[1] By 2000, this framework had been updated and revised to produce UNCTAD's second-generation model of the Palestinian economy, the Macroeconomic Simulation Framework (MSF).[2] The two models were developed to stimulate and project the Palestinian economy under different policy assumptions. The MSF envisaged a transitional period during which the economy would become more independent of the Israeli economy with an increase number of returnees and higher investment rates. However, the intensification of the crisis since September 2000, and the new realities it imposed, has created a picture far more complex than that captured by the MSF, thus its detailed results were never disseminated. These pioneering models set the stage, for the first time, for a logical understanding of the macro-economy of Palestine, and the QF provided a reference point for further work done by other international institutions (World Bank), as well as more limited models estimated by individual Palestinian researchers after 1994. In addition, MAS has recently produced a number of quantitative and modelling studies, which demonstrate the Institute's advanced econometric and modelling skills.

More recently in 2000-2001 the World Bank developed a Computable General Equilibrium (CGE) model,[3] whose primary objective is to assess the impact of specific alternative economic relation arrangements with Israel; namely trade policies and the labour market. The model did not consider a major departure from the previously existing arrangement. It was constructed and calibrated before October 2000, and therefore its analytical span did not consider major and wide-ranging policy changes from the policy framework existing in the period 1994-2000. The

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1 See UNCTAD/ECDC/SEU/6, "Prospect for Sustained Development of the Palestinian Economy in the West Bank and Gaza Strip, 1990-2010: A Quantitative Framework", 11 November 1994.

2 UNCTAD Internal document " Prospect for Sustained Development of the Palestinian Economy 1990-2010: Macroeconomic Simulation Framework" August 2000 (see **Annex I** for a summary of the operation and initial findings of the MSF, which were presented informally at a joint MAS-UNCTAD workshop in July 2000).

3 See Astrup, C. and S. Dessus, "Trade Options for the Palestinian Economy: Some Orders of Magnitude", Middle East and North Africa Working Paper Series no. 21, 2001, the World Bank. Also see for the same authors "Exporting Labour or Goods? Long-term Implications for the Palestinian economy", Middle East and North Africa and Economic Development group, The World Bank, 2001.

relevance of this model is presently being discussed and assessed by all concerned parties. However, the Bank model lacks Palestinian ownership both in terms of its development and therefore the policy span/options it addresses. Any future development of this model will be a Bank initiative and within the specific policy framework it was designed to address.

During the interim period (1994-2000) factors such as weak economic policy coordination and ad-hoc management, coupled with certain institutional failures, discounted any role for coherent and comprehensive macro-policy-making. However in the wake of three years of war and economic havoc, and with the imperatives looming for institutional and policy reform for the envisioned State of Palestine, the Palestinian Authority concluded that a more serious approach to economic policy-making was required. Accordingly, the outcomes of international and national modelling to date should be looked at as a process that started from ground zero and considered within the context of the dramatic political developments of the last ten years.

None of the previous studies or efforts fully considered the economic changes which took place as a result of the partial implementation of the Paris Protocol and especially of the reversal in implementation of the Protocol since 2000. The structural impact of the prolonged crisis and the pending challenges arising from the 1994-2000 interim period are additional imperatives for taking a fresh and well-informed view of economic policy options in the short, medium and longer terms. These changes and the reality they impose require an analytical framework with a much wider span of economy-wide and sectoral policy options than those considered by the previous studies. In addition, a new effort has a good chance of succeeding where previous efforts have not ventured owing to:

a) leading involvement of Palestinian expertise in design and analysis;
b) collaborative effort between competent institutions;
c) greater dedicated resource availability;
d) 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

This project seeks to build on previous efforts by providing Palestinian policy-makers with a cohesive framework for informing medium and long-term development strategies. This will be done within the context of a two-

phased implementation plan in order to ensure proper involvement of concerned ministries and national research institutions, and institutionalise the required capacity within these institutions to utilise the framework beyond the project's life cycle.

Objectives and Output

The objective of this project is to provide policy makers with assessment of a wide range of policy options, and assist them in formulating alternative strategies for the future of Palestinian economic relations and policies. Specifically, the project will focus on future macroeconomic, Labour and trade policies.

This will require an assessment of the concerned sectors and the present policy framework. To quantify the impact of the alternative sectoral and macroeconomic policies, an integrated analytical framework will be developed. The proposed framework should be able to reflect the present Palestinian economic reality, incorporate the new data available and new modelling techniques, and build on the experience of the previous models. It should also be able to quantify the impact of trade policy, labour policy, increase in the number of returnees, taxes and transfers policy, investment programs, debt and foreign saving … etc. The project will also aim at creating and enhancing the necessary economic policy formulation and modelling capacity in the PA, with a built-in mechanism for maintenance and updating of the integrated framework following project completion.

Direct beneficiaries of the model include: Palestinian policy makers, organisational units and professionals in the Ministries of National Economy, Labour, Finance and Planning, the Palestinian Monetary Authority, the Palestinian Central Bureau of Statistics (PCBS), and selected researchers and national academic institutions. Indirect beneficiaries include: PA policy-makers in other ministries, donors and international development agencies.

The expected outputs of the model are (i) three reviews of the determinant parameters of the present macroeconomic, labour and trade policy framework; (ii) analysis of major policy options for future policies in the area of labour, trade and macroeconomic management; (iii) macroeconomic simulation framework (software program), (iv) comprehensive socio-economic, labour and demographic database (PCBS

data); (v) enhanced, integrated and sustainable PA technical capacity in the area of quantitative economic modelling and macroeconomic management.

The analytical framework should be capable of providing policy makers with assessments of the medium and long-term economic impact of a wide range of policy options and structural changes, such as:

1. A macroeconomic package to address poverty and the weak domestic demand within a sustainable fiscal balance and manageable foreign debt position.
2. Labour policy and employment programs to reduce the dependency on the Israeli labour market while creating employment opportunities in the domestic economy.
3. Increase in the number of returnees.
4. Trade policy and gradual introduction of a new trade regime to expand Palestine's international market and increase its trading partners.
5. Investment programme in trade facilities (such as roads, ports … etc.) and infrastructure to reduce transaction costs and increase the efficiency of capital. This programme should also guide the private sector towards productive (non-construction) investments.
6. Industrial policy to target the high value added sectors with the highest potential contribution to external trade.
7. Tax and transfers (fiscal) policy
8. Increase in foreign debt.

PREVIOUS MODELS

In the past, efforts were made to assess alternative long-term policy options for the Palestinian economy. The main efforts were conducted by UNCTAD and the World Bank.

UNCTAD Quantitative Framework

In 1990, the UNCTAD secretariat commenced work on a research project on prospects for sustained development of the Palestinian economy. Drawing on the findings of a series of economic and social sectoral studies completed in 1992, the project investigated medium and long-term Palestinian economic development prospects. This included design of a computerised quantitative framework (QF), which charted the historical relationship between key macroeconomic aggregates and projected alternative paths for the development of the Palestinian economy over the period 1990-2010, according to different assumptions affecting future demographic and policy variables. These ranged from a baseline scenario which implied long-term economic and social collapse, to an alternative scenario, which featured a different set of supply and demand side policies and factors and revealed the Palestinian economy's potential for sustained economic growth and development.

The findings of this research project were confirmed and further elaborated in publications issued in 1993 by the Palestine Liberation Organisation and by the World Bank. Together, these efforts served two important functions at the outset of the interim period foreseen by the Israeli-Palestinian accords:

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

Though conceived and largely completed prior to the Israel-Palestine peace accords of 1993, the underlying assumptions and findings of the econometric analysis and projection exercise anticipated a gradual removal of longstanding restrictions on the economy and the improved policy environment that was ushered in during the interim period. The QF also

explored the long-term opportunities for a major transformation of the Palestinian economy in the context of the exercise of sovereignty by a Palestinian authority over natural and human resources, as well as its full empowerment in the management of economic development.

In particular, the QF demonstrated that with an enhanced aggregate trade and investment policy framework to address major structural gaps (trade, investment and employment), the economy could recover and prosper. The QF demonstrated the economy's capacity to reverse historical trade deficits, enhance national savings and investment capacities, and reduce a large reserve of unemployed and underemployed labour, dependent on work opportunities outside the domestic economy. Moreover, this is possible while productively absorbing one million Palestinian returnees over 10-years, whose integration into the economy is underpinned by significant flows 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, which is calculated with a set of demand equations deriving from the historical regression analysis. The discrepancy between (projected) potential and actual output is reflected in one of the major gaps demonstrated by the framework, namely the rate of unemployment. Reducing this gap and correcting other structural distortions thus becomes possible through alternative assumptions affecting different functions.

World Bank CGE Model

CGE models come in many forms, from relatively simple models of a few equations to models as comprehensive as the social accounting matrix (SAM), on which they can be based. But all are known to be built through too many compromises, and that their predictions are extremely sensitive to the assumptions adopted. Such assumptions are often untested and sometimes untestable. As an example, various sophisticated CGE models were built to predict the outcome of the free trade agreement between US and Canada. One is struck by the significant differences in their predictions. Furthermore, some of the predicted changes were very much different from the actual changes, and indeed were not even of the same

degree of magnitude, (see, for instance, the difference between the results of Cox - Harris and Brown - Stern).

Obviously, choosing appropriate assumptions relevant to US - Canada relation is a lot easier than choosing those relevant to Israeli - Palestinian relations, given the volatile nature of their connection, and the present transitory state of the Palestinian economy.

CGE models have been employed with increasing frequency, over alternative models such as time - series econometrics models, for modelling the economies of developing countries primarily for the following two reasons:

(i) In analysing the impact of structural reforms in developing countries, economists are interested not only with the direction of change in aggregate variables, but also with distributional effects. CGE models are appropriate tools for such analysis as they are built on market cleaning assumptions, thus they capture all necessary changes in relative prices to achieve general equilibrium, thereby identifying the impact on different sectors of the economy.
(ii) As is often the case, most developing countries suffer from a paucity of data. In this regard CGE models are appropriate in that they are not necessarily data intensive. CGE models do not require long-term series of econometric estimates. In addition to SAM parameters, they need estimates of elasticities of substitution and transformation. They can be estimated if data are available, or imposed using estimates obtained from countries with similar economic structures.

Clearly these two features which recommend the use of CGE models are not applicable in the Palestinian case at present. The challenges facing the Palestinian economy, at present and in the near future, are not questions of reforming policy regimes; they are rather questions of mobilising resources and designing a comprehensive strategy for growth. In this regard, questions of policy reform have to be settled in accordance with planning objectives. Thus, the relevant questions to the Palestinian economy, at present, are not questions that can be answered by comparative - static exercises of CGE models. They are questions of growth to be dealt within the framework of dynamic planning models.

Furthermore, using data from the last few years would certainly result in very misleading results. In the last few years, the Palestinian economy has performed under severe conditions of huge distortions and disequilibria in

all markets, and has been dependent on the flow of relatively large amounts of external assistance from the donor countries. 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 is quite misleading to use data from very anomalous years. Certainly, such data would produce very peculiar SAM parameters, so that calibration of the model could produce actual values of the economic variables (production, trade, employment, prices, and so on) of one of the recent years that would be quite unsuitable for using as a benchmark.

The Palestinian side is not interested in using the model to analyse a set of specific questions. It rather needs a model to be used as an instrument of analysing questions as they arise. Thus, the Palestinian side needs an institutional framework within which quantitative analysis of policies are conducted in a continuous manner. The Palestinian side needs the help of international agencies not in building quantitative models of the Palestinian economy as such but in training Palestinians in the art of model building.

The World Bank model is not well described and some markets (labour and capital) are missing. In any event, the main theoretical approach for modelling most markets is a nested two-stage optimisation to derive the demand and supply functions and then estimating them with some sort of reduced form, or even using some elasticities from other countries. For example, for private consumption: at the first stage/top level the consumers are optimising their utility functions to determine the optimal mix between imported and domestically-produced goods. At the second stage (lower level) and after determining the demand (in real dollars) for imported goods, the consumers again optimise the utility function to determine the optimal mix of consumption of imports by source regions, to determine the share of each region in the Palestinian imports of consumption goods.

The same approach is applied to the production side to determine the supply of economy. But the important issue as far as we are concerned is that when we move down from the theoretical micro-optimisation background to the reduced form (i.e. the equations to be estimated or assumed) we don't see, from an econometric point view, that an equation from a CGE model reflects reality better than an equation from a macro/Klien (ad-hoc as some people argue) type model. Both will reflect the reality as good or as bad as long as the equation has all the relevant variables.

Other Models

Earlier models were built by Israeli researchers, including a model by Gideon Fishelson "The Econometric Model of Gaza Strip". This model covered the period from 1969 to 1987. Another model was built by Arie Arnon & Daniel Gottlieb "An Analysis of the Palestinian Economy the West Bank and the Gaza Strip". This model covered the period from 1968 to 1991. A third model was build by Ron Baums "The Econometric Model of the West Bank". This model covered the period from 1969 to 1986. All of these models simulated some policies that included fiscal, trade and labour policies that involved closing the border to exports to and imports from Israel and closing the Israeli borders to Palestinian workers.

ECONOMIC AND DEMOGRAPHIC DATA

The original time series data was prepared by UNCTAD in its DATABASE 1972-2001, and other variables were added as needed by the current model. The following is a brief description of the sources and methodologies used to build up the data sets. This section depends heavily on UNCTAD's user manual of the database 1972-2001.

Data are compiled and presented on territorial bases: Gaza Strip (GS) and Remaining West Bank (RWB). According to the Palestinian Central Bureau of Statistics (PCBS), Remaining West Bank refers to all of the West Bank excluding East Jerusalem.

1. National Accounts Data

The goal is to produce a continuous set of national account variables, over the 1972-2000 period, expressed in US$ both in current and real terms. Following the most recent national account data published by PCBS, the real figures are expressed in 1997 US$. Regarding data sources, the pre-93 data in Israeli shekels is entirely obtained from the ICBS publication containing pre-1994 series. The starting point for the Pre-93 data is converting the national account data expressed in Israeli shekels into current US$ and then moving to constant 97US$. Regarding post-93 data, the current and 97US$ data is directly obtained from PCBS files and introduced in the database without any transformation.

All data in Israeli shekels, as reported by ICBS, are converted using an average annual exchange rate estimated by the World Bank. The exchange rate used is the World Bank's DEC alternative conversion factor (local currency per US$) for Israel. The World Bank definition of this conversion factor is "the underlying annual exchange rate used for the World Bank Atlas method. As a rule, it is the official exchange rate reported in the IMF's International Financial Statistics. Exceptions arise where further refinements are made by World Bank estimates. It is expressed in local currency units per U.S. dollar".[4]

Owing to the absence of adequate deflators relevant to the specificities of the Palestinian economy, the pre-93 data cannot be expressed in a

[4] Source: IMF, International Financial Statistics, supplemented by World Bank estimates.

straightforward way in constant 97$. The World Bank provides implicit 95$ deflators for Israel over the period under consideration. The general idea of moving to the 97$ figures is to derive complete 95$ series using these World Bank implicit deflators, and to apply backward the growth rate of constant 95US$ data to the values of the year 1994 (expressed in 97$) to derive constant 97$ series. The process is detailed in the following section.

The approach explained in this and the following sections relates only to the pre-93 data, as the post-93 data is already expressed in constant 97$. Optimally, deflators should be specific to the variable that needs to be deflated (e.g. Exports and Imports require different deflators in order to preserve the changes in terms of trade changes). To reflect this in the dataset, as far as the data allows, Palestinian pre-93 series are deflated using Israeli deflators obtained from the World Bank data on Israel for the following nine series: exports of goods and services; final consumption expenditure; GDP; general government final consumption expenditure; gross capital formation; gross fixed capital formation; gross national expenditure; household final consumption expenditure; and imports of goods and services.[5] An Israeli-specific 95$ deflator is chosen to deflate the relevant Palestinian series. The choice is based on theoretical knowledge, but when there is no suitable deflator for a specific variable it is the general GDP deflator that is applied to convert from current to constant dollars. Note that aggregated series in real terms (such as GDP) are the sum of their real variables and not the result of deflating the aggregated nominal values.

The derivation of the deflators and deflation process is carried out as follows:

The Israeli deflator D of variable Xi in year t is derived from the ratio of the nominal value over the real value in 95$ in that year:

$$D95it = (Xit / X95it)$$

The real value of the Palestinian variable XPi in year t in 95$ is derived by dividing its nominal value by the above deflator for the same year:

[5] Calculation of these implicit deflators in file: WrldBk NAcc 5may.xls using the implicit deflator of the corresponding years. The deflator in question should of course be appropriate to the series that is considered. Only two series are concerned: the Public-owned enterprises intermediate consumption and the Public-owned enterprises value added. The most adequate available deflator here is the general GDP deflator.

$XP95it = (XPit / D95it)$, for all $t < 1994$

As for the period 1994 – 2000, the real 95$ values are derived as follows:

$XP95it = XPi95 \bullet (XP97it / XP97i95)$, for all $t > 1993$

However, for "public-owned enterprises intermediate consumption" and "public-owned enterprises value added" data do not exist for the pre-93 period. Therefore, their real values in 95$ during that period are derived as ratios to real GDP at market prices in 95$ similar to their shares in nominal GDP.

Values in constant 97$ for pre-93 variables are derived by applying the growth rates of the same variables measured in constant 95$ as follows:

$XP97it = XP97i97 \bullet (XP95it / XP95i97)$, for all $t < 1994$

However, the classifications of private investment and public investment were dropped in the post-93 dataset. Their real values in 97$ for the period 1972 – 1993 are calculated from the total real investment in 97$ based on their ratios to total investment in nominal terms. Similarly, "net indirect tax – subsidies", "indirect taxes and transfers to the government" and "transfers from the government" were also dropped in the post-93 dataset; their values in 97$ were calculated based on the ratios of their nominal relative to nominal GDP, which are then applied to real GDP in 97$.[6]

Finally, it should be noted that GDP at market prices and GDP at factor cost are not necessarily equal. This is owing to the fact that they are aggregates of different sets of real variables, each deflated by different deflators. To maintain the consistency of the data, the discrepancy between the two GDP series is allocated to the "net errors and omissions item". However, this discrepancy is not very significant.

Continuity of National Accounts Data

In the pre-93 dataset, Sectoral GDP was divided into five values added: Agriculture; industry; construction; public services; and private services. However, in the post-93 dataset the PCBS provides a much richer disaggregation of value added data with a large number of sectors (22) in line with the 1993 Revised Standard National Accounts (SNA) format. To

[6] The 1994-2000 values are obtained directly from the PCBS original files: NmnlGDP2000.xls and CnstsGDP2000.xls. The PCBS provides a rich disaggregation for post-93 value added data

reconcile the two datasets and have continuous value added series over the period 1972 - 2000, some of the sectors in the post-93 data were aggregated to reduce the total number to the five sectors of the pre-93 dataset. For agriculture and fishing, and construction it was a straight match as the two sectors appear in the pre-93 and post-93 datasets. As for the remaining sectors, it was not a trivial matter. Table 4 shows how the post-93 sectors are reconciled to match the pre-93 sectors. For the education, health and social work sectors, the reconciliation involved dividing them between the public services and private services in the pre-93 classification, as shown in the Table. It should mentioned that since the sectoral data for education, health and social work were available aggregated for both Gaza Strip (GS) and the remaining of the West Bank (RWB), it is assumed that GS and RWB show a similar pattern in terms of distribution of value added with respect to the three sub-sectors, and the reconciliation is preformed accordingly.

Missing Data

The buildings and non-buildings gross capital formation data were not reported for the years 1988-1993 in RWB, and for 1988 in GS. These missing values are estimated as a percentage of total investment based on the historical trend and it is assumed that this percentage evolves towards the 1993 level with a linear trend. This issue could be revisited in future research.

Gross private disposable income series is also not available for the post-93 period. The reason is that "indirect taxes and transfers to the government" and "transfers from the government" are reported in the new datasets. Historically, the trend of the ratio of the gross private disposable income relative to gross national disposable income was pretty stable over time. For the remaining West Bank data the ratio was about 0.93 during the period 1972-1993, except for 1988 and 1989 where it dropped to 0.75, as the growth of private disposable income presents a two-year delay with respect to the growth of national disposable income. Therefore it would be reasonable to assume that the trend of this ratio did not change significantly after 1994, and based on this assumption the values of GPRDY can be derived for the period 1994-2000 as a percentage of GNDY. Regarding the Gaza Strip, this approach cannot be applied, as this ratio does not show a stable trend. Consequently, GPRDY in GS for 1994-2000 is reported as missing data, and the same applies to the aggregated Palestinian value of that variable. This could be further researched in the future.

2. Trade Data

Trade data present the value of exports and imports of goods and services between the Palestinian territory and abroad. The availability of trade variables in the pre and post-93 periods is reported in Table A2 in the Annex. The level of details of trade by country and commodity depends on the source of the data as follows:

- 1972-94: Total value of exports and imports of goods and services. Exports and imports of goods classified by country: Jordan, Israel and Rest Of the World (ROW).[7]
- 1995: detailed data not reported.
- 1996-2000: Value of exports and imports of goods and services. 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 according to the STIC standards (3-digit level). The 4-digit disaggregation is also available in the original sources but is not integrated in the present database. The data source is the PCBS (2003, Unpublished data). It is worth noting that the PCBS advises to use trade statistics with some caution as they could be under-reported due to the various sources, the political situation and border crossing reporting-related issues. Besides, values less than $500 are considered null in the original data.

To guarantee coherence, the sums of exports and imports by country equal their sums classified by STIC-3 code. In practice, marginal discrepancies are observed (less than 4%). In GS imports by country and by commodity show a discrepancy of about 3%, while in RWB this discrepancy ranges between 5% in 1997 and 1% in 1998. To reconcile these discrepancies the following approach has been applied:

1. If the sum by country is larger than the sum of STIC-3 code, the discrepancy is allocated to the Exports/Imports of "commodities and transactions, not elsewhere specified" in the STIC classification.
2. If the sum by country is smaller than the sum of STIC-3 code, the discrepancy is allocated to the exports/imports of "other countries" in the country classification.

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

Consistency with National Accounts

It is essential to maintain the consistency of exports and imports in both trade data and national account data. This requires, for example, the value of merchandise exports in the trade data to be equal to the value of exports of goods in national accounts. It should be noted, however, that in some years the details of trade data are not reported in the national accounts or trade data provided by the PCBS and ICBS, and therefore some missing data are listed in the database. To account for some of the missing data and ensure the consistency between the detailed trade data and those of the national accounts, the following has been applied:

- 1972-1987: In the national accounts the goods and services disaggregation is unavailable for both exports and imports. However, trade data for RWB reports total exports of goods and thus allows the estimation of exports of services over the period. The same approach was applied for imports. For GS, imports from Jordan are not reported for the years 1977-1995, and therefore national accounts data cannot be completed for this period.
- 1988-1994: For RWB, data on trade with Israel is unavailable and thus exports of goods are reported as missing. The only available external trade data are total exports and total imports. As for GS, data on trade with Israel is available, except for 1988.
- 1995: Trade data is unavailable.
- 1996-2000: The positive discrepancy between exports in the trade dataset and export of goods reported in the national accounts is allocated to the "other countries" item. The latter also absorbs any underestimation in the trade dataset as compared to the national accounts figures.

In isolated cases, the aggregation of exports (FOB) and/or imports (CIF) of goods by commodities is larger than the value reported in the national accounts data. In such incidents, the discrepancy from the national accounts value is allocated to or deducted from "commodities and transactions, not elsewhere specified". This issue could be further researched in the future.

The methodology used to deflate trade data is similar to that applied to national accounts data and described in Section C of Chapter II. The approach for obtaining 97$ figures is to derive complete 95$ series using these World Bank implicit deflators, and apply the growth rate of constant 95$ data to arrive at the constant 97$ data.

3. Labour Data

The labour force database is structured according to the set of definitions detailed here. Original data is sometimes sparse or unclear in definitions; therefore a good part of the effort of merging pre-93 and post-93 data was dedicated to finding the adequate structure of the data.

Pre-93 categorisation of sectoral employed persons is different from that applied in the post-93 period. Pre-93 disaggregation includes agriculture, industry, construction and others. Post-93 categories are agriculture, manufacturing, construction and services. While, in pre-93 data persons employed in services are included under the category of "other", post-93 data explicitly include employment in "services" as a separate category, and do not report the category of "other". However, the sum of the four reported categories is less than the total employment reported. The difference between the two has been allocated to "other" in the post-93 period in the database.[8]. In spite of the missing data in 1994, the series follow a time trend over the period of the database, except for employment in agriculture whose figures dropped about 40% between 1993 and 1995. This observation needs to be assessed and explained at the modelling stage.

4. Demographic Data

The set of demographic variables is simple in its structure and most series were included in the database with a minimum of processing. 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, mid-year male and female population was 98.5% and 98.6% of end-of-year population of the GS and RWB respectively. Furthermore, 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%. As for net migration, it could be estimated by subtracting population from its total growth. However, owing to missing data, this variable was not derived.

[8] This exercise is in the file LaborOct dec02.xls.

5. Quality of the data

While for the post-93 period the data depended mainly on PCBS sources, the pre-93 data relied on the ICBS. In either case, variable specifications follow international standards[9]. Of course, each dataset applied the international definitions available at the time of its development. Hence, the present database represents the first serious efforts to reconcile the two datasets and any differences in variable definitions. The database preserves the qualities of the original data, with whatever limitations they may have. For example, as mentioned above, detailed trade data could be underestimated in the original source. Consequently, some of the trade categories remain underestimated in the present database, but the methodology applied in the development of the trade dataset ensures that the aggregates of trade are reconciled with the national accounts figures and that they are not underestimated in totals. Furthermore, any data in the original sources that is the result of estimation will of course remain so in this database.

To ensure the accuracy of the database, random checks against the original sources were performed. This approach has been applied to every block and leads to the conclusion that series are sufficiently accurate. The deflated real national accounts data were also checked through the comparison between the structure of the economy measured in nominal local currency, current US$ and constant US$. The structure of the economy should not change substantially with the change in the units of measurement, and thus the share of the same sector in GDP should be roughly equal. Any difference in share should be owing to the deflator used to move from nominal to real data. This test could easily spot any incoherence in the national accounts data. National accounts variables in the database have satisfied this criterion, and therefore it is reasonable to say they reflect high degree of consistency. Finally, data are verified on a global basis through a constant analysis of the variables against their historical trends, as well as through team-work and internal double-checking. In conclusion, these checks confirm the overall good quality of the database.

[9] For a technical evaluation of the ICBS data series, see "Sources of Economic and Social Statistics on the West Bank and Gaza Strip", UNCTAD/ECDC/SEU/10, 1996.

6. Further Analysis

The database in its present form contains all the major available national accounts, trade, labour force and demographic variables. During the development process it was found that a limited number of variables have missing values. Straightforward estimations were performed to extrapolate and fill the missing data gaps. However, as indicated above, some situations require additional analysis to further improve the quality of the data. Furthermore, natural population increase and net migration were left as missing data due to an apparent incoherence in the unit of measurement in addition to the lack of documentation in the original sources. This made it impossible at the present stage to completely integrate these two variables in the database.

THE MODEL

The model is a standard Klein type that focuses on the demand side and integrates supply side by use of an I-O model. The Model consists of 3 main blocks:

1. Labour and demographic block, which includes 11 behavioural equations and 14 identities.
2. Government block, which includes 5 behavioural equations and 10 identities.
3. Trade block, which consists of 13 behavioural equations and 9 identities

The method of estimation is seemingly unrelated regression-UR.

The following is a list of the model equations and variable definitions:

Labour and Demographic Block

LEII=C(10)+C(11)*LOG(WR*ENIS)+C(12)*LLS + C(13)*CD+
C(14)*LEII(-1)

LTDE1_C=C(20)+C(21)*LVA+C(22)*LTDE2_C+C(23)*LTDE4_C+C(24)*D(EII/TDE_C)

LTDE2_C=C(30)+C(31)*LVA+C(32)*LW2+C(33)*D94+[AR(1)=C(34)]

LTDE3_C=C(40)+C(41)*LVA +C(42)*LPOP+C(43)*LW3

LTDE4_C=C(50)+C(51)*LVA+C(53)*LOG(W4/WI)+C(54)*LEII

PRM=C(60)+C(61)*LW+C(62)*LPOPM+C(63)*LLSM+C(64)*PRM(-1)

PRF=C(70)+C(71)*LW+C(72)*LPOPF+C(73)*LLSF

LW1=C(80)+C(81)*LWI+C(82)*UR+C(83)*T+C(84)*LW1(-1)

LW2=C(90)+C(91)*LWI+C(92)*UR+C(93)*T+C(94)*LW2(-1)

LW3=C(100)+C(101)*LWI+C(102)*UR+C(103)*T+C(104)*LW3(-1)

LW4=C(110)+C(111)*UR+C(112)*T+C(113)*LW4(-1)

Labour Block Identities

TDEi_C=EXP(LTDEi_C) i= 1, 2, 3, 4

Wi = EXP(LWi) i= 1, 2, 3, 4

TDE_C=TDE1_C+TDE2_C+TDE3_C+TDE4_C

MPM=POPM*SHMA

MPF=POPF*SHFA

LSM=MPM*PRM

LSF=MPF*PRF

LS=LSM+LSF

W=ETA1*EXP(LW1)+ETA2*EXP(LW2)+ETA3*EXP(LW3)+ETA4*E
XP(LW4)

LD=EXP(LEII)+TDE_C

UR=1 – (LD/LS)

POP=POPM + POPF

MP = MPM + MPF

EII = EXP(LEII)

Government Block

LGC=C(120)+C(121)*LGE+C(122)*LTGR(-1)-C(122)*LTGE(-
1)+C(123)*DN+C(124)*LGC(-1)

LGI=C(130)+C(131)*LTGR(-1)-C(131)*LTGE(-
1)+C(132)*DN+C(133)*LGI(-1)

LVAT=C(150)*LVA+C(151)*LVAT(-1)
LTFG=C(160) +C(163)*LOG(GNDI/POP)+ C(164)*LTFG(-1)

LOTR=C(170) + C(171)*LURMO+C(172)*LFL

Government Block Identities

GC =EXP(LGC)

GI = EXP(LGI)

IT = EXP(LIT)

VAT = EXP(LVAT)

TGE=EXP(LGC)+EXP(LGI)+EXP(LTFG)

TGR=EXP(LIT)+EXP(LVAT)+EXP(LOTR)

VAT2=.17*VA

FL=VAT2 – VAT

GBD = TGR – TGE

OTR = EXP(LOTR)

Trade and National Accounts block

LURMI = C(180) + C(181)*LGNI+C(182)*LIMD+C(183)*CD

LURMO = C(190) + C(191)*LGNI+C(192)*LIMD+C(193)*CD

LURXI=C(210)+C(211)*LW+C(212)*LOG(CPI/IPI)+C(213)*LIGDP+C(214)*(N+D93)+C(215)*LURXI(-1)

LURXO=C(220)+C(221)*LENIS+C(222)*LEXD+C(223)*log(GDP_FC/TDE_C)+C(224)*DN+C(225)*LURXO(-1)

LEXD = C(290) + C(291)*LGDPD+C(292)*LENIS+C(293)*LEXD(-1)

LIMD = C(300) + C(301)*LIPI+C(302)*LIMD(-1)

LNFI=C(310)+C(311)*LEII+C(312)*T+C(313)*LWI+[AR(1)=C(314)]

LPC = C(240)+
C(241)*LGNDI+C(242)*LOG(PCD/GDPD)+C(243)*D94+C(244)*LPC(-1)

PI = C(250)+C(251)*D(CX)+C(252)*GDP_FC+C(253)*GI(-1)

LGDPD = C(260) + C(261)*LCPI+C(262)*LIMD

LCPI=
C(270)+C(271)*LIPI+C(272)*LOG(GDP_FC/TDE_C)+C(273)*D84+C(2
74)*LCPI(-1)

LPCD= C(280)+C(281)*LCPI+C(282)*LPCD(-1)

LVA=C(320)*LPC+C(321)*LGC+C(322)*LTOI+C(324)*LURXT+C(32
5)*LURMT

Trade and National Accounts identities

URMT = EXP(LURMI)+EXP(LURMO)

URXT = EXP(LURXI)+EXP(LURXO)

CA = URXT – URMT

NS = EXP(LGNDI) – EXP(LPC)

TC = EXP(LPC) + GC

TOI = EXP(LPI)+GI

GDP = TC+TOI+CA

GNI = GDP + NFI

GDP_FC = EXP(LVA)

Variable Definitions

CA	Trade balance
CD	No. of closure days
CPI	Consumer Price Index
CX	Credit extension
D84	Dummy variable
D93	Dummy variable
D94	Dummy variable
DN	Dummy variable
EII	No. of people employed in Israel
ENIS	US $ /NIS exchange rate
ETAi	Share of employment in sector I from total employed
EXD	Export deflator
FL	Fiscal leakage
GBD	Government budget deficit
GC	Government Consumption
GDP	Domestic GDP
GDP_FC	GDP at factor cost
GDPD	GDP deflator
GE	Gov't employment
GI	Gov't investment
GNDI	Gross National Domestic Income
GNI	Gross National Income
IGDP	Israeli GDP
IMD	Import deflator
IPI	Israel price index
IT	Income taxes
LD	Labour demand
LS	Labour supply
LSF	Female labour supply
LSM	Male labour supply
MPF	Female manpower
MPM	Male manpower
NFI	Net factor income
NS	National savings
OTR	Other revenues
PC	Private consumption
PCD	Private consumption deflated
PI	Private investment

POP	Population
POPF	Female population
POPM	Male population
PRF	Female participation rate
PRM	Male participation rate
SHFA	Female share
SHMA	Male share
T	Time
TC	Total consumption
TDE_C	No. of people employed domestically
TDE1_C	No. of people employed domestically in agriculture
TDE2_C	No. of people employed domestically in industry
TDE3_C	No. of people employed domestically in construction
TDE4_C	No. of people employed domestically in services
TFG	Transfers from government
TGE	Total gov't expenditure
TGR	Gov't total revenues
TOI	Total investment
UI	Unemployment in Israel
UR	Unemployment rate
URMI	Imports from Israel
URMO	Imports from rest of the world
URMT	Total imports
URXI	Exports to Israel
URXO	Exports to the rest of the world
URXT	Total exports
VA	Value added
VAT	True Value Added Tax rev.
VAT2	Projected VAT
W	Domestic Wages
W1	Wage in agriculture
W2	Wage in industry
W3	Wage in construction
W4	Wage in services
WI	Wage in Israel
WR	Wage ratio (wage in Israel / domestic wage)

Labour and Demographic Block

The labour block consists of 11 behavioural equations and 14 identities. Selection of explanatory variables was completed based upon a priori demand and supply analysis, with emphasis on the former justified by Kaleckian and Keynesian economics, 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 determined outside of the system. However, due to the significant dependency on Israel for employment, and the higher wage rates there, domestic wages are modelled to capture the positive relation to employment in Israel. Domestic employment (at least in agriculture and industrial sectors which are more affected by 'openness' because they are the export sectors) is thereby dependent, in part, on wage rates in the agriculture and industry sectors.

Palestinian employment in Israel was a function of the ratio of wages in the Palestinian Territories to the Israeli wages, the closure days, and the Palestinian labour supply, while domestic employment was a function of value added, wages, and lagged employment. Male and female participation rates were a function of wage rate and population of each group. Wages in the Palestinian Territories were a function of wages in Israel, the unemployment rate, and lagged wages.

It needs to be noted that, in line with the a priori selection process, variables were not necessarily included based upon their t-statistics and standard errors. Rather, emphasis on theoretical consistency required at times the inclusion of variables that were not necessarily statistically significantly.

The Government Block

There was no government in the national sense from 1967 to 1993; therefore data from the Israeli Civil Administration (ICA) for this time span is considered for the government sector. This period is characterised by Israel's collection of taxes coupled with an almost total lack of implementing programs for the development of the Palestinian territory. The expenditure that did take place was primarily for the running of the health, educational, postal and local governmental staff. In 1992 the ICA

budget was in surplus by $17 million[10] (Khader 1999). With the establishment of the PNA in 1994, the term government took on a different meaning. It has a centralised budget with fiscal policy tools. Despite the fact that in its early years it hardly performed any fiscal management in the macroeconomic sense, it did contribute to the absorption of thousands of employees, especially in times of restricted access to the Israeli labour markets. It has also implemented many employment generation schemes[11.] Daoud (2002) points out that the PNA's fiscal actions were not consistent with GDP movements over time nor were responsive to private sector development needs. The spending structure of the Palestinian budget has experienced significant growth on per capita bases for the security apparatus and maintained relatively low levels on health and education.

Figure 1: Total Government Revenues (TGR) and Total Government Expenditures (TGE)/ million US$

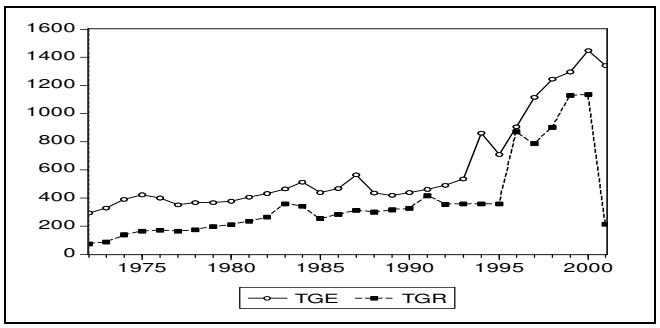


Figure 1 above reflects the historical trends of both government revenues and expenditures. The expanded budget was in part due to the retention of large customs clearances which were historically kept by Israel. The donor community also stepped up their contributions to help the newly established PNA with significant contributions to capital expenditure. It is evident that the deficit reached new proportions with the beginning of the second Intifada when Israel withheld all clearances that accrued to the PNA.

[10] The current data set shows a deficit of $ 45 million in 1991 and $ 137 million in 1992.

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

Standard macroeconomic models treat the government sector largely as exogenous to investigate how fiscal policy affects employment, GDP and prices[12]. 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. Al-Naqib (1996) examined the tax structure of the PNA and came to the conclusion that the tax system is largely regressive as it is mostly comprised of a benefit-based VAT system.

The empirical literature of macro-econometric models of Palestine varied in its treatment of the government sector. UNCTAD (1994) modelled government consumption and investment as functions of GDP in the aggregate demand relation, but did not tackle the deficit or revenues. On the other hand, El-Jafari (1998) modelled both revenues and expenditures; in his formulation, revenues depended on GNP, imports, and a lag. His expenditure function was disaggregated to current and capital; Current expenditures were functions of revenues, lagged dependent variable and foreign aid, while capital expenditures depended on a lag and government revenues. It must be noted that in the last few years the majority of capital expenditure was financed by foreign aid, and in addition it seems that lagged deficit is a better explanatory variable for capital expenditure than current revenues.

Among studies that estimated econometric models of Palestine, Arnon, Luski, Spivak, and Weinblatt (1997) also used direct taxes and indirect taxes to depend on GNP and GDP respectively; they then used 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 both modelled government as exogenous. The latter used government consumption as well as direct taxes, indirect taxes and transfers, while the former used government consumption only.

In the Palestinian context there has been only two ways to finance the deficit; the first is foreign aid, for which data is available only for the post 1993 period. The second method is by use of a delayed payments system (arrears) which has an interest component to it. In the last few years the Ministry of Finance (MOF) has exerted significant efforts to payoff all

[12] A notable exception is the fact that part of government revenues and expenditures are automatically tied to the status of the economy such as transfers and tax revenues.

arrears by limiting public employment expenditure and streamlining other current expenditure practices (Daoud 2003). This being coupled with reduced donor budget aid, it has become increasingly more difficult to balance the budget. As a result, the deficit is endogenised with a feedback mechanism to the demand side of the economy and consequently employment.

In this model both revenues and expenditures are endogenous; government expenditure is disaggregated into consumption, investment, and other expenditures. Public consumption is thought of being influenced by public employment, lagged deficit, PNA dummy and lagged dependent variable. Public investment is similarly modelled except for public employment. Other government expenditures were left as exogenous. On the revenue side, there were VAT revenues which were estimated twice. The first is a regression on value added and a lag; this estimated coefficient would then be interpreted as the average VAT rate (marginal as well). The second is an identity as 17% of value added. The difference between the two is an estimate of the fiscal leakage which could be a source of revenues if reduced. The leakage is in turn used to explain other revenues along with imports from the rest of the world. Income tax revenues are dependent on gross national income, as usual, in addition to a lag and a dummy variable for the post-1993 period.

Foreign Trade and National Accounts Block

Since the war of 1967, the Palestinian economy has become closely linked to the Israeli economy. Over the period 1967-2000, exports to Israel averaged about 59% of total Palestinian exports, while imports from Israel averaged about 63% of the total imports. The relation between these two economies has also been affected by the political instability, and by the Israeli policies formulated to restrict the movement of goods and people. In addition to this, the existence of the PNA also has affected the expectations of Palestinian economic agents, which in turn affects investment decisions. Lastly, donors' contributions in the development process of the Palestinian economy have also had an impact, which must not be neglected, especially during the years of the second Intifada. Therefore, mainstream macroeconomic models must be modified in one way or another to reflect the impact of these factors on the Palestinian economy.

In this study 13 behavioural equations in addition to 9 identities were constructed to sketch the determinants of foreign trade and national income. To consider the heavy reliance of the Palestinian economy on the Israeli economy, Palestinian imports from and exports to Israel are specified separately from the rest of the world. Palestinian imports from Israel (URMI) and imports from the rest of the world (URMO) are expressed as functions of gross national income (GNI), an imports deflator (IMD), and the closure days. The GNI and the imports deflator are included to account for income and price effects respectively, while the closure days are to reflect the impact of the Israeli measures on these variables.

Similarly, Palestinian exports are also divided into Palestinian exports to Israel (URXI) and exports to the rest of the world (URXO). Exports to Israel are expressed a function of its lagged value, real wages, the ratio of the domestic consumer price index relative to the Israeli price index, the Israeli gross domestic product, and a dummy variable D (where D = 1 for 1994–2001, 2 for 1993, and 0 otherwise). On the other hand, exports to the rest of world is expressed as a function of its lagged value, the exchange rate of the new Israeli shekel against the US dollar, export deflator, productivity, and a dummy variable (where D = 1 for 1994-2001, and 0 otherwise). In addition to the above 4 equations, three identities are constructed to incorporate total imports, total exports, and the current account.

The second set of equations and identities relate to the determinant of national income. In this study, the standard Keynesian model is slightly modified to fit the Palestinian case. According to this model, private consumption (PC) is assumed to depend on its lagged value, in addition to gross national disposable income (GNDI), the ratio of private consumption deflator to GDP deflator (PCD/GDPD), and a dummy variable (D = 1 1994-2001, and 0 otherwise).

The expenditure on private investment (PI) is expressed as a function of credit extension (CX), gross domestic product at factor cost (GDP_FC), and lagged value of government investment (GI(-1)). It is clear that the private investment equation is quite different from the IS-M model by including credit extension, lagged value of government investment, and excluding interest rate. Excluding interest rates is basically due to the fact that the existence of no national currency makes the task of computing the interest rate quite hard or even impossible. In addition to this, interest rates

may be the least important factor in affecting investment, compared to the high risk resulting from the prevailing political instability.

These behavioural equations are also followed by 4 identities. The first identity stands for total consumption, which is the sum of private and public consumption. The second identity stands for total investment, the sum of private and government investment. The third identity expresses gross domestic product, which is the sum of total consumption, total investment, and net exports. The fourth identity expresses the gross national income as the sum of gross domestic product and the net factor income from abroad.

To compare the robustness of the results estimated using different price measures, 4 behavioural equations are constructed. The first equation links GDP deflator (GDPD) to consumer price index (CPI), and imports deflator (IMD). This equation basically asserts the relative importance of consumption to total expenditures, and also the dependence of consumption on imports. The second equation relates consumer price index (CPI) to its lagged value (CPI(-1)), the Israeli price index (IPI), domestic GDP at factor cost (GDP_FC), and a dummy variable (D84=1 for the period 1984 to 1993 and zero otherwise). In the third equation, export deflator (EXD) is assumed to depend on its lagged value (EXD(-1)), GDP deflator (GDPF), and the exchange rate of the Israeli new shekel against the dollar (ENIS). The fourth equation relates import deflator (IMD) to its lagged value (IMD(-1), and the Israeli price index (IPI). The last three equations emphasise the dependence of the Palestinian price on the prevailing price index in Israel.

The net factor income (NFI) is expressed as a function of the number of Palestinian workers in Israel (EII) and wage rate in Israel (WI). This equation ignores the Palestinian workers' remittances abroad. Finally, the model links the value added (VA) to private consumption (PC), government consumption (GC), total investment (TOI), total exports (URXT), and total imports (URMT).

EMPIRICAL RESULTS

The present version of the model consists of three primary blocks. The first of the three blocks is labour, which contains eleven endogenous variables. It starts with employment in Israel, since for most of the time period covered by the data set, employment in Israel constituted roughly 20% of total employment. In addition, employment and wages in each of the four sectors are explained. The remaining two equations are for male and female participation rates. The identities to the system are appended in the model for simulation purposes.

The second block is the government; it consists of five equations covering both the revenue and expenditure side of the budget. The remaining thirteen equations make up the Trade and National Accounts block, which includes four current account equations, four national accounts, and five price equations (deflators).

In a forthcoming development, the three blocks of the model will be integrated by an input output sub-routine to incorporate production of the four sectors (agriculture, industry, construction, and services) to link the production side of the economy with final demand equations. This integration is presently under development, thus the results of the econometric model alone are presented here.

The model was estimated on an equation by equation then block by block basis, and finally as a complete system[13]. Many criteria were used in the selection process, including sign correctness, 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 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 of it is policy simulation and forecasting.

The results are presented below block-wise in order to make the discussion focused and specific.

[13] The identification of the system as a whole was checked. The model can be estimated by OLS. However, due to gains in efficiency, SUR was used instead.

The Labour Market and Demography

Estimates of the labour block relations are presented in Table 1 below:

Table 1: Estimates of labour market relations*

Dependent Variable	Explanatory variable	Coefficient	Standard Error	Probability
Employment in Israel	Constant	2.5480	0.5402	0.000
	Wage ratio	0.0148	0.0036	0.000
	Labour supply	0.3411	0.0337	0.000
	Closure days*	-0.0043	0.0002	0.000
	Lagged Dep. Var.	0.4065	0.0288	0.000
Domestic employment in agriculture	Constant	6.6293	0.3994	0.000
	Value added in agriculture	0.1878	0.0278	0.000
	Domestic employment in Industry	-0.7598	0.0829	0.000
	Domestic employment in services	0.9394	0.0747	0.000
	Change in relative Israel to domestic employment*	-0.8986	0.1062	0.000
Domestic employment in industry	Constant	-9.4533	505.4259	0.985
	Value added in industry	0.3360	0.0170	0.000
	Industry daily wage	-0.0308	0.0331	0.352
	1994 dummy*	-0.0689	0.0132	0.000
	First order autocorrelation*	1.0011	0.0299	0.000
Domestic employment in construction	Constant	-13.0039	0.9798	0.000
	Value added in construction	0.2664	0.0450	0.000
	Population	1.5257	0.0780	0.000
	Construction daily wage	-0.0982	0.1169	0.401
Domestic employment in services	Constant	4.3959	0.7622	0.000
	Total value added	1.6194	0.0666	0.000
	Service to Israel wage ratio	-0.2122	0.0406	0.000
	Employment in Israel	-0.4944	0.0617	0.000
Male participation rate	Constant	0.4161	0.0745	0.000
	Daily wage	0.0402	0.0074	0.000
	Male population	-0.1881	0.0189	0.000
	Male labour supply	0.1766	0.0169	0.000
	Lagged Dep. Var.	0.7302	0.0298	0.000
Female participation rate	Constant	0.0689	0.0235	0.004
	Daily wage	-0.0094	0.0026	0.000
	Female population	-0.0500	0.0033	0.000
	Female labour supply	0.0688	0.0020	0.000

Dependent Variable	Explanatory variable	Coefficient	Standard Error	Probability
Daily wage in agriculture	Constant	0.6177	0.0827	0.000
	Daily wage in Israel	0.2435	0.0254	0.000
	Unemployment rate	-1.9803	0.1643	0.000
	Time trend	0.0173	0.0018	0.000
	Lagged Dep. Var.	0.3852	0.0314	0.000
Daily wage in industry	Constant	0.5422	0.0658	0.000
	Daily wage in Israel	0.1672	0.0224	0.000
	Unemployment rate*	-1.9731	0.1490	0.000
	Time trend*	0.0233	0.0018	0.000
	Lagged Dep. Var.	0.4872	0.0340	0.000
Daily wage in construction	Constant	0.9976	0.0642	0.000
	Daily wage in Israel	0.1491	0.0135	0.000
	Unemployment rate*	-1.4797	0.1038	0.000
	Time trend*	0.0163	0.0013	0.000
	Lagged Dep. Var.	0.4252	0.0262	0.000
Daily wage in services	Constant	1.3806	0.1197	0.000
	Unemployment rate*	-1.7539	0.2318	0.000
	Time trend*	0.0170	0.0025	0.000
	Lagged Dep. Var.	0.4573	0.0465	0.000

* All variables are in logs unless denoted by *

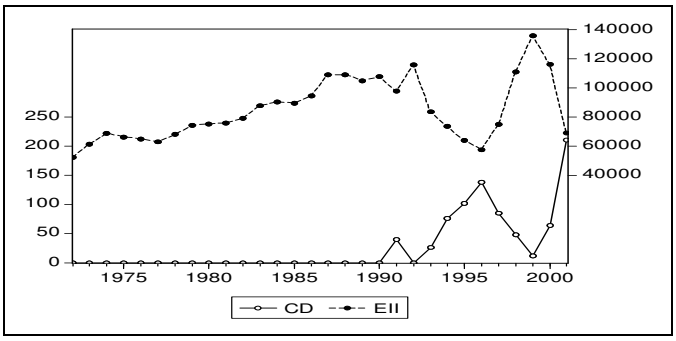
The equations were mostly in double log form for the added advantage of elasticity calculations. In some cases lagged dependent variables are included for the partial adjustment interpretation; long term elasticities can be readily calculated.

It is evident from Table 1 that all estimated slope coefficients have the correct sign. It is possible that the same exogenous variable may have a counter-intuitive effect on the same dependent variable for various groups. This is seen in female and male participation rates. An increase in average daily wage increases male participation rates but decreases female participation rates. This is commonly found in micro studies as an income effect; higher wages lead to a lesser need for the woman to work. The main features of the empirical findings are as follows.

Employment

Employment in Israel is inelastic with respect to wage ratio; if relative wages offered to Palestinians employed in Israel increase by 1%, employment in Israel would rise by only .014% (.025% in the long-run). This implies that employment in Israel is not strongly driven by relative wages. Although the wage offered to Palestinians has as much as a 50% premium in some years, there are other factors which take precedence, especially in recent years. Palestinian labour supply seems to be more influential, although the elasticity coefficient is less than one. Closure days affect employment in Israel negatively by a magnitude of -.004% per day (-.007% in the long-run). This figure is obviously under-estimated by the fact that for most of the period 1972 – 1990 closure days were zero. Taking the simple correlation coefficient for the entire period and for post 1990 the figures are -.21 and -.73, respectively. The stronger relation is clearly shown in figure 2 below:

Figure 2: Employment in Israel (right scale) and closure days (left scale)



Therefore, based on more recent history, the elasticity coefficient should be much higher.

The lagged dependent variable coefficient indicates that 60% of the gap in employment in Israel from its long run equilibrium value takes place in the first year, implying that it takes 1.7 years for the gap to be filled completely.

On the other hand, domestic employment is most sensitive with respect to own value added in industry, however inelastic. This implies that increase

in sectoral output by 1% leads to less than 1% increase in labour input. On the contrary, an increase in total value added by 1% leads to a 1.6% increase in service employment. The small wage elasticity in industry and construction also suggests that elasticity of demand for output in these sectors is small. Employment in agriculture seems to complement employment in services since there is a one-to-one correspondence between services employment and agricultural employment. Industrial employment, on the other hand, takes place at the expense of employment in agriculture. A 1% increase in industry employment (holding other variables constant) reduces agricultural employment by 0.75%. 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 from the employment in Israel coefficient in the services domestic employment equation; the coefficient is negative and less than one. Expansion in industrial employment may then take place at the expense of agricultural employment as employment substitution between industry in Israel is less likely. It is worth noting that construction employment is elastic with respect to population (the elasticity coefficient is 1.5%).

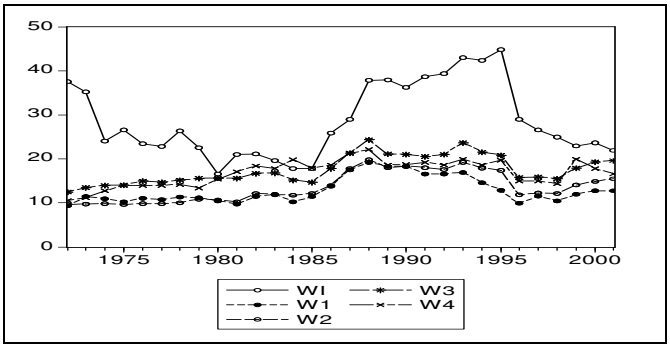
Labour Force Participation

The effect of the daily wage on participation is of minor economic significance. It affects males and females differently, as noted earlier. The male and female populations have the expected sign, holding male and female labour force constant. Increases in population leads to lower participation. Of special interest is the fact that the population effect is only marginally higher than the labour force effect for females. For males the reverse is true. This entails that in the long run increases in respective population result in higher female participation, but marginally lower male participation. Finally, male participation rates are slow in adjustment to their long-run value. The adjustment coefficient is .27, thus the speed of adjustment is roughly 3.5 years.

Wages

The wage equations relate sectoral wages to wages in Israel, unemployment rates, time and lags. Historically, construction (sector 3) had the highest wage among the four sectors; while agriculture (sector 1) had the lowest.

Figure 3: Daily wage in agriculture (W1), industry (W2), construction (W3), services (W4) and daily wage for Palestinians in Israel (WI) (/ US $)

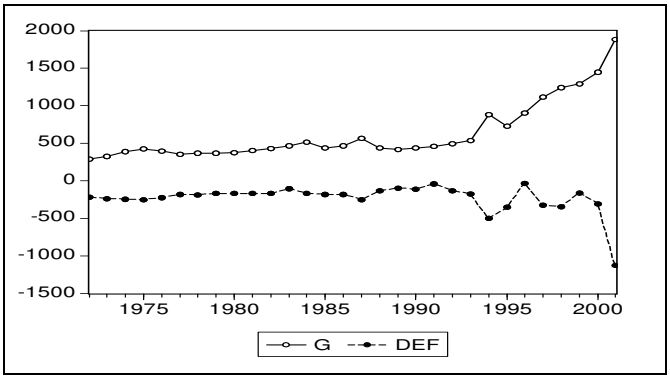


It is evident that the work in Israel premium fluctuates sharply, but has taken a severe reduction since 1996. Domestic wages are closer in their co-movements. However, regression results indicate that whenever the wage in Israel increases, domestic wages follow suit. This relation is not strong, which could be another reason behind the weak relationship between relative wage and employment in Israel. A one percent increase in wages in Israel leads to less than 1% increase in domestic wages. Wage elasticity with respect to unemployment is elastic for all sectors. Wages decrease by roughly 2% for percentage point increases in unemployment in agriculture and industry, and less so in construction and services. Over time, industry wages have had the highest growth average (0.023%) and the other three sectors grew at a lower average of 0.017% per year.

The Government

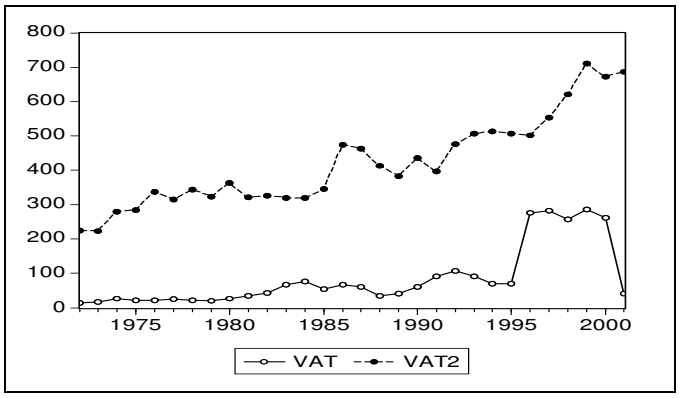
The estimated coefficients for the government revenue and expenditure relations all seem to carry the correct sign. One seemingly noticeable exception is the effect of lagged deficit on both government consumption and investment, implying fiscal discipline which requires adjustment in expenditure behaviour following an increase in the deficit. That is the case unless the macroeconomic environment does not necessitate otherwise. Figure 4 below shows the deficit and total government spending:

Figure 4: Government spending and the deficit



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. It is shown below that on average government consumption is higher since 1995 by 0.08%, owing mostly to government employment. The long term elasticity of government employment is about 0.56% as the partial adjustment coefficient is roughly 0.54%.

Figure 5: Actual and should be value added tax revenues



On the other hand, government investment is also higher on average since PNA rule by 0.75%. Investment adjustments to short-run deviations from its long-run values are quite speedy; it takes an average of 1.6 years to fill

the gap. This is in contrast to value added tax revenues which take almost 4 years. The value added tax is modelled here as a behavioural relation because there is interest in knowing whether there is room for improvement in tax collection practices or not. In the figure below, VAT is the actual value added tax revenues; VAT2 is the value added tax had it been 17% of value added. The difference is the projected leakage.

It is evident that the fiscal leakage is more than double the amount actually collected for many years. The estimated value added tax rate is 12.4% that is a 4.6 percentage point difference.

Table 2: Estimates of government block relations

Dependent variable	Explanatory variable	Coefficient	Std. error	Probability
Government consumption	Constant	2.2767	0.2677	0.000
	Government employment	0.3005	0.0309	0.000
	Lagged deficit	0.1594	0.0282	0.000
	PNA dummy	0.0825	0.0292	0.005
	Lagged dependent variable	0.4619	0.0543	0.000
Government investment	Constant	2.8145	0.2040	0.000
	Lagged deficit	0.3363	0.0713	0.000
	PNA dummy	0.7501	0.0851	0.000
	Lagged dependent variable	0.3879	0.0471	0.000
Value added tax	Value added	0.1237	0.0256	0.000
	Lagged dependent variable	0.7568	0.0461	0.000
Transfers from government	Constant	-5.9996	1.1298	0.000
	Per-capita disposable income	-1.1234	0.1855	0.000
	Lagged dependent variable	0.7664	0.0399	0.000
Other government revenues	Constant	-3.3380	0.5575	0.000
	Imports from the rest of the world	1.8172	0.0642	0.000
	Fiscal leakage	-0.5190	0.0827	0.000

All variables are in logs

Government transfers are elastic with regard to per-capita disposable income. Higher income reduces transfers by 1.1% for each 1% increase in per-capita income.

Finally, other government revenues depend heavily on imports from the rest of the world. The elasticity coefficient is 1.8% increase for each 1%

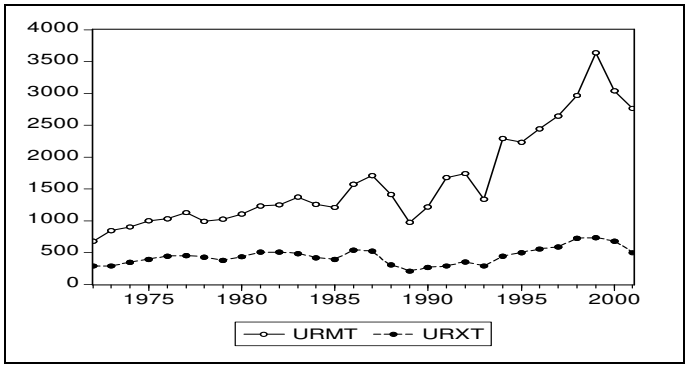
increase in imports from the rest of the world. Fiscal leakage has the proper sign, but remains marginally low.

Trade and National Accounts

Foreign Trade

The foreign trade section of the national accounts block consists of four estimated equations and two identities. 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. Trade with the rest of the world was actually derived as a residual. Although exports remained relatively stable over the entire span, imports have grown in importance. Figure 6 below shows that the current account has increased nearly fivefold during the period of the study. Closer inspection of the data shows that imports from Israel constitute the bulk of total imports. The data also reveal that imports from Israel have increased during the second Intifada, but not strongly enough to reverse the decline in imports from the rest of the world.

Figure 6: Imports, exports and the current account



The results of the estimated import demand and export supply equations are presented in Table 3 below. It is evident that all estimated coefficients have the expected signs except for three coefficients. The first and second are the effect of closure days on imports from Israel and the rest of the world. One would expect that when a closure is enforced, trade movement will be limited, but it seems that closures are meant to restrict labour movement only. The third is the effect of the exchange rate on exports to the rest of the world. It is shown that depreciation of the NIS reduces

exports to the rest of the world, which is opposite to what the theory predicts. However, it could be the case that while Israeli exports to ROW responds to changes in its own national exchange rate, Palestinian exports to the ROW does not increase owing to switch in export portfolio towards more exports to Israel and less to the ROW. In any events if this sign is correct, it may show that exchange rate policies designed and implemented by Israel do not help the Palestinian current account. Imports are elastic with respect to income, more so for imports from the rest of the world.

Higher domestic wages reduce exports to Israel as an indication of lack of competitiveness. The same also applies to the relative price; an increase in Palestinian relative prices by 1% leads to a reduction in exports to Israel by 0.13%. But it seems that Israeli demand for Palestinian exports is even more elastic with respect to income than is the case for Palestine. The elasticity coefficient is 2.7% increased exports to Israel for each 1% increase in Israel GDP.

Table 3: Regression results for trade data

Dependent variable	Explanatory variable	Coefficient	Std. error	Probability
Imports from Israel	Constant	-2.6205	0.8210	0.002
	Gross national income	1.1500	0.0992	0.000
	Import deflator	-0.0719	0.0823	0.383
	Closure days*	0.0042	0.0003	0.000
Imports from the rest of the world	Constant	-3.9011	0.9685	0.000
	Gross national income	1.2505	0.1172	0.000
	Import deflator	-0.0989	0.0913	0.279
	Closure days*	0.0011	0.0004	0.002
Exports to Israel	Constant	-21.0564	1.3214	0.000
	Daily wage	-1.2880	0.1420	0.000
	Palestinian/Israeli relative price	-0.1266	0.0136	0.000
	Israel GDP	2.7352	0.1226	0.000
	PNA and 93 dummy	-1.2562	0.0365	0.000
	Lagged dependent variable	0.1098	0.0195	0.000
Exports to the rest of the world	Constant	8.8909	0.5969	0.000
	NIS/$ exchange rate	-0.0575	0.0107	0.000
	Export deflator	-0.2101	0.1261	0.096
	Labour average product	1.4530	0.1378	0.000
	PNA dummy	1.2658	0.0774	0.000
	Lagged dependent variable	0.4138	0.0389	0.000

All variables are in logs unless denoted by an *

Finally, the arrival of the PNA has resulted into a shift of exports away from the Israeli markets to the rest of the world. On average, exports to Israel are lower for the post PNA period by 1.25%. At the same time, exports to the rest of the world are higher by 1.26% than the pre-PNA period.

National Accounts

The results of aggregate demand components are presented in Table 4 below. Of particular importance are the consumption, investment, net factor income and value added equations. Beginning with the consumption function, it is found that the marginal propensity to consume is 0.84, i.e. the marginal propensity to save from an additional dollar in income is only 16 cents. This is of particular interest as it relates to the size of the expenditure multiplier.

Table 4: Regression results of demand and price equations

Private consumption	Constant	-1.2209	0.2942	0.000
	Gross national disposable income	0.8425	0.0706	0.000
	Private consumption/overall price level	-0.4543	0.1148	0.000
	1994 dummy	-0.0081	0.0262	0.757
	Lagged dependent variable	0.2808	0.0628	0.000
Private investment*	Constant	-63.0648	48.6843	0.196
	Change in credit extensions*	0.7880	0.0731	0.000
	Value added*	0.2337	0.0214	0.000
	Lagged government investment*	0.1448	0.1194	0.226
GDP deflator	Constant	-0.4279	0.0307	0.000
	Consumer price index	0.0695	0.0055	0.000
	Import deflator	0.9082	0.0384	0.000
Consumer price index	Constant	-1.8949	0.7154	0.008
	Israel price index	1.2123	0.1464	0.000
	Labour average product	-0.6947	0.1563	0.000
	1984 dummy	1.0290	0.0813	0.000
	Lagged dependent variable	0.6977	0.0280	0.000
Private consumption deflator	Constant	-0.1687	0.0267	0.000
	Consumer price index	0.0298	0.0047	0.000
	Lagged dependent variable	0.6835	0.0309	0.000

Export deflator	Constant	0.0216	0.0125	0.084
	GDP deflator	0.1800	0.0216	0.000
	NIS/$ exchange rate	-0.0109	0.0020	0.000
	Export deflator	0.6692	0.0255	0.000
Import deflator	Constant	0.0206	0.0152	0.176
	Israel price index	0.1352	0.0266	0.000
	Lagged dependent variable	0.6785	0.0316	0.000
Net factor income	Constant	-17.3932	1.3566	0.000
	Employment in Israel	2.0400	0.1105	0.000
	Time	-0.0639	0.0149	0.000
	Wage in Israel	0.5051	0.0866	0.000
	First order autocorrelation	0.7275	0.0553	0.000
Value added	Private consumption	0.7951	0.0353	0.000
	Government consumption	0.2616	0.0439	0.000
	Total investment	0.0182	0.0475	0.702
	Total exports	0.2454	0.0361	0.000
	Total imports	-0.2196	0.0725	0.003

*All variables are in logs unless denoted by an *

The price elasticity of consumption demand is less than one; this suggests that consumer spending expenditure will increase when the relative price of consumables increases. Consumption habits are also significant in explaining current consumption; the partial adjustment coefficient is 0.72, implying that deviation from long run desirable consumption does not last for more than a year and a half.

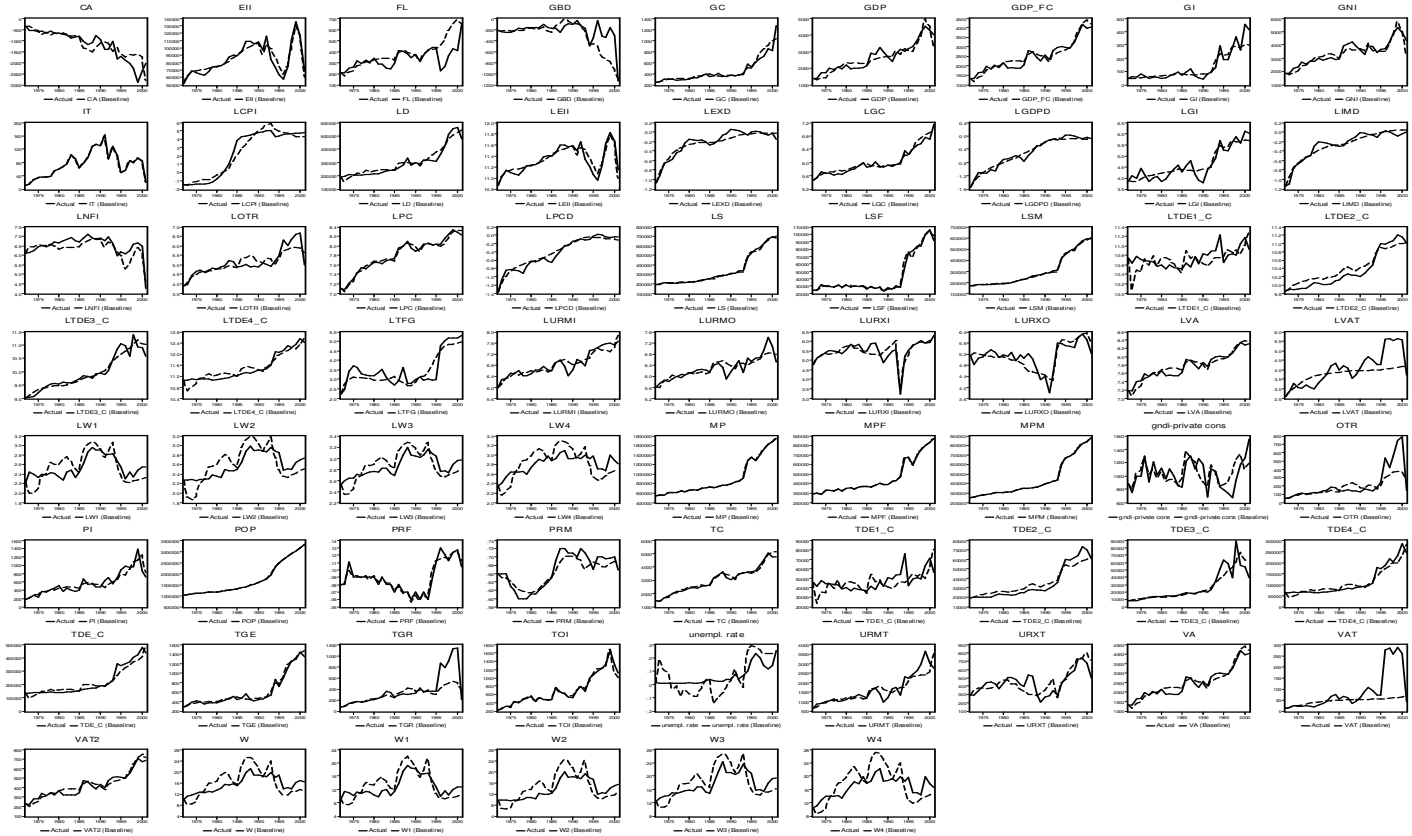
The private investment relation was one of the most difficult to fit. It was found that the interest rate was neither significant statistically nor economically in explaining investment. The estimated coefficients are slopes, not elasticities. Private investment is found to be positively and significantly influenced by the change in credit extensions and value added. Its adjustment is quite speedy (1.1 years).

Net factor income has experienced negative growth over the sample period. As a matter of fact, its growth was positive from 1972-1989. The beginning of the first Intifada and later the second Intifada reversed the growth of net factor income. This note is empirically supported by the elasticity of NFI with respect to employment in Israel (2%) and wages in Israel (0.5%).

The value added relation is temporarily placed in the model to bridge the policy variables to employment. Naturally, this is supposed to be through the input-output sub-routine currently being processed. Interestingly enough, not only do exports and imports have the opposite signs; but are also nearly equal in magnitude. This leaves private consumption and government consumption as the major determinants of value added. Investment is oddly not significant in the statistical or economic sense.

In-sample simulation

In order to asses the model's ability to track the endogenous variables an in-sample simulation was performed, and comparisons of the actual series with the baseline are shown in the Figure 7 overleaf. Most variables track history well; a few exceptions remain however, among those are the other government revenues towards the end of the period and value added tax revenues. This consequently affected the government budget deficit. Also unemployment forecasts seem to follow the actual series, but not closely enough. This stems from labour demand and labour supply relations. In general, the figure below has continuous lines (actual series) and dashed ones (baseline).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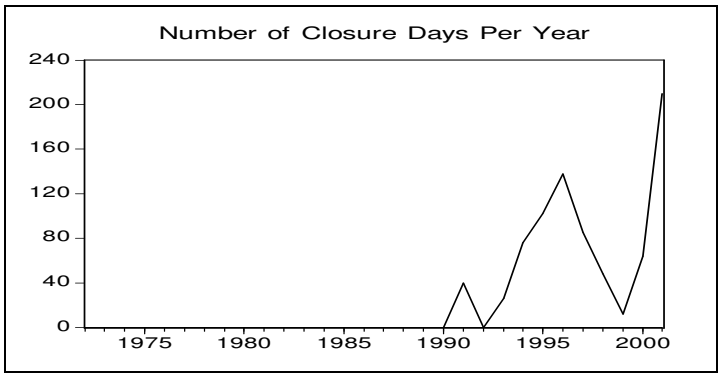
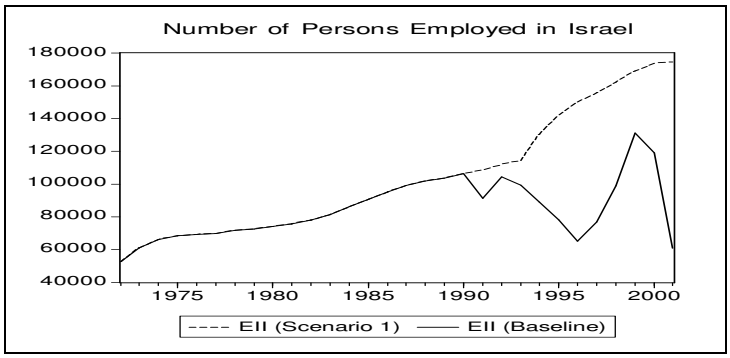
SIMULATION ANALYSIS

Trial One: Testing the Model

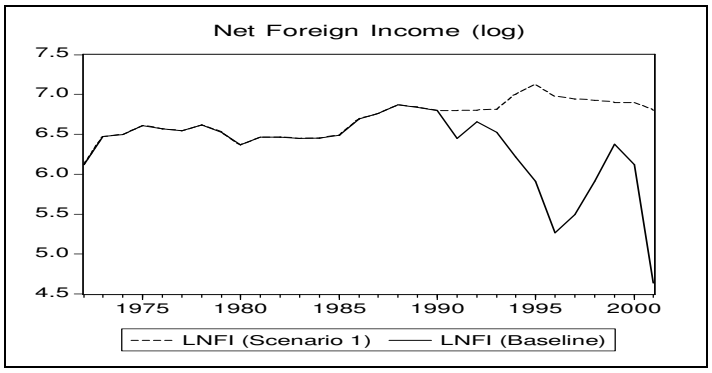
An in-sample-simulation is made to assess the model's ability to run policy scenarios. This first test attempted to analyse the impact of reduced closure. The simulation is based on going back in time (in-sample), and reducing the number of closure days from 1990 onward from the historically recorded levels to zero per year.



As a result, employment in Israel increases from about 60,000 to more than 170,000 persons.



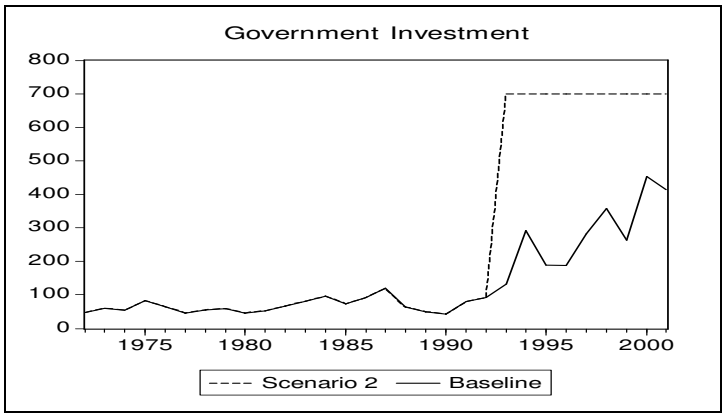
Net foreign income increases when compared to the decline under closure.

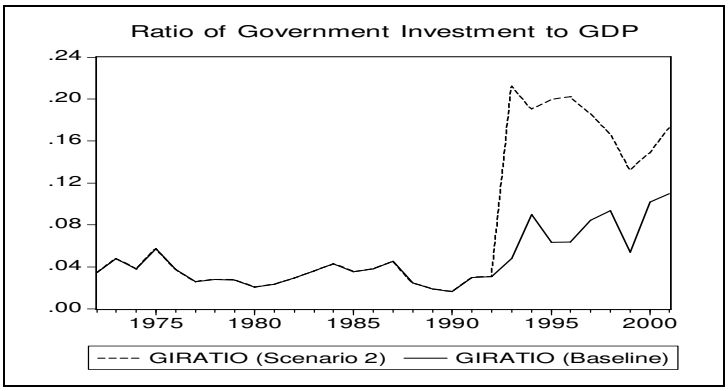


These direct results in turn have further consequences. For example, increased employment in Israel draws employment out of domestic sectors and raises domestic wages, reducing the competitiveness of Palestinian producers on one hand. On the other, reduced closure might be expected to improve Palestinian producer's accessibility to input and output markets, improving their production capabilities. Elsewhere, investment can respond positively to the influx of money earned in Israel, but might depend on the propensity for increased consumption of imports and the leakage of the income back into Israel. Future stages of model simulation will probe deeper into the complexities of these and similar issues in order to better assess their implications for policy. The model simulation helps enrich the analyst's outlook by simplifying the many effects and cross-effects between various economic aggregates and effectively arriving at realistic outcomes.

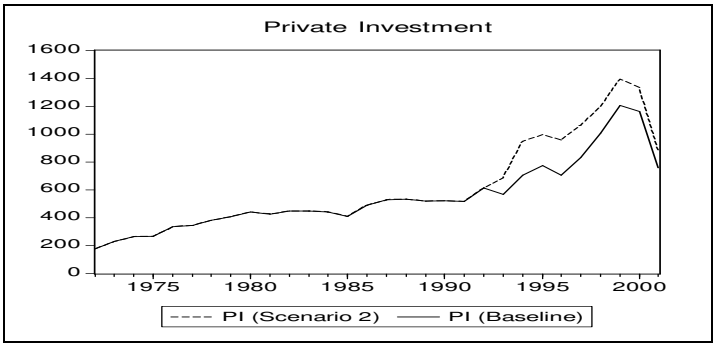
Trial Two: Testing the Model

Raising government investment from its historically recorded levels to an arbitrarily high 700 million dollars per year beginning in 1993 - without targeting it to specific sectors or production activities - shows up as a one-time jump in relation GDP, followed by a decline then recovery as GDP grows then falls in the crisis of 2000.

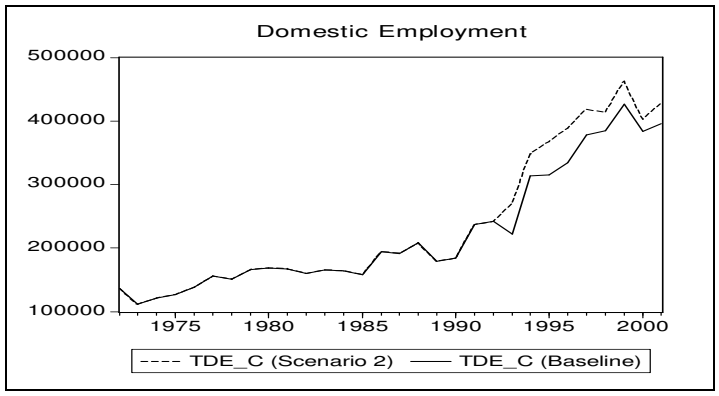




Private investment is crowded in by government investment, registering an increase followed by a fall in 2000.



Domestic employment increases by an average of 38,000 persons, raised by both public and private investment, causing the unemployment rate to fall by an average 7 percentage points.



Indeed these tangible results are costly with massive government expenditures, but their impact nevertheless dies out with the closure crisis of 2000. Groping with relationships of the model that could provoke a more lasting and profitable impact for both the private and household sectors could become one of the central tasks of future model simulation exercises.

The previous analysis shows how the model could be use to assess alternative fiscal, investment, trade and labour policies. The focus of Phase II of the project will be on applying the model to assess alternative future Palestinian economic policies and institutional frameworks.

MONETARY BLOCK

Introduction

Owing to the unavailability of data, the monetary block was dealt with in isolation from the other blocks of the model, and its results were not integrated in the simulation presented earlier.

At the time of the Arab-Israeli war in June 1967, there were 8 Jordanian and foreign owned banks with 26 branches in the West Bank, and 3 Egyptian and foreign-owned banks with 4 branches in Gaza. These banks were operated under the Jordanian and Egyptian banking Laws[14]. These banks immediately disappeared as a result of the occupation and the set of military measures implemented against the Palestinian economic institutions. The only banks licensed to operate in WBGS were Israeli banks. Over a short period of time the number of Israeli banks in the WBGS amounted to 6 banks with 39 branches. The Israeli banks continued to overwhelm the Palestinian financial sector until the first Intifada, when these banks closed in 1988.

The post war period witnessed several unsuccessful rounds of negotiations which were aimed at reopening the banks that had been closed at the time of the 1967 war. After several years of intense lobbying and negotiations, the Bank of Palestine was licensed to operate in Gaza, but not in Khan Yunnis. The number of branches of this bank gradually increased to amount to 9 at the end of 1993. Furthermore, the Cairo-Amman bank was also allowed to reopen in Nablus in 1986, and then allowed to operate in other Palestinian cities. The number of its branches reached 8 at the end of 1993.

Owing to the deteriorating business environment during the years of Intifada, the high risk associated with the occupation, and the Israeli restrictions imposed on the operations of non-Israeli banks in the occupied territories, these banks followed very conservative lending policies and provided limited banking services to the Palestinian economy. In general, the functions of banks were limited to facilitating trade transactions and serving as savings depository institutions.

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[14] World Bank, Developing the Occupied Territories, An investment in Peace, Private Sector Development.

After 1994 more attention was given to the financial sector. The first step in this direction was the establishment of the Palestinian Monetary Authority (PMA) in December 1994. Despite the very minor role assigned to the PMA and the high risk remaining associated with the peace process, it succeeded in licensing a large number of banks to operate in WBGS. During the period from 1994 until 2004 the number of banks licensed to operate in the Palestinian territories increased to 21 banks, of which 10 were national banks (62 branches), 10 Arab banks (71 branches), and 1 foreign bank (1 branch)[15].

During the period from December 1996 until August 2004 the total assets of banks increased from US$ 2200.4 million to US$ 4866.8 million. At the same time the credit facilities increased from US$423.8 million to US$1313.2 million. Likewise, the deposits of residents registered a tremendous increase from US$1707.5 to US$3751.7 million. The credit to deposit ratio increased from 26.8% at the end of 1996 to 42.6% in September 2000, and then dropped to 37.2% in August 2004, reflecting the deterioration of the economic environment resulting from Israeli closure and incursion. The credit-to-deposit ratio is very low compared to all neighbouring countries.

Due to the absence of a national currency and the weak monetary policy practiced by the PMA, more emphasis will be directed to the impact of credit facilities on real economic activity. The bank-lending channel is based on the view that banks play a special role in the financial system because they are well-suited to solve asymmetric information problems in credit markets (Bernanke and Blinder 1992, Meltzer 1995, Panagopoulos and Spiliotis 1998). The importance of this role arises from the fact that most of borrowers will not have access to the credit market unless they borrow from banks. As long as there is no perfect substitutability of retail bank deposits with other sources of funds, the bank-lending channel of monetary transmission operates as follows (Mishkin 1998): Expansionary monetary policy, which increases bank reserves and bank deposits, increases the quantity of loans available. This increase in loans, in turn, will cause investment spending to rise. Schematically, the monetary policy effect is

$$M\uparrow \Rightarrow \text{bank deposits} \uparrow \Rightarrow \text{bank loans}\uparrow \Rightarrow I\uparrow \Rightarrow Y\uparrow$$

[15] Palestinian Monetary Authority, Statistical bulletin, Issue (75), September 2004.

An important implication of the credit view is that monetary policy will have a greater effect on expenditure by smaller firms, which are more dependent on bank loans, than it will on large firms, which can access the credit markets directly through stock and bond markets. This implication can also be generalised to less developing countries such Palestine, in which firms are more dependent on bank loans than firms in developed countries.

The purpose of this section is to examine the dynamic relationship between banks lending, and unemployment rate, and banks lending and prices using Palestinian quarterly data for the period 01.1997-02.2004, when data on the unemployment rate was available. Bernanke and et al. (1996) argue that the role of banks in the transmission of monetary policy relates to both their liability and assets. In a monetary contraction, for example, bank reserves decrease and, owing to reserve requirements, bank deposits fall. If the decrease in bank deposits is not offset by other funds, which are not subject to reserve requirements, or decrease in securities, this will result in a decrease in bank loans. If bank loans fall, the monetary policy reduces both investment and consequently economic activity. The existence and effectiveness of this channel depends on two factors: (1) Bank loans and securities must be an imperfect substitute for some borrowers, or some borrowers are bank-dependent; (2) A central bank must constrain the supply of bank loans.

As noted by Stiglitz (1994), due to the poor accounting disclosures and credit rating agencies, asymmetric information seems to be prevalent in the financial markets of most developing countries. With this situation, most classes of borrowers find it difficult to issue securities. As a result of the predominant role of banks in developing countries and their ability to overcome the asymmetric information problem in credit markets, many borrowers are substantially bank-dependent.

The Econometric Methodology

In recent years, and especially in the last decade, increasing attention has been given to the cointegration technique developed by Johansen (1988), and Johansen and Juselius (1990). The importance of this technique arises from the fact that much of ‘classical’ econometric theory has been based on the assumption that the observed data come from a stationary process (Hendry and Juselius 2000). Assuming stationarity when that is false can induce serious statistical distortion. The distortion here implies that most

of the statistics calculated from the regression involving the non-stationary time-series data do not follow the standard distributions. As an example, the F-statistics in the regression model involving non-stationary regressors has a substantial rightward shift under the null hypothesis of no causality. Thus the significance of the test is overstated and a spurious regression result is obtained (Chang 2002).

In this paper, the stationarity properties of the series (say Y) and the order of its integration will be empirically investigated using the Augmented Dickey-Fuller (1981) (ADF) test. The stationarity can be examined by testing the presence of unit roots in time series-data. The test for a stationarity is the t-statistic θ in the regression model

$$\Delta Yt = \delta 0 + \delta 1t + \theta Yt - 1 + \Sigma ni\varphi i\Delta Yt - i + \eta t \qquad (1)$$

where Δ is the first-difference operator, Yt is the series under consideration, ηt is a stationary random error, t is the time trend, $\delta 0$, $\delta 1$, θ, and φi are parameters to be estimated. The hypothesis of non-stationarity is rejected when θ is significantly negative. Here n must be selected large enough to ensure that ηt is a white noise. In this study, the Akaike information criterion (AIC) is used to determine the appropriate lag length n that will be enough to ensure the stationarity of the error term ηt. The AIC is defined as

$$AIC = T*\ln (ESS/T) + 2\ k \qquad (2)$$

where T is the sample size, ESS is the sum of squared error of the regression in equation 1, and k is the number of parameters, k = n + 3. The appropriate lag length selected by estimating equation 1 over a selected grid of values of n and finding that value of n at which AIC attains its minimum.

Once a unit root has been confirmed for each data series, the question is whether there exists some long-run equilibrium relationship among the variables in question. The existence of a long-run equilibrium relationship between economic variables is referred to as cointegration.

The second step in the analysis begins by examining the long-run equilibrium relationship among variables. There are many possible tests for considering this issue (Engle and Granger 1987, and Engle and Yoo 1987). The most reliable of these tests is the multivariate test based on the

vector autoregressive representation (VAR) suggested by Johansen (1988). The Johansen method applies the maximum likelihood procedure to determine the presence of cointegrating vectors in non-stationary time series.

Following Johansen (1988) and Johansen and Juselius (1990), the likelihood ratio will be used for testing the number of cointegrating vectors (or the rank of π). The likelihood ratio statistic for the trace test is

$$LHR = - \; T\Sigma_{i=r+1}^{p-2} \text{Ln}\,(1 - \hat{g}\, i) \qquad (3)$$

where $\hat{g}\, r+1, \ldots., \hat{g}\, p$ are the estimated p-r smallest Eigenvalues. The null hypothesis to be tested is that there are at most r cointegrating vectors. That is, the number of cointegrating vectors is less than or equal to r, where r is 0, or 1 (in this study). In each case, the null hypothesis is tested against the general alternative of r + 1 cointegrating vectors.

It is clear that the cointegration tests are quite sensitive to the choice of lag length used in carrying out such tests. In this study the criterion suggested by Schwarz (1978) will be used to select the number of lags required in estimating the cointegration test. The Schwarz criterion (SC) is defined as follows:

$$SC = \text{Ln}\,\tilde{O}n2 + n\,\text{Ln}\,(T)/T \qquad (4)$$

where $\tilde{O}n2$ is the maximum likelihood estimator of the residual variance obtained from a model with lag length n, that is $\tilde{O}n2 = SSEn/T$, T is the sample size, and n is the number of lags selected to numerically minimise SC in equation (4).

Given the results of the cointegration tests, the procedure is as follows: when the variables are not cointegrated, the causality tests are conducted are conducted by running the standard Granger regressions without the error correction terms. However, if the cointegration hypothesis is not rejected, the error-correction model is applied for determining the causality. The cointegrated error correction model of between two bivariate time series, Y1t and Y2t, is as follows:

$$\Delta LY1t = \beta 1 + \theta i11(B)\Delta LY1t + \theta j12(B)\Delta LY2t + \phi 1EC1t\text{-}1 + e1t \qquad (5)$$
$$\Delta LY2t = \beta 2 + \theta i21(B)\Delta LY1t + \theta j22(B)\Delta LY2t + \phi 2EC2t\text{-}1 + e2t$$

where EC represents the error correction term, θ(B) is convergent rational functions in B, the backshift operator (BiYt = Yt-i), and e1t and e2t are white noise innovations.

In this study, we use three monetary aggregates along with unemployment rate and consumer price index (1997= 100). The monetary aggregates are: Total credit facilities (TCF), Credit facilities to the private sector (PCF), and banks' balance abroad (BBA). All figures are measured in US million dollars. These variables come from the Palestinian Monetary Authority, Statistical Bulletin, various issues. The unemployment rate and the consumer price index come from the publication of the Palestinian Central Bureau of Statistics.

Empirical Findings

Table 1 reports the results of non-stationarity tests for all data series using the ADF test. The regression models are estimated using 6 lagged differences. It is clear that non stationarity cannot be rejected for the levels of all variables at the 5% level, except for LPCF. In contrast, when the data are differenced (neither intercept nor linear trends are included) nonstationarity cannot be rejected for LTCF and LBBA for the first difference. These results indicate that LPCF is integrated of order 0, LU and LP are integrated of order 1, and LBBA and LTCF are integrated of order 2. Table 1 also reports the minimum AIC(n) which provides the appropriate order of the autoregressive process, n, in equation 1.

Table 1: Augmented Dickey-Fuller Unit Root Tests

Variable	Level					
	Lag Order (n)	ADF	Min AIC(n)	Critical ADF		
				1%	5%	10%
LTCF	4	-2.78	-9.06	-4.37	-3.60	-3.24
LPCF	2	-4.27**	-9.22	-4.34	-3.59	-3.23
LBBA	4	-2.43	-9.81	-4.37	-3.60	-3.24
LU	1	-2.16	-2.77	-4.32	-3.58	-3.22
LP	6	-2.70	-9.64	-4.42	-3.62	-3.25

Variable	Level					
	Lag Order (n)	ADF	Min AIC(n)	Critical ADF		
				1%	5%	10%
	First Difference					
LTCF	3	-1.49	-2.66	-1.96	-1.96	-1.62
LPCF	---	---	---	---	---	---
LBBA	3	-0.92	-9.53	-2.66	-1.96	-1.62
LU	1	-4.0***	-2.71	-2.65	-1.95	-1.62
LP	1	--3.48***	-8.00	-2.65	-1.95	1.62
	Second Difference					
LTCF	5	-3.99***	-8.76	-2.68	-1.96	-1.62
LPCF	---	---	---	---	---	--
LBBA	6	-2.01**	-9.66	-2.68	-1.96	-1.62
LU	---	---	---	---	---	---
LP	---	---	---	---	---	---

(***), (**), and (*) denote significance at the 1%, 5%, and 10% level, respectively.

Since a unit root has been confirmed for most of the data series, we proceed to examine long-run effect of monetary aggregates on unemployment and price level. The cointegration test is carried out on the assumption of a quadratic trend in the data. To compare the robustness of the results across different lag lengths, the cointegration tests were estimated using 3 different lag structures (1-2, 1-3, and 1-4). As shown in table 2, the null hypothesis of no cointegration versus the alternative of one cointegration vector is rejected when the lag length 1-3 is used. This finding suggests that the unemployment rate and the monetary aggregates selected would not move too far away from each other.

Table 2: Johansen Tests for Cointegration of Monetary Aggregates and Unemployment Rate

Variables	Lag Interval	Eigenvalue	Likelihood Ratio	ADF Critical Value		H_0
				5%	1%	
LTCF,LU	1 – 2	0.96	92.45**	18.17	23.46	0
		0.16	4.72*	3.74	6.40	1
	1-3	0.42	21.90*	18.17	23.46	0
		0.26	7.66**	3.74	6.40	1
	1-4	0.43	14.88	18.17	23.46	0
		0.03	0.85	3.74	6.4	1
LPCF, LU	1-2	0.52	24.93**	18.17	23.46	0
		0.17	5.12*	3.74	6.40	1
	1-3	0.47	22.91*	18.17	23.46	0
		0.22	6.51**	3.74	6.40	1
	1-4	0.51	24.43**	18.17	23.46	0
		0.24	6.80**	3.74	6.40	1
LBBA, LU	1-2	0.24	12.23	18.17	23.46	0
		0.17	4.95*	3.74	6.40	1
	1-3	0.37	20.68*	18.17	23.46	0
		0.28	8.48**	3.74	6.40	1
	1-4	0.47	24.44**	18.17	23.46	0
		0.29	8.41**	3.74	6.40	1

(**), and (*) denote significance at the 1%, and 5%, respectively.

Similarly, Table 3 reports the cointegration tests of the monetary aggregates and price level. The null hypothesis of no cointegration versus the alternative of one cointegration vector is also rejected when the lag lengths (1 -4) is used. In more specific words, the results reported in tables 2 and 3 support the viewpoint that an increase in the quantity of credit facilities will cause investment to rise, hence reducing unemployment and rising price level. This finding is quite consistent with the hypothesised relationship which asserts the importance of the banks' credit channel that had been discussed above.

Table 3: Johansen Tests for Cointegration of Monetary Aggregates and Price Level

Variables	Lag Interval	Eigenvalue	Likelihood Ratio	ADF Critical Value		H_0
				5%	1%	
LTCF,LP	1 – 2	0.96	90.60**	18.17	23.46	0
		0.21	6.23*	3.74	6.40	1
	1-3	0.33	15.67	18.17	23.46	0
		0.19	5.39*	3.74	6.40	1
	1-4	0.47	21.62*	18.17	23.46	0
		0.21	5.88*	3.74	6.40	1
LPCF, LP	1-2	0.67	37.55**	18.17	23.46	0
		0.25	7.66*8	3.74	6.40	1
	1-3	0.56	25.16**	18.17	23.46	0
		0.14	3.80*	3.74	6.40	1
	1-4	0.62	27.24**	18.17	23.46	0
		0.12	3.15	3.74	6.40	1
LBBA, LP	1-2	0.31	14.72	18.17	23.46	0
		0.16	4.77*	3.74	6.40	1
	1-3	0.75	40.17**	18.17	23.46	0
		0.15	4.12*	3.74	6.40	1
	1-4	0.55	29.27**	18.17	23.46	0
		0.32	9.54**	3.74	6.40	1

(**) and (*) denote significance at the 1%, and 5% level respectively.

The previous analysis confirms the existence of one cointegrating equation along with the nonstationarity of most of the most data series used in this study. This finding, of course, allows us to employ the error correction model (ECM) technique to efficiently examine the short-run and long-run relationships between monetary aggregates and unemployment, and monetary aggregates and prices. The ECM model is estimated using 2 lag lengths on each endogenous variable in addition to an intercept, and a dummy variable to reflect the impact of the Israeli closures and incursions (i.e. D1 = 1for the period, and D1 = 0 otherwise). As shown in table 4, the coefficient of EC (in the unemployment equation) turns out to be statistically negative at 1% significance level, confirming the existence of

a long-run negative relationship between credit facilities and unemployment. Conversely, banks' balance abroad turns out to have a positive long-run impact on unemployment which is statistically significant at the same level of significance. These results are very consistent with the hypothesised relationship.

Table 4: Error Correction Model Estimation for Monetary Aggregates and Unemployment Rate

Total Credit (LTCF) and Unemployment (LU)			**Credit to Private Sector (LPCF) and Unemployment (LU)**			**Banks' Balance abroad (LBBA), and Unemployment (LU)**		
Error Correction	**LTCF**	**LU**	**Error Correction**	**LPCF**	**LU**	**Error Correction**	**LBBA)**	**LU**
CE	-0.14 (1.66)	-1.37 [a] (6.78)	CE	-0.01 (0.84)	-1.23 [a] (8.87)	CE	-0.04 (1.33)	3.50 [a] (8.63)
LTCF(-1)	-0.53[a] (3.62)	0.81 (2.35)	LPCF(-1)	0.16 (0.75)	1.80 (0.91)	LBBA(-1)	0.56 [a] (4.13)	-0.49 (0.27)
LTCF(-2)	-0.21 (1.45)	0.21 (0.63)	LPCF(-2)	0.37 (1.89)	0.84 (0.48)	LBBA(-2)	-0.34 [b] (2.53)	-2.58 (1.42)
LU(-1)	0.02 (0.43)	-0.17 (1.40)	LU(-1)	-0.01 (0.66)	-0.15 (1.47)	LU(-1)	-0.00 (0.21)	-0.13 (1.29)
LU(-2)	0.01 (0.22)	-0.14 (1.19)	LU(-2)	-0.01 (0.56)	-0.11 (1.13)	LU(-2)	0.00 (0.26)	-0.07 (0.71)
C	0.03 (0.77)	-0.60[a] (6.76)	C	0.00 (0.49)	-0.63 [a] (7.26)	C	0.01 [b] (2.19)	-0.56[a] (7.65)
D1	0.04 (0.73)	1.05 [a] (7.36)	D1	0.01 (0.72)	1.05 [a] (9.37)	D1	-0.01 (0.71)	1.11 [a] (9.32)
Summary Statistics			Summary Statistics			Summary Statistics		
R^2	0.54	0.74	R^2	0.30	0.83	R^2	0.59	0.84
LH	41.13	18.12	LH	83.85	24.37	LH	94.80	24.54
AIC	-5.37	-3.66	AIC	-8.53	-4.12	AIC	-9.34	-4.14
SC	-5.03	-3.32	SC	-8.19	-3.69	SC	-9.00	-3.80

(a) and (b) denote significance at the 1%, and 5%, respectively.

With respect to the long-run relationship between monetary aggregates and price level, the results provide no support for the hypothesis that an increase in credit facilities will result in an increase in prices, especially when total credit is used, where the sign of the coefficient (CE) is negative but statistically insignificant. However, when credit facilities to the private

sector are used the result is very consistent with the hypothesised relation, but only significant at 10% significance level. The banks balance abroad appears to have a positive and significant impact on prices at 5%.

Table 5: Error Correction Model Estimation for Monetary aggregates and Price Level

Total Credit (LTCF) and Price Level (LP)			**Credit to Private Sector (LPCF) and Price Level (LP)**			**Banks Balance abroad (LBBA), and Price Level (LP)**		
Error Correction	**LTCF**	**LP)**	**Error Correction**	**LPCF)**	**LP**	**Error Correction**	**LBBA**	**LP**
CE	-0.88 [a] (15.82)	-0.02 (0.52)	CE	-0.31 [a] (4.88)	0.20 (1.80)	CE	-0.08 (1.03)	0.32 [b] (2.71)
LTCF(-1)	-0.05 (0.92)	-0.02 (0.49)	LPCF(-1)	0.14 (0.94)	0.10 (0.38)	LBBA(-1)	0.61 [a] (4.85)	0.21 (1.11)
LTCF(-2)	-0.03 (0.56)	-0.10 [a] (3.37)	LPCF(-2)	0.47 [a] (3.98)	-0.26 (1.22)	LBBA(-2)	-0.30 [b] (2.11)	-0.53 [b] (2.40)
LP(-1)	-0.82 [a] (3.35)	0.10 (0.65)	LP(-1)	-0.63 [a] (5.21)	0.14 (0.65)	LP(-1)	0.10 (0.84)	0.03 (0.15)
LP(-2)	-0.64 [b] (2.77)	-0.56 [a] (3.77)	LP(-2)	-0.25 [b] (2.09)	-0.14 (1.59)	LP(-2)	-0.03 (0.24)	-0.43 [b] (2.51)
C	0.01 (1.34)	0.02 [a] (4.04)	C	0.01 (1.29)	0.03 [b] (2.61)	C	0.00 (1.02)	0.02 [a] (4.12)
D1	0.07 [a] (7.23)	-0.01 (1.12)	D1	0.02 [a] (3.29)	-0.02 (1.93)	D1	0.01 (1.63)	-0.01 (1.17)
Summary Statistics			Summary Statistics			Summary Statistics		
R^2	0.96	0.58	R^2	0.73	0.39	R^2	0.60	0.49
LH	74.51	86.41	LH	96.52	81.19	LH	95.17	83.67
AIC	-7.84	-8.72	AIC	--9.47	-8.33	AIC	-9.37	-8.52
SC	-7.50	-8.38	SC	-9.13	-8.00	SC	-9.03	-8.18

(a) and (b) denote significance at the 1%, and 5%, respectively.

Concluding Remarks

Most empirical macro-studies using time-series data have been based on the assumption that the observed data come from a stationary process (Hendry and Juselius 2000). Assuming stationarity when that is false can induce serious statistical distortion. The distortion here implies that most of the statistics calculated from the regression involving the non-stationary

time-series data do not follow the standard distributions. Thus the significance of the test is overstated and a spurious regression result is obtained (Chang 2002). This study is the first to employ the error correction approach in investigating the long-run impact of credit facilities and banks balance abroad on unemployment rate and price level using Palestinian quarterly data.

The results obtained confirm the existence of one cointegrating equation along with the nonstationarity of most of the data series used in this study. This finding, of course, allows us to employ the error correction model (ECM) technique to efficiently examine the short-run and long-run relationships between monetary aggregates and unemployment, and monetary aggregates and prices. In this study, we specified an error correction model to estimate the short-run and long-run response of unemployment rate and price level to some monetary aggregates. The results provide evidence showing that both total credit facilities and credit facilities to the private sector turn out to have a negative and significant impact on unemployment rate, while banks balance abroad turns out to have a positive and significant impact on unemployment rate. This finding is consistent with the view of banks lending channel. On the other hand, credit facilities show no significance impact on prices, while banks balance abroad provides evidence supporting its positive impact on prices.

MOVING AHEAD

In the next phases of the project, the project team is planning the following activities: (expected dates are in brackets):

1. Final calibration of the model and the production of the out-of-sample baseline scenario up to 2015 for both the West Bank and Gaza.
2. Production of three out-of-sample policy scenarios: (i) labour, (ii) trade, and (iii) investment and fiscal policies.
3. Formulation of an economic policy package to reflect the outcome of the three policy scenarios.
4. Production of a policy document/paper.
5. Workshop to discuss the three scenarios, the policy paper and alternative economic policies available to the Palestinian National Authority. To widen the debate on policy making and assisting in formulating a Palestinian development vision it is hoped that this workshop will be open to a wide range of participants from the government, NGOs, private sector and academia.
6. Training Programme for staff from the beneficiaries of the project: Ministries of Labour, National Economy, Finance, and Planning, the PCBS, and the Palestinian Monetary Authority. The objective of this programme is to train staff from these institutions to be able to use the model for their own policy analysis. It is therefore requested of all beneficiary institutions to start considering one or two of their staff to take part in the training program.
7. Housing or installing the model in the beneficiary institutions for their own use.

BIBLIOGRAPHY

Acocella, N., (1998), "The Foundations of economic policy: Values and techniques", Cambridge University Press

Al-Naqib, F., (1996), "A preliminary evaluation of the tax system in the West Bank and Gaza Strip", Palestine Economic Policy Research Institute (MAS), Ramallah

Arnon, A., Israel Luski, Avia Spivak, and Jimmy Weinblatt (1997), "The Palestinian Economy Between Imposed Integration and Voluntary Separation", Social, economic and political studies of the Middle East, v (60), pp. 187 – 23.

Astrup, C. and S. Dessus "Exporting Labour or Goods? Long-term Implications for the Palestinian economy", Middle East and North Africa and Economic Development group, The World Bank, 2001.

Astrup, C. and S. Dessus. "Trade Options for the Palestinian Economy: Some Orders of Magnitude", Middle East and North Africa Working Paper Series no. 21, 2001, the World Bank.

Baums, R., (1989), "An econometric model of the West Bank", Tel Aviv University

Bernanke, B., and A. Blinder. (1992). "The Federal Funds Rate and the Channel of Monetary Transmission." *American Economic Review* 82(4): 901–921.

Bernanke, B., M. Gertler and S. Gilchrist. (1996). "The Financial Accelerator and the Flight to Quality." *Review of Economics and Statistics* 78(1): 1–15.

Chang, T. (2002). "An Econometric Test of Wagner's Law for Six Countries Based on Cointegration and Error-Correction Modelling Techniques." *Applied Economics* 34: 1157–1169.

Cox D., and Harris R., "Trade Liberalisation and Industrial Organisation : Some Estimates for Canada". Journal of Political Economy 93 (February 1985), pp. 115 - 145.

Daoud, Y., (2002), "Government Expenditure Policies and its Consistency with Private Sector Development Needs", Palestine Trade Centre (PALTRADE), Ramallah

Daoud, Y., (2003), "Financial reform in the Palestinian National Authority: An assessment", Health, Development, Information, and Policy Institute, Ramallah

Dickey, D., and W. Fuller. (1981). "Likelihood Ratio Statistics for Autoregressive Time Series with A Unit Root." *Econometrica* 49: 1057 – 1072.

El-Jaafari, M., (1998), "Macroeconomic Policies for Employment Promotion", International Labour Office and Ministry of Labour.

Engle, R., and B. Yoo. (1987). "Forecasting and Testing in Co-integrated Systems." *Journal of Econometrics* 35:143 – 59.

Engle, R., and C. Granger. (1987). "Co-integration and Error- Correction Representation, Estimation and Testing." *Econometrica* 55:251–76.

Fishelson, G., (1989), "An econometric model of the Gaza Strip", Tel Aviv University

Hendry, D., and K. Juselius. (2000). "Explaining Cointegration Analysis: Part 1." *The Energy Journal* 21(1): 1– 42.

Johansen, S. (1988). "Statistical Analysis of Cointegration Vectors." *Journal of Economics Dynamic and Control* 12: 231-54.

Johansen, S., and K. Juselius. (1990). "Maximum Likelihood Estimation and Inference on Cointegration – with Applications to the Demand for Money." *Oxford Bulletin of Economics and Statistics* 52: 169-210.

Khader, A., (1999), Fiscal Management, in Diwan, I., and Shaban, R., eds. "Development under Adversity: The Palestinian economy in transition", Palestine Economic Policy Research Institute (MAS) and the World Bank

Meltzer, A. (1995). "Monetary, Credit and Other Transmission Processes: A Monetary Perspective." *Journal of Economic Perspective* 9(4): 49-72.

Mishkin, F. (1998). "The Economics of Monetary, Banking, and Financial Markets." Addison-Wesley.

Palestine Monetary Authority, Statistical Bulletin, Various Issues.

Palestinian Central Bureau of Statistics, Consumer Price Index, Various Issues.

Palestinian Central Bureau of Statistics, Labour Force Survey Report Series, Various Issues.

Panagopoulos, Y., and A. Spiliotis. (1998). "The Determinants of Commercial Banks' Lending Behaviour: Some Evidence for Greece." *Journal of Post Keynesian Economics* 20: 649-72.

Sarkar, H., & Manoj Panda, "Short-term structural macroeconomic model for India: Applications to policy analysis"

Schwarz, G. (1978). "Estimating the Dimension of A Model." *The Annals of Statistics* 6: 461-464.

Stiglitz, J. (1994). “Government, Financial Markets, and Economic Development.” *NBER Working Paper*, No. 3669

UNCTAD Internal document “Prospect for Sustained Development of the Palestinian Economy 1990-2010: Macroeconomic Simulation Framework" August 2000

UNCTAD, (1994), Prospects for sustained development of the Palestinian economy in the West Bank and Gaza Strip, 1990 - 2010: A quantitative framework technical supplement

UNCTAD. Occupied Palestinian Territories: Economic and Demographic Database, 1972-2000. UN, Geneva, 2003

UNCTAD. Prospect for Sustained Development of the Palestinian Economy in the West Bank and Gaza Strip, 1990-2010: A Quantitative Framework", 11 November 1994.

World Bank (1993), Developing the Occupied Territories, An investment in Peace, Private Sector Development.