

Building Macroeconomic models; challenges and obstacles: The Palestinian Experience.

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This paper is aiming at presenting the Palestinian experience in building macroeconomic models, including the structure of the model (input-output component), challenges and obstacles in estimating the macroeconomic indicators and method of treatment. The problem is that economic policies in Palestinian territory restricted by Paris protocol and Israeli economy. The Integrated Simulation Framework (ISF) built on UNCTAD's previous generations of econometric models for the Palestinian economy. while the Palestinian Central Bureau Statistics has rebuilt the model with new time series, behavioral equation, economic identity and structure of economic sectors. The model included all categories of aggregate demands: private and public consumption and investment, as well as export and import of goods and services. Its structure makes it possible to model trade by source and destination. The model is capable of simulating less dependence and more controlled interconnection between the Palestinian and Israel economies through the introduction of a set of policy instruments (switches) that alters relative prices of tradable goods and services (including labour). The model simulates 151 endogenous variables generated from 35 behavioural equations and 116 identities. These are distributed among five blocks: (i) labour and demographic, (ii) government, (iii) trade and national accounts, (iv) prices and deflators block and (v) value added. This model use alternative method to estimate coefficients; three stage method and seemingly unrelated method.

Key words: Integrated Simulation Framework, seemingly unrelated method, policy makers.

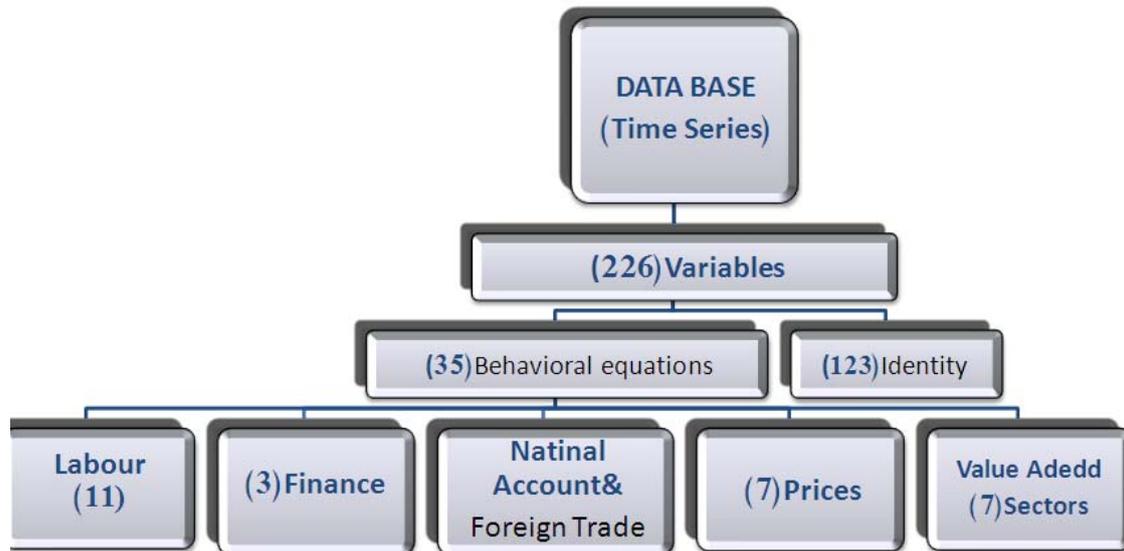
Introduction:

The Integrated Simulation Framework (ISF) builds on UNCTAD’s previous generations of econometric models for the Palestinian economy since 2000, The Paris Protocol on Economic Relations between Israel and the Palestinian Liberation Organization (1995) established the main features of the Palestinian economic policy framework and the economic policy instruments available to Palestinian decision makers upon the establishment of the Palestinian Authority (PA). As a result, the Paris Protocol has shaped the growth pattern of the occupied Palestinian territory (OPT), so this model depend on this protocol as framework through Trade policy and the gradual introduction of a new trade regime to expand Palestine’s international market and diversify its trading partners, Public/private investment programs, Industrial policy targeting high-value-added sectors, Tax and transfer (fiscal) policy and Labor policy.(UNCTAD, 2007)

in 2010 PCBS decided to adopt this model through workshops, training course and missions, PCBS established analysis and forecasting department to work on this model, the first Palestinian version model was 2011, the main result for development were updating time series, recalculate the basic variables and estimate behavioral equations . the PCBS issued two press release on economic forecasting 2012,2013 for main macroeconomic indicators.

In this paper we will present structural frame work , data sources, method of estimation, challenges and obstacles.

Structure of the model:



The model includes all categories of aggregate demand: private and public consumption and investment, as well as export and import of goods and services. Its structure makes it possible to model trade by source and destination, and therefore reflects the dependence of the Palestinian economy on that of Israel. This dependence is also captured by modeling the Israeli market as a destination for Palestinian labor. The model is capable of simulating less dependence and more controlled interconnection between the two economies through the introduction of a set policy instruments (switches) that alters relative prices of tradable goods and services (including labour). The model simulates 226 endogenous variables

generated from 35 behavioral equations and 123 identities. These are distributed among five blocks: (i) labour and demographic block, with 11 behavioral equations and 34 identities; (ii) government block, with 3 behavioral equations and 14 identities; (iii) trade and national accounts block, with 10 behavioral equations and 62 identities; (iv) prices and deflators block, with 7 behavioral equations and 6 identities; and (v) value added block, with 4 sectoral equation. (UNCTAD, 2007)

For more details about behavioral equations for each block :

Labour block

- domestic sectoral labor demand (4 behavioral equations; agriculture, industry, construction and services)
- domestic sectoral wages (4 behavioral equations)
- participation rates (2 behavioral equations; male and female)
- Palestinian labour supply in Israel (1 behavioral equations)

Government block

- government consumption (1 behavioral equations)
- other public revenue and indirect taxes (2 behavioral equations)
- policy variables: investment, transfers, VAT and income tax rates

External block & National accounts and production block

- Exports: Israel, ROW and goods & services (3 behavioral equations)
- Imports: Israel, ROW and goods & services (3 behavioral equations)
- Net factor income (1 behavioral equations)
- Private consumption (1 behavioral equations)
- Private investment: construction and non-construction (2 behavioral equations)
- sectoral value added (4 behavioral equations; agriculture, industry, construction and services).

Prices block

- Consumption price deflator (1 behavioral equations)
- Investment price deflators (2 behavioral equations)
- Export and import of goods and services price deflators (4 behavioral equations)

Important topic,

Developing UNCTAD model (Palestine experience)

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What we did in PCBS?

Data source:

- UNCTAD estimation
- Palestine Central Bureau Statistics
- Ministry of finance (MOF)
- Palestinian monetary authority (PMA)
- OTCHA
- ONISCO

Time series data (1972-2011):

- updating time series from (1994-2011) for all macroeconomic indicators by constant price (2004).
- Recalculate all macroeconomic indicator from 1972-1993 by new base year (2004) instead of (1997) by this formula

- Recalculate labor force and demographic data to be more consistent with same coverage area, where excluded east Jerusalem (J1) from all labor force and demographic data because all national account data without (J1)
- Developing indicators for closure days for trade and labor to capture restrictions and political situation changes in Palestine, this very important indicator effect in Palestinian economy, so we get data from (ONESCO& OTCHA) by rejoin west bank and Gaza Strip.
- Recalculate prices deflators using national account indicators in real and nominal term.

Notes: time series (1972-2013) from UNCTAD model

making a model

Work with a 6 steps to show how to build and work with a model, including:

Step 1:

conceptual framework of a model (mentioned above and the same for UNICTAD model)

Step 2:

data export to work file/import from excel(export excel file which include all time series from 1972-2011)

Step 3:

model estimation building/making the model (construct behavioral equations as log-log function using OLS method, so the first building structure of the behavioral EQ we estimate equation by equation)

Step 4:

solving and testing the model, in-sample simulations (testing all characteristics of OLS method- Normality, Linearity, Serial Correlation.....)

Step 5:

putting the assumptions for base line scenarios and others Scenarios .(Exogenous/policy variables:

- policy variables presently available to Palestinian policy makers: public investment/expenditures and employment, income tax rates and credit extension.
- policy instruments not available to Palestinians (policy makers - exchange, interest and VAT rates)
- external factors – ROW growth, population and capital depreciation

This model is a combination of three estimated systems, which separates Value added equations and prices equations from the rest of the model equations. In this sheet, the first system which excludes the VA and Prices will firstly shown, afterwards the other two systems. This system includes the following equation blocks: Labour block , Public finance/ government block , External block and Private domestic expenditure

SYSTEM 2: Prices/ deflators: this system includes the behavioural equations for prices

SYSTEM 3: Sectoral value added: here 4 equations representing agricultural, industry,

Step 6:

forecasting and add-factoring & Scenarios.

Main result

- Palestinian model version one (corporate with UNCTAD)
- Press release on economic forecasting 2012,2013 with four scenario
- Input for Palestinian budget

Main challenges and obstacles

- Limited policy instrument for fiscal and monetary policy because:
 1. Paris protocol (clearance tax)
 2. Dose not have currency
 3. Dose not have barriers
 4. Restriction by occupation
 5. Palatine state depend on aid about 70%
- Time series data before 1993 estimated by UNCTAD from different recourses, so we have differ period
- Don't have time series data by region west bank and Gaza strip before 1993 (this very important because economic structure different between WB&G.
- The economic and political situation not stable to guaranty all assumption for any scenario

References:

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