

Model Turkey 93/1

Source: S. Karbuz, A small scale macroeconomic model for the Turkish economy, Macroeconomic Decision Support for Turkey, Ph. D. Dissertation, Technische Universität Wien, Wien 1994, 67 - 91

The equations

Real private final consumption expenditures

$$(1) \quad \text{PCER}_t = f_1(\text{YDISR}_t, \text{PCER}_{t-1})$$

$$\text{PCER}_t = a_{1,1} + a_{1,2}\text{YDISR}_t + a_{1,3}\text{PCER}_{t-1}$$

Real gross fixed capital formation

$$(2) \quad \text{IR}_t = f_2\left(\frac{\text{PUBREV}_{t-1}}{\text{GNPN}_{t-1}}, \frac{\text{DCREDIT}_t}{\text{DGNP}_t}, \text{GNPR}_t\right)$$

$$\text{IR}_t = a_{2,1} + a_{2,2}\frac{\text{PUBREV}_{t-1}}{\text{GNPN}_{t-1}} + a_{2,3}\frac{\text{DCREDIT}_t}{\text{DGNP}_t} + a_{2,4}\text{GNPR}_t$$

Real exports of goods and services

$$(3) \quad \ln \text{EXPR}_t = f_3\left(\ln(\text{YOECDR}_t \cdot \text{EXC}_t), \ln \frac{\text{EXC}_t \cdot \text{DGOECD}_t}{\text{DGNP}_t}, \ln \text{IMPR}_{t-1}\right)$$

$$\ln \text{EXPR}_t = a_{3,1} + a_{3,2}\ln(\text{YOECDR}_t \cdot \text{EXC}_t)$$

$$+ a_{3,3}\ln \frac{\text{EXC}_t \cdot \text{DGOECD}_t}{\text{DGNP}_t} + a_{3,4}\ln \text{IMPR}_{t-1}$$

Real imports of goods and services

$$(4) \quad \text{IMPR}_t = f_4\left(\text{GNPR}_t, \frac{\text{IMPDUT}_{t-1}}{\text{DIMP}_{t-1}}, \frac{\text{DIMP}_t}{\text{DGNP}_t}, \text{EXPR}_{t-1}\right)$$

$$\ln \text{IMPR}_t = a_{4,1} + a_{4,2}\text{GNPR}_t + a_{4,3}\frac{\text{IMPDUT}_{t-1}}{\text{DIMP}_{t-1}} + a_{4,4}\frac{\text{DIMP}_t}{\text{DGNP}_t}$$

$$+ a_{4,5}\text{EXPR}_{t-1}$$

Net GNP deflator

$$(5) \quad \ln \text{DPNET}_t = f_5(\ln \text{GNPR}_{t-1}, \ln \text{WAGES}_t, \ln \text{DIMP}_t, \ln \text{M1}_t, \text{EXC}_t)$$

$$\ln \text{DPNET}_t = a_{5,1} + a_{5,2}\ln \text{GNPR}_{t-1} + a_{5,3}\ln \text{WAGES}_t$$

$$+ a_{5,4}\ln \text{DIMP}_t + a_{5,5}\ln \text{M1}_t + a_{5,6} \text{EXC}_t$$

Direct taxes

$$(6) \quad \text{DTAX}_t = f_6((\text{WAGES}_t \cdot \text{CEMP}_t), \text{OPSURP}_t, \text{DTAX}_{t-1})$$

$$\text{DTAX}_t = a_{6,1}(\text{WAGES}_t \cdot \text{CEMP}_t) + a_{6,2}\text{OPSURP}_t + a_{6,3}\text{DTAX}_{t-1}$$

Nominal M1

$$(7) \quad \ln \text{M1}_t = f_7(\ln \text{GNPN}_t, \text{DISR}_t)$$

$$\ln \text{M1}_t = a_{7,1} + a_{7,2}\text{GNPN}_t + a_{7,3}\text{DISR}_t$$

Civilian employment

$$(8) \quad \text{CEMP}_t = f_8(\text{IR}_t, \text{EXPR}_t, \text{CEMP}_{t-1})$$

$$\text{CEMP}_t = a_{8,1} + a_{8,2}\text{IR}_t + a_{8,3}\text{EXPR}_t + a_{8,4}\text{CEMP}_{t-1}$$

Civilian labor force

$$(9) \quad \text{CLF}_t = f_9(\text{URBANR}_t, \text{CLF}_{t-1})$$

$$\text{CLF}_t = a_{9,1} + a_{9,2}\text{URBANR}_t + a_{9,3}\text{CLF}_{t-1}$$

Wage rate

$$(10) \quad \ln \text{WAGES}_t = f_{10}\left(\ln \text{DGNP}_{t-1}, \ln U_t, \ln \frac{\text{GNPR}_t}{\text{CEMP}_t}, \text{D80}\right)$$

$$\ln \text{WAGES}_t = a_{10,1} + a_{10,2}\ln \text{DGNP}_{t-1} + a_{10,3}\ln U_t +$$

$$a_{10,4}\ln \frac{\text{GNPR}_t}{\text{CEMP}_t} + a_{10,5}\text{D80}$$

Real gross national product

$$(11) \quad \text{GNPR}_t = \text{PCER}_t + \text{IR}_t + \text{STOKR}_t + \text{GCER}_t + \text{EXPR}_t - \text{IMPR}_t + \text{STDIS}_t$$

GNP deflator

$$(12) \quad \text{DGNP}_t = (1 + \text{TINET}_t) \cdot \text{DPNET}_t$$

Nominal gross national product

$$(13) \quad \text{GNPN}_t = \text{GNPR}_t \cdot \text{DGNP}_t$$

Net indirect taxes (nominal)

$$(14) \quad \text{NITAX}_t = \text{TINET}_t \cdot \text{GNPN}_t$$

Real disposable income

$$(15) \quad \text{YDISR}_t = \frac{(\text{GNPN}_t - \text{CFC}_t - \text{NITAX}_t - \text{DTAX}_t)}{\text{DGNP}_t} \cdot 100$$

Unemployment rate

$$(16) \quad U_t = \left(\frac{\text{CLF}_t - \text{CEMP}_t}{\text{CLF}_t} \right) \cdot 100$$

Nominal public revenues

$$(17) \text{ PUBREV}_t = \text{DTAX}_t + \text{NITAX}_t + \text{SUBSID}_t + \text{NONTAX}_t$$

Operating surplus (nominal)

$$(18) \text{ OPSURP}_t = \text{GNPN}_t - \text{NITAX}_t - \text{CFC}_t - \text{WAGES}_t \cdot \text{CEMP}_t - \text{NFAIN}_t$$

Exogenous variables

CFC	Consumption of fixed capital (nominal)
COE	Compensation of employees (nominal)
DCREDIT	Domestic credits (nominal)
DGOECD	OECD GNP deflator
DIMP	Import prices
DISRR	Interest rate (nominal)
DPNET	GNP deflator (net)
DTAX	Direct taxes (nominal)
EXC	Exchange rate
GCER	Real government final consumption expenditures
IMPDUT	Import duties (nominal)
ITAX	Nominal indirect taxes
NFAIM	Net factor income (nominal)
NONTAX	Non-tax revenues (nominal)
STOKR	Real increase in stocks
SUBSID	Subsidies (nominal)
TINET	Indirect tax ratio
URBANR	Urbanisation rate
YOECDR	OECD real GNP