Appendix A
List of Equations[49]

PRODUCTION

$$X_j = V_j + \sum_i a_{ij} X_j \tag{A1}$$

$$V_A = \left[\alpha_{XA}\{\beta_{XA} U_A^{-\rho_{XA}} + (1-\beta_{XA}) K_{INF}^{-\rho_{XA}}\}^{-\frac{1}{\rho_{XA}}}\right]^{1-\eta_{XA}} \tag{A2}$$

$$X_A = \alpha_{ED_A}[\beta_{ED_A} E_A^{\rho_{ED_A}} + (1-\beta_{ED_A}) D_A^{\rho_{ED_A}}]^{\frac{1}{\rho_{ED_A}}} \tag{A3}$$

$$V_I = \alpha_{XI} U_I^{\beta_{XI}} \tag{A4}$$

$$J_1 = \alpha_{X_P 1}[\beta_{X_P 1} S_P^{-\rho_{X_P 1}} + (1-\beta_{X_P 1}) K_P^{-\rho_{X_P 1}}]^{-\frac{1}{\rho_{X_P 1}}} \tag{A5}$$

$$J_2 = \alpha_{X_P 2}\{\beta_{X_P 2} J_1^{-\rho_{X_P 2}} + (1-\beta_{X_P 2}) U_P^{-\rho_{X_P 2}}\}^{-\frac{1}{\rho_{X_P 2}}} \tag{A6}$$

$$V_P = \alpha_{X_P}\left[\beta_{X_P} J_2^{-\rho_{X_P}} + (1-\beta_{X_P}) K_{INF}^{-\rho_{X_P}}\right]^{-\frac{1}{\rho_{X_P}}} \tag{A7}$$

$$X_P = \alpha_{ED_P}[\beta_{ED_P} E_P^{\rho_{ED_P}} + (1-\beta_{ED_P}) D_P^{\rho_{ED_P}}]^{\frac{1}{\rho_{ED_P}}} \tag{A8}$$

$$J_G = \alpha_{X_G J}[\beta_{X_G J} S_G^{-\rho_{X_P J}} + (1-\beta_{X_G J}) K_{INF}^{-\rho_{X_G J}}]^{-\frac{1}{\rho_{X_G J}}} \tag{A9}$$

$$V_G = \alpha_{X_G}\left[\beta_{X_G} J_G^{-\rho_{X_G}} + (1-\beta_{X_G}) U_G^{-\rho_{X_G}}\right]^{-\frac{1}{\rho_{X_G}}} \tag{A10}$$

$$NGDP = \sum_i PV_i V_i + INDTAX \tag{A11}$$

$$RGDP = \sum_i (C_i + G_i + Z_P^i + E_i - ER \cdot wpm_i M_i) + Z_G \tag{A12}$$

[49] In both Appendices A and B, the index i or j (respectively, h) is used below to refer to all production sectors (household groups, respectively), that is, A, G, I, and P (A, I, F, and E, respectively), unless otherwise indicated.

LABOR MARKET

$$U_A^d = \left((1-\eta_{XA})V_A^{1+\frac{\rho_{XA}}{1-\eta_{XA}}}\frac{PV_A}{W_A}\cdot\frac{\beta_{XA}}{\alpha_{XA}^{\rho_{XA}}}\right)^{\frac{1}{1+\rho_{XA}}} \tag{A13}$$

$$U_{RUR}^s = U_A^d(V_A, \frac{W_A}{PV_A}) \tag{A14}$$

$$U_{RUR}^s = U_{RUR,-1}(1+g_{RUR}) - MIG \tag{A15}$$

$$EW_{URB} = \theta_U(1-sstax_U)W_{UP,-1} + (1-\theta_U)W_{I,-1} \tag{A16}$$

$$\theta_U = \frac{U_{P,-1}}{U_{F,-1}^s - U_{G,-1}} \tag{A17}$$

$$MIG = U_{RUR,-1}\lambda_M\left[\sigma_M \ln\left(\frac{EW_{URB}}{W_{A,-1}}\right)\right] + (1-\lambda_M)\frac{U_{RUR,-1}}{U_{RUR,-2}}MIG_{-1} \tag{A18}$$

$$W_{jG} = \omega_{jG}P_{URB}, \qquad j = U, S \tag{A19}$$

$$W_{SP} = (1-\nu_S)\Omega_S + \frac{\nu_S PJ_1 m_S}{(1+IL)(1+paytax_S)} \tag{A20}$$

$$\Omega_S = \Omega_{S0}\frac{W_{SG}^{\phi_S^1}[P_{URB,-1}(1+EINFL)]^{\phi_S^2}}{UNEMP_S^{\phi_S^3}} \tag{A21}$$

$$W_{UP} = (1-\nu_U)\Omega_U + \frac{\nu_U PJ_2 m_U}{(1+IL)(1+paytax_U)} \tag{A22}$$

$$\Omega_U = \Omega_{U0}\frac{W_{UG}^{\phi_U^1}[P_{URB,-1}(1+EINFL)]^{\phi_U^2}W_M^{\phi_U^4}}{UNEMP_U^{\phi_U^3}} \tag{A23}$$

$$U_P^d = J_2\left(\frac{PJ_2}{(1+IL_{-1})(1+paytax_U)W_{UP}}\frac{\beta_{XP2}}{\alpha_{XP2}^{\rho_{XP2}}}\right)^{\sigma_{XP2}} \tag{A24}$$

$$\frac{\Delta U_F^s}{U_{I,-1}} = \beta_F\left[\sigma_F \ln\left(\frac{U_{P,-1}^d}{U_{F,-1}^s - U_{G,-1}}\frac{(1-sstax_U)W_{UP,-1}}{W_{I,-1}}\right)\right] + (1-\beta_F)\frac{\Delta U_{F-1}^s}{U_{I,-2}} \tag{A25}$$

$$UNEMP_U = 1 - \frac{(U_G + U_P^d)}{U_F^s} \tag{A26}$$

$$U_I^s = U_{URB}^s - U_F^s \tag{A27}$$

$$W_I = \beta_{XI}(\frac{PV_I \cdot V_I}{U_I^s}) \tag{A28}$$

$$U_{URB}^s = U_{URB,-1}^s(1 + g_{URB}) + MIG - SKL - IMIG \tag{A29}$$

$$S_P^d = J_1 \left(\frac{PJ_1}{(1 + IL_{-1})(1 + paytax_S)W_{SP}} \cdot \frac{\beta_{XP1}}{\alpha_{XP1}^{\rho_{XP1}}} \right)^{\sigma_{XP1}} \tag{A30}$$

$$UNEMP_S = 1 - \frac{(S_G^T + S_P^d)}{S} \tag{A31}$$

$$S_G^T = S_G + S_G^E \tag{A32}$$

$$SKL = [\beta_E {S_G^E}^{-\rho_E} + (1 - \beta_E){K_{EDU}}^{-\rho_E}]^{-\frac{1}{\rho_E}} \tag{A33}$$

$$S = (1 - \delta_S)S_{-1} + SKL \tag{A34}$$

$$EW_F = ER_{-1} \cdot W_{F,-1} \tag{A35}$$

$$IMIG = U_{URB,-1}\lambda_{IM} \left[\sigma_{IM} \ln \left(\frac{ER_{-1} \cdot W_{F,-1}}{EW_{URB}} \right) \right] + (1 - \lambda_{IM}) \frac{U_{URB,-1}}{U_{URB,-2}} IMIG_{-1} \tag{A36}$$

EXTERNAL TRADE

$$E_i = D_i \left(\frac{PE_i}{PD_i} \cdot \frac{1 - \beta_{EDi}}{\beta_{EDi}} \right)^{\sigma_{EDi}}, \quad i = A, P \tag{A37}$$

$$M_i = D_i \left(\frac{PD_i}{PM_i} \cdot \frac{\beta_{Qi}}{1 - \beta_{Qi}} \right)^{\sigma_{Q_i}}, \quad i = A, P \tag{A38}$$

AGGREGATE SUPPLY AND DEMAND

$$Q_I^s = X_I, \quad i = I, G \tag{A39}$$

$$Q_i^s = \alpha_{Q_i}\{\beta_{Q_i} {D_i}^{-\rho_{Q_i}} + (1 - \beta_{Q_i}){M_i}^{-\rho_{Q_i}}\}^{-\frac{1}{\rho_{Q_i}}}, \quad i = A, P \tag{A40}$$

$$Q_A^d = C_A + G_A + INT_A \tag{A41}$$

$$Q_I^d = C_I + INT_I \tag{A42}$$

$$Q_G^d = C_G + G_G + Z_P^G + INT_G \tag{A43}$$

$$Q_P^d = C_P + G_P + Z_P^P + Z_G + INT_P \tag{A44}$$

$$INT_j = \sum_i a_{ji} X_i \tag{A45}$$

$$G_i = gg_i \frac{PG \cdot G}{PC_i}, \quad \text{for } i = A, P, G, \quad \sum_i gg_i = 1 \tag{A46}$$

$$C_i = \sum_h C_{ih} = \sum_h x_{ih} + \frac{\sum_h cc_{ih}(CON_h - \sum_i PC_i x_{ih})}{PC_i} \tag{A47}$$

$$Z_P^i = zz_i \frac{PK \cdot Z_P}{PC_i}, \quad zz_G + zz_P = 1 \tag{A48}$$

PROFITS AND INCOME

$$PROF_i = PV_i V_i - W_i U_i, \text{ for } i = A, I \tag{A49}$$

$$PROF_P = PV_P V_P - (1 + IL_{-1})[(1 + paytax_U) W_M U_P + (1 + paytax_S) W_S S_P] \tag{A50}$$

$$YF_P = (1 - ftax_P) PROF_P - IL_{-1} DL_{P,-1} - ILF_{-1} DLF_{P,-1} - IF^W \cdot ER \cdot FL_{P,-1} \tag{A51}$$

$$PROF_G = PV_G V_G - (1 + paytax_U) W_{UG} U_G - (1 + paytax_S) W_{SG} S_G \tag{A52}$$

$$PROF_B = IL_{-1}(DL_{P,-1} + DL_{F,-1}) + ILF_{-1} DLF_{P,-1} \tag{A53}$$
$$+ IL_{-1}[(1 + paytax_U) W_M U_P + (1 + paytax_S) W_S S_P] + IB \cdot GB_{B,-1}^T$$
$$- IR \cdot DL_{B,-1} - ID \sum_h DD_{h,-1} - IDF \cdot ER \sum_h FD_{h,-1} - IF^W \cdot ER \cdot FL_{B,-1}$$

$$YH_A = W_A U_A + shp_A PROF_A + \gamma_A TRH + ID \cdot DD_{A,-1} \tag{A54}$$

$$YH_I = PV_I V_I + \gamma_I TRH + ID \cdot DD_{I,-1} + \tau_I ER \cdot REMIT \tag{A55}$$

$$YH_F = (1 - sstax_U) \sum_{j=P,G} W_{Uj} U_j + (1 - sstax_S) \sum_{j=P,G} W_{Sj} S_j + W_{SG} S_G^E \tag{A56}$$
$$+ shp_P^F YF_P + \gamma_F TRH + ID \cdot DD_{F,-1} + ER(IDF \cdot FD_{F,-1} + IF_{RF}^W FD_{F,-1}^W)$$
$$- IL_{-1} DL_{F,-1} + (1 - \tau_I) ER \cdot REMIT$$

$$YH_E = (1 - shp_A) PROF_A + shp_P^E YF_P + shp_B^E PROF_B \tag{A57}$$
$$+ \gamma_E TRH + ID \cdot DD_{E,-1} + ER(IDF \cdot FD_{E,-1} + IF_{RF}^W FD_{E,-1}^W) + IB \cdot GB_{E,-1}$$

SAVINGS AND WEALTH

$$SAV_h = srate_h(1 - inctax_h)YH_h \tag{A58}$$

$$srate_h = s_0^h \left(\frac{1+ID}{1+EINFL}\right)^{\sigma_{SAV}^h} \tag{A59}$$

$$CON_h = (1 - inctax_h)YH_h - SAV_h \tag{A60}$$

$$WT_h = WT_{h,-1} + SAV_h + \Delta ER(FD_{h,-1} + FD_{h,-1}^W) \tag{A61}$$

PRIVATE INVESTMENT

$$\frac{PK \cdot Z_P^d}{NGDP_{-1}} = \left(\frac{K_{INF}}{U_{URB}^s + S}\right)^{\sigma_{KINF}} (1 + \frac{\Delta RGDP_{-1}}{RGDP_{-2}})^{\sigma_{ACC}} \left(\frac{1+IL}{1+EINFL}\right)^{-\sigma_{IL}} \tag{A62}$$

$$\Delta(\frac{PK \cdot Z_P}{NGDP_{-1}}) = \lambda_{PINV}(\frac{PK \cdot Z_P^d}{NGDP_{-1}} - \frac{PK_{-1} \cdot Z_{P,-1}}{NGDP_{-2}}) \tag{A63}$$

$$K_P = K_{P,-1}(1 - \delta_P) + Z_{P,-1} \tag{A64}$$

CREDIT MARKET AND PORTFOLIO ALLOCATION

$$WT_h = H_h + ER(FD_h + FD_h^W) + DD_h + GB_h - DL_h \tag{A65}$$

$$H_h^d = \frac{CON_h^{\theta_{CON}^h} EINFL^{-\theta_{EINFL}^h}(1+ID)^{-\theta_{DD}^h}}{\left\{(1+EDEPR)(1+IDF)^{\kappa_{FD}^h}(1+IF_{RF}^W)^{1-\kappa_{FD}^h}\right\}^{\theta_{IF}^h}} \tag{A66}$$

$$\kappa_{FD}^h = \frac{FD_{h,-1}}{FD_{h,-1} + FD_{h,-1}^W}, \qquad h = F, E \tag{A67}$$

$$H^d = \sum_h H_h^d \tag{A68}$$

$$DD_h = WT_h - H_h, \qquad h = A, I \tag{A69}$$

$$\frac{DD_h}{ER(FD_h + FD_h^W)} = \left\{\frac{(1+EDEPR)^{-1}(1+ID)}{(1+IDF)^{\kappa_{FD}^h}(1+IF_{RF}^W)^{1-\kappa_{FD}^h}}\right\}^{\theta_{DD}^h}, \ h = F, E \tag{A70}$$

$$\frac{FD_h}{FD_h^W} = (\frac{1+IDF}{1+IF_{RF}^W})^{\theta_{FD}^h}, \quad h = F, E \tag{A71}$$

$$\frac{GB_E^d}{WT_E - H_E} = \frac{(1+EIB)^{\theta_{GB}^E}(1+ID)^{-\theta_{DD}^E}}{\left[(1+EDEPR)(1+IDF)^{\kappa_{FD}^E}(1+IF_{RF}^W)^{1-\kappa_{FD}^E}\right]^{\theta_{FD}^E}} \tag{A72}$$

$$DL_P^T = DL_P + ER \cdot DLF_P \tag{A73}$$

$$ER \cdot DLF_P = \phi_{DL}^P(FL_B + \sum_h ER \cdot FD_h) \tag{A74}$$

$$DL_P^T = DL_{P,-1}^T + PK \cdot Z_P - (1 - shp_P^F - shp_P^E)YF_P - ER \cdot \Delta FL_P \tag{A75}$$

$$RR = rreq \sum_h (DD_h + ER \cdot FD_h) \tag{A76}$$

$$GB_B^T = GB_B^p + GB_B^d \tag{A77}$$

$$GB_B^p = \phi_{GB}^{B,p} \cdot GB^s \tag{A78}$$

$$\frac{GB_B^d}{NW_B} = \phi_{GB}^{B,d}(\frac{1+EIB}{1+IL})^{\theta_{GB}^B} \tag{A79}$$

$$\frac{ER \cdot FL_B}{NW_B} = \phi_{FL}^B \left[\frac{1+IR}{(1+IF^W)(1+EDEPR)}\right]^{\theta_{FL}^B} \tag{A80}$$

$$NW_B = NW_{B,-1} + (1 - shp_B^E)PROF_B - \Delta ER(\sum_h FD_{h,_{-1}} + FL_{B,-1} - DL_{F,-1}) \tag{A81}$$

$$DL_B = DL_F + DL_P^T + GB_B^T - (1 - rreq)\sum_h (DD_h + ER \cdot FD_h) - ER \cdot FL_B - NW_B \tag{A82}$$

INTEREST RATES AND RISK PREMIA

$$1 + ID = 1 + IR \tag{A83}$$

$$1 + IDF = 1 + IF^W \tag{A84}$$

$$1 + IF^W = (1 + IF_{RF}^W)(1 + EXTPR) \tag{A85}$$

$$EXTPR = CONTAG + \frac{\kappa_{ERP}}{2}(\frac{\sum_{i=P,B,G} FL_i}{\sum_{i=A,P} wpe_i E_i})^2 \tag{A86}$$

$$1 + IL = \frac{\{(1+IR)^{\kappa_{DL}^B}[(1+IF^W)(1+EDEPR)]^{1-\kappa_{DL}^B}\}}{(1+DOMPR\ )^{-1}(1-rreq)} \tag{A87}$$

$$\kappa_{DL}^B = \frac{\sum_h DD_{h,-1} + DL_{B,-1}}{\sum_h DD_{h,-1} + DL_{B,-1} + ER_{-1}(\sum_h FD_{h,-1} + FL_{B,-1})} \tag{A88}$$

$$DOMPR = \left[\frac{\delta_c PK_{-1}K_{P-1}}{DL_{P,-1} + ER_{-1}(DLF_{P,-1} + FL_{P,-1})}\right]^{-\kappa_{DRP}} \tag{A89}$$

$$(1 + ILF)(1 + EDEPR) = 1 + IL \tag{A90}$$

CENTRAL BANK

$$PROF_{CB} = IR \cdot DL_{B,-1} + IF^W_{RF} ER \cdot FF + IB \cdot GB_{CB,-1} \tag{A91}$$

$$NW_{CB} = NW_{CB,-1} + (1 - shp_G)PROF_{CB} + \Delta ER \cdot FF_{-1} \tag{A92}$$

$$MB = MB_{-1} + \Delta DL_B + ER \cdot \Delta FF + \Delta GB_{CB} - (1 - shp_G)PROF_{CB} \tag{A93}$$

GOVERNMENT

$$PRBAL = TXREV + PROF_G + shp_G PROF_{CB} \tag{A94}$$

$$-W_{SG}S^E_G - TRH - PG \cdot G - PC_P Z_G$$

$$OVBAL = PRBAL - IF^W_G \cdot ER \cdot FL_{G,-1} - IB \cdot GB^T_{-1} \tag{A95}$$

$$GB^s = GB^T_B + GB_{CB} + GB_E \tag{A96}$$

$$TXREV = DIRTAX + INDTAX \tag{A97}$$

$$+sstax_U \sum_{j=P,G} W_{Uj}U_j + sstax_S \sum_{j=P,G} W_{Sj}S_j + \sum_{j=U,S} paytax_j(W_{jG}j_G + W_{jP}j_P)$$

$$DIRTAX = \sum_{h=A,F,E} inctax_h YH_h + ftax_P PROF_P \tag{A98}$$

$$\begin{aligned} INDTAX &= ER \sum_{i=A,P} wpm_i tm_i M_i + \sum_{i \neq I} protax_i PX_i X_i \\ &\quad + \sum_{i=A,P} saltax_i PQ_i Q_i \end{aligned} \tag{A99}$$

$$Z_G = I_{INF} + I_{EDU} \tag{A100}$$

$$K_i = (1 - \delta_i)K_{i,-1} + I_{i,-1}, \quad i = INF, EDU \tag{A101}$$

$$-OVBAL = ER \cdot \Delta FL_G + \Delta GB^s \tag{A102}$$

BALANCE OF PAYMENTS AND THE EXCHANGE RATE

$$\begin{aligned} 0 \;=\; & \sum_{i=A,P}(wpe_i E_i - wpm_i M_i) + IF^W_{RF}\sum_{h=F,E} FD^W_{h,-1} \\ & + REMIT + IF^W_{RF} FF - IF^W \sum_{h=P,B} FL_{j,-1} - IF^W_G FL_{G,-1} \\ & - \sum_{h=F,E}\Delta FD^W_h + \sum_{j=G,P,B}\Delta FL_j - \Delta FF \end{aligned} \tag{A103}$$

$$REMIT = \kappa_{REM} W_F FORL_{-1} \tag{A104}$$

$$FORL = (1-\delta_{IMIG})FORL_{-1} + IMIG \tag{A105}$$

CURRENCY AND BOND MARKET EQUILIBRIUM

$$H^s = MB - RR \tag{A106}$$

$$H^s = H^d \tag{A107}$$

$$(1-\phi^{B,p}_{GB})GB^s = NW_B \phi^{B,d}_{GB}\left(\frac{1+EIB}{1+IL}\right)^{\theta^B_{GB}} + GB_{CB} \tag{A108}$$

$$+\frac{(WT_E - H_E)(1+EIB)^{\theta^E_{GB}}(1+ID)^{-\theta^E_{DD}}}{\left\{(1+EDEPR)(1+IDF)^{\kappa^E_{FD}}(1+IF^W_{RF})^{1-\kappa^E_{FD}}\right\}^{\theta^E_{FD}}}$$

PRICE DETERMINATION

$$PV_i = V_i^{-1}\left\{PX_i(1-protax_i) - \sum_j a_{ji} PC_j\right\} X_i \tag{A109}$$

$$PE_i = wpe_i ER, \quad i = A, P \tag{A110}$$

$$PM_i = wpm_i(1+tm_i)ER, \quad i = A, P \tag{A111}$$

$$PX_i = \frac{PD_i D_i + PE_i E_i}{X_i}, \quad i = A, P \tag{A112}$$

$$PX_i = PD_i, \quad i = I, G \tag{A113}$$

$$PQ_i = \frac{PD_i D_i + PM_i M_i}{Q_i}, \quad i = A, P \tag{A114}$$

$$PJ_1 = \frac{PROF_P + (1 + IL_{-1})(1 + paytax_S)W_{SP}S_P}{J_1} \tag{A115}$$

$$PJ_2 = \frac{J_1 PJ_1 + (1 + IL_{-1})(1 + paytax_U)W_{UP}U_P}{J_2} \tag{A116}$$

$$PK = \prod_{i=G,P} PC_i^{zz_i} \tag{A117}$$

$$PG = \prod_{i=A,G,P} PC_i^{gg_i} \tag{A118}$$

$$PC_i = (1 + saltax_i)PQ_i, \quad i = A, P \tag{A119}$$

$$P_{RUR} = \prod_i PC_i^{wr_i} \tag{A120}$$

$$P_{URB} = \prod_i PC_i^{wu_i} \tag{A121}$$

$$CPI = P_{RUR}^{wcp} \cdot P_{URB}^{1-wcp} \tag{A122}$$

$$PINF = INFL = \Delta CPI/CPI_{-1} \tag{A123}$$

DEFAULT RISK, CREDIBILITY, AND EXPECTATIONS

$$EIB = (1 - PDEF)IB \tag{A124}$$

$$PDEF = 1 - \exp[-\alpha_0(\frac{GB_{-1}}{TAXREV_{-1}})] \tag{A125}$$

$$EINFL = CREDIB \cdot INFL^{TARG} + (1 - CREDIB)INFL_{-1} \tag{A126}$$

$$CREDIB = 1 - PDEF \tag{A127}$$

$$EDEPR = \chi EDEPR_{-1} + (1 - \chi)(EINFL - FINFL_{-1}) \tag{A128}$$

Appendix B
Variable Names and Definitions

Endogenous Variables

Name	Definition
C_{ih}	Consumption of good i by household category h
C_i	Aggregate consumption of good i
CON_h	Consumption by household category h
CPI	Aggregate price level
$CREDIB$	Credibility index
D_A	Domestic demand for domestic rural good
DD_A	Domestic deposits by households in rural sector
DD_E	Domestic deposits by profit earners and capitalists
DD_F	Domestic deposits by households in the formal sector
DD_I	Domestic deposits by households in the informal sector
DD_S	Domestic deposits by skilled household
DD_{UF}	Domestic deposits by unskilled household in formal sector
DD_{UI}	Domestic deposits by households in the informal sector
DEF	Government deficit
$DIRTAX$	Direct tax revenue
DL_B	Borrowing from the central bank
DL_F	Borrowing abroad from commercial banks
DLF_P	Foreign-currency loans by domestic banks
DL_P	Domestic-currency loans by banks to formal firms
DL_P^T	Total domestic borrowing from commercial banks
$DOMPR$	Domestic risk premium
D_P	Domestic demand for domestic private urban good
E_A	Export of rural sector goods
E_P	Export of private urban (formal) good
$EDEPR$	Expected rate of depreciation of nominal exchange rate
EIB	Expected rate of return on government bonds
$EINFL$	Expected inflation rate
$EXTPR$	External risk premium
EW_F	Expected foreign wage, in domestic-currency terms
EW_{URB}	Expected unskilled urban wage,
FD_A	Foreign deposits by households in rural sector

FD_E	Foreign deposits by profit earners and capitalists
FD_F	Foreign-currency deposits held at home by formal household
FD_h^W	Foreign-currency deposits held abroad by household h
FD_S	Foreign deposits by skilled household
FD_{UF}	Foreign deposits by households in formal urban sector
FD_{UI}	Foreign deposits by households in informal sector
FF	Foreign reserves
FL_B	Banks' foreign liabilities
FL_G	Foreign loans made to the government
$FORL$	Number of Turkish nationals working abroad
G	Government expenditures
G_A	Government spending on rural sector good
G_G	Government spending on public sector good
G_P	Government spending in private urban sector good
GB	Government bonds held by commercial banks, the central bank, and profit earners
GB_{CB}	Government bonds held by the central bank
GB_E	Holdings of government bonds, profit earners/capitalists
GB_h	holdings of government bonds by household h
GB^B	Holdings of government bonds, commercial banks
GB^s	Supply of government bonds
GB_B^T	Total government bond holdings by commercial banks
GB_B^d	Additional commercial bank demand for government bonds
GB_B^p	Direct bond placements by commercial banks
GB_E^d	Demand for government bonds by profit earners
H^d	Total demand for money
H_h^d	Demand for currency by household h
H^s	Money supply
H_A	Money held by households in rural sector
H_E	Money held by profit earners
H_S	Money held by skilled household
H_{UF}	Money held by households in formal urban sector
H_{UI}	Money held by households in informal sector
IB	Rate of interest on public bonds
$INDTAX$	Indirect taxes on goods and services
IR	Cost of funds provided by the central bank
IL	Interest rate for domestic loan

$IMIG$	Migration to foreign countries
$INDTAX$	Indirect taxes on goods and services
$INFL$	Consumer price index inflation rate
$INFL^{TARG}$	Inflation target of the central bank
INT_A	Intermediate good demand for rural sector good
INT_I	Intermediate good demand for informal good
INT_P	Intermediate good demand for formal private sector good
INT_G	Intermediate good demand for public good
J_1	Composite input from J_2 and unskilled labor
J_2	Composite input from physical capital and skilled labor
J_G	Composite input from skilled labor and public capital in infrastructure
K_{EDU}	Public capital in education
K_{INF}	Public capital in infrastructure
K_P	Private capital
M_A	Import of rural sector good
MB	Money base
MIG	Net of worker migration to urban areas
M_P	Import of private urban (formal) good
m_S	Physical marginal product of skilled worker
m_U	Physical marginal product of unskilled worker
$NGDP$	Nominal GDP at market prices
NW_B	Net worth of commercial banks
NW_{CB}	Net worth of the central bank
Ω_S, Ω_U	Reservation wages of skilled and unskilled workers
$OVBAL$	Overall fiscal balance
P_{RUR}	Rural price index
PC_i	Sales price of good i
PD_A	Price of domestic sales of rural sector good
P_{URB}	Urban consumption price index
PD_G	Domestic price of public good
PD_I	Domestic price of informal sector good
PD_P	Domestic price of domestic sales of private urban good
$PDEF$	Probability of default on government debt
PE_A	Price of exported rural good
PE_P	Price of exported private urban good
PG	Government consumption deflator

$PINF$ Inflation rate
PJ_1 Price of composite input J_1
PJ_2 Price of composite input J_2
PK Price of capital
PM_A Price of imported rural sector good
PM_P Price of imported private urban sector good
PQ_A Composite good price of rural sector good
PQ_G Composite good price of public good
PQ_I Composite good price of informal sector good
PQ_P Composite good price of private urban sector good
$PRBAL$ Government primary balance
$PROF_A$ Profits from rural production
$PROF_B$ Commercial banks' profits
$PROF_G$ Profits from public production
$PROF_I$ Profits from informal sector production
$PROF_P$ Profits from private urban formal production
$PROF_{CB}$ Profits of the central bank
PV_A Value added price of rural sector good
PV_I Value added price of informal good
PV_P Value added price of private formal good
PV_G Value added price of rural sector good
PX_A Sales price of agricultural good
PX_G Sales price of public good
PX_I Sales price of informal good
PX_P Sales price of private urban (formal) good
Q_A Demand of nontraded agricultural composite good
Q_G Demand of public composite good
Q_I Demand of informal composite good
Q_P Demand of private urban composite good
Q_A^d Aggregate demand for rural sector good
Q_G^d Aggregate demand for public good
Q_I^d Aggregate demand for informal good
Q_P^d Aggregate demand for urban private formal sector good
Q_A^s Quantity supplied in the rural sector
Q_G^s Quantity supplied in the public sector
Q_I^s Quantity supplied in the informal sector
Q_P^s Quantity supplied in the urban private formal sector

$RGDP$ Real GDP
RR Reserve requirements
S Skilled workers
S_P^d Demand for skilled labor in the urban private formal sector
SAV_A Saving by rural sector household
SAV_E Saving by profit earners and capitalists
SAV_F Saving by urban formal sector household
SAV_I Saving by informal sector household
$srate_A$ Saving rate of rural household
$srate_E$ Saving rate of profit earners and capitalists
$srate_F$ Saving rate of formal sector household
$srate_I$ Saving rate of informal sector household
SKL Flow of newly-skilled workers
S_P Skilled labor employed in private urban formal
TRH Total government transfers
$TXREV$ Tax revenues
U_A Unskilled labor employed in rural sector
U_I Unskilled labor employed in informal sector
U_P Unskilled labor employed in private urban formal sector
U_{RUR} Supply of unskilled labor in rural sector
U_{URB}^s Urban unskilled labor supply
U_A^d Demand for labor in the rural sector
U_I^d Demand for labor in the informal sector
U_P^d Demand for labor in the urban formal private sector
U_F^s Supply of unskilled workers in the formal sector
U_I^s Supply of labor in the informal sector
U_{RUR}^s Labor supply in rural sector
U_{URB}^s Urban unskilled labor supply
$UNEMP_U$ Unskilled unemployment rate, urban formal sector
$UNEMP_S$ Skilled unemployment rate
V_A Value added in rural sector
V_I Value added in informal sector
V_G Value added in public sector

V_P	Value added in private urban formal sector
W_A	Nominal wage in rural sector
W_I	Nominal wage in informal sector
W_S	Nominal wage rate for skilled labor, private formal sector
W_{SG}	Nominal wage rate for skilled labor, public sector
w_{SG}	Real wage rate for skilled labor, public sector
W_{SP}	Skilled wage rate in the private formal sector
W_{UG}	Nominal wage rate for unskilled labor, public sector
w_{UG}	Real wage rate for unskilled labor, public sector
W_{UP}	Nominal wage for urban unskilled labor, private formal sector
WT_A	Total wealth of rural sector household
WT_E	Total wealth of profit earners and capitalists
WT_F	Total wealth of urban formal sector household
WT_I	Total wealth of informal sector household
x_{ih}	Subsistence level of consumption of good i by household h
X_A	Production of rural sector good
X_G	Production of public good
X_I	Production of informal sector good
X_P	Production of private formal urban sector good
YF_P	Income by private formal urban sector firm
YH_A	Income of rural sector household
YH_E	Income of profit earners and capitalists
YH_F	Income of formal sector household
YH_I	Income of informal sector household
Z_G	Investment demand for rural sector good
Z_P	Investment demand for private urban formal sector good
Z_P^d	Desired level of investment
Z_P^G	Private investment by urban formal sector firms allocated to purchases of public services
Z_P^P	Private investment by urban formal sector firms allocated to purchases of private goods

Exogenous Variables

Name	**Definition**
$CONTAG$	Change in "sentiment" on world capital markets
ER	Nominal exchange rate
$FINFL$	Foreign inflation
FL_G	Foreign borrowing by government
FL_P	Foreign borrowing by private formal urban firms
$ftax_P$	Corporate income tax rate
g_{RUR}	Population growth in rural economy
g_{URB}	Population growth in urban economy
ID	Interest rate on domestic deposits
IDF	Domestic interest rate on foreign-currency deposits held in the domestic banking system
I_{EDU}	Investment in education
IF^W	Interest rate paid on foreign loans
IF^W_G	Interest rate on government foreign loans
IF^W_{RF}	Risk-free foreign interest rate on FD^W_h
I_{INF}	Investment in infrastructure
ILF	Interest rate on foreign-currency loans by domestic banks
$inctax_h$	Income tax rate for households h
$paytax_S$	Payroll tax rate on skilled labor
$paytax_U$	Payroll tax rate on unskilled labor
$protax_i$	Tax rate on gross production
$REMIT$	Foreign-currency value of remittances from abroad
S_G, S^E_G	Skilled workers in public production, and public education
S^T_G	Total number of skilled workers in the public sector
$saltax_i$	Tax rate on domestic sales
$sstax_S$	Social security tax on skilled workers in private formal sector
$sstax_U$	Social security tax on unskilled workers in private formal sector
tm_A, tm_P	Import tariff on rural sector goods, private urban sector goods
U_G	Unskilled workers in public sector
W_F	Foreign wage measured in foreign-currency terms
W_M	Nominal wage rate for unskilled labor, private formal sector
wpe_i	World price of exports of good i, with $i = A, P$
wpm_i	World price of imports of good i, with $i = A, P$

Parameters

Name	Definition
a_{ij}	Input-output coefficient for $i = A, G, I, P$ and $j = A, G, I, P$
α_0	Parameter used in determining subjective probability of default
α_{ED_A}	Shift parameter in X_A equation
α_{ED_P}	Shift parameter in X_P equation
α_{QA}	Shift parameter in rural sector composite good
α_{QP}	Shift parameter in urban composite good
α_{XA}	Shift parameter in rural sector production
α_{XG}	Shift parameter in public production
α_{X_GJ}	Shift parameter in J_G equation
α_{XI}	Shift parameter in informal sector production
α_{XP}	Shift parameter in private formal urban sector production
α_{XP1}	Shift parameter in composite input of unskilled and skilled/capital composite input
α_{XP2}	Shift parameter in composite input of skilled workers and private capital
β_E	Share parameter in SKL equation
β_{ED_A}	Share parameter in X_A equation
β_{ED_P}	Share parameter in X_P equation
β_F	Speed of adjustment for the supply of unskilled labor in the formal urban private sector
β_{QA}	Shift parameter in rural sector composite good
β_{QP}	Shift parameter in private formal urban sector composite good
β_{XA}	Shift parameter in rural sector production
β_{X_GJ}	Share parameter in J_G equation
β_{XG}	Share parameter in V_G equation
β_{XI}	Share parameter, informal production
β_{XP}	Share parameter between inputs and public capital in private production
β_{XP1}	Share parameter between unskilled and skilled/capital composite input
β_{XP2}	Share parameter between skilled workers and private capital
cc_{ih}	Coefficients determining allocation of total consumption by household h to good i

δ_c Collateral parameter

δ_{EDU} Depreciation rate of education capital

δ_{IMIG} Rate of "attrition" of the stock of migrants

δ_{INF} Depreciation rate of infrastructure capital

δ_P Depreciation rate of private capital

δ_S Rate of depreciation of the skilled labor force

η_{XA} Coefficient of returns to scale in rural production

γ_{Bh} Share of domestic deposits in total deposits for household h

γ_E Share of transfers allocated to profit earners and capitalists

γ_A Share of transfers allocated to rural sector household

γ_F Share of transfers allocated to formal sector household

γ_I Share of transfers allocated to informal sector household

gg_A Share of public expenditure on rural good

gg_G Share of public expenditure on public good

gg_P Share of public expenditure on formal private urban good

κ^B_{DL} Parameter used in determining the lending rate

κ_{ERP} Parameter used in determining external risk premium

κ^h_{FD} Measure of relative weight of the domestic interest rate on foreign-currency deposits held at home for household h

κ_{REM} Share of wages being remitted

λ_{IM} Speed of adjustment rate on international migration

λ_M Speed of adjustment rate on migration

λ_{PINV} Partial adjustment parameter for actual investment

Ω_{j0} Shift parameters in reservation wages of skilled and unskilled workers, $j = S, U$

ϕ^P_{DL} Parameter used in determining the composition of the demand for loans

ϕ^B_{FL} Parameter used in determining demand for foreign loans by commercial banks

$\phi^{B,d}_{GB}$ Parameter used in determining additional demand for government bonds by commercial banks (ratio of net wealth)

$\phi^{B,p}_{GB}$ Share of direct bond placement with commercial banks

ϕ^i_S Parameters used in reservation wages of skilled workers for $i = 1, 2, 3$

ϕ^i_U Parameters used in reservation wages of unskilled workers for $i = 1, 2, 3, 4$

ρ_E	Substitution parameter in SKL equation
ρ_{ED_A}	Substitution parameter in X_A equation
ρ_{ED_P}	Substitution parameter in X_P equation
ρ_{QA}	Substitution parameter in rural composite good
ρ_{QP}	Substitution parameter in urban composite good
ρ_{XA}	Substitution parameter in rural sector production
ρ_{XG}	Substitution parameter in V_G equation
ρ_{X_GJ}	Substitution parameter in J_G equation
ρ_{XP}	Substitution parameter between inputs and public capital in private production
ρ_{XP1}	Substitution parameter between unskilled and skilled/capital composite input
ρ_{XP2}	Substitution parameter between skilled workers and private capital
$rreq$	Reserve requirement ratio
σ_{ACC}	Elasticity of investment to growth rate of GDP at factor cost
σ_{ED_A}	Elasticity parameter used in E_A equation
σ_{ED_P}	Elasticity parameter used in E_P equation
σ_F	Parameter used in supply of unskilled labor in formal sector
σ_{IL}	Elasticity parameter used in equation determining desired level of investment, Z_P^d
σ_{IM}	Elasticity of international migration to wage differentials
σ_{KINF}	Elasticity of investment to ratio of public infrastructure capital to total urban population
σ_M	Elasticity of migration to wage differentials
σ_{QA}	Elasticity of rural composite good
σ_{QP}	Elasticity of private formal urban composite good
σ_{SAV}^h	Parameter in the saving rate equation for household h
σ_{XP1}	Elasticity of substitution between unskilled workers and composite input of skilled workers and private capital
σ_{XP2}	Elasticity of substitution between skilled workers and private capital
s_0^h	Saving coefficient for household h
shp_A	Share of profits from rural production distributed to rural household
shp_B^E	Share of commercial banks' income received by profit earners profit earners

shp_G	Share of the central bank's profits transferred to the government
shp_P^F	Share of private formal sector firms' net income distributed to formal sector household
shp_P^E	Share of private formal sector firms' net income received by profit earners
θ_U	Share of urban unskilled workers employed in formal sector
θ_{CON}^h	Parameter in H_h^d equation
θ_{DD}^E	Parameter used in determining the equilibrium condition of the market for government bonds
θ_{DD}^h	Parameter used in determining ratio $DD_h/ER(FD_h + FD_h^W)$
θ_{EINFL}^h	Parameter used in H_h^d equation
θ_{FD}^E	Parameter used in equilibrium condition of the market for government bonds
θ_{FD}^h	Parameter used in determining ratio FD_h/FD_h^W
θ_{FL}^B	Parameter used in determining demand for foreign loans by commercial banks
θ_{GB}^B	Parameter used in determining additional demand for government bonds by commercial banks (ratio of net wealth)
θ_{GB}^E	Parameter used in determining the equilibrium condition of the market for government bonds
θ_{IF}^h	Parameter used in H_h^d equation
τ_I	Fraction of remittances allocated to informal households
ν_S, ν_U	Firms' bargaining power relative to skilled, unskilled, workers
wr_i	Initial share of good i in rural consumption price index
wu_i	Initial share of good i in urban consumption price index
wcp	Share of spending by rural households in total consumption
χ	Parameter used in determining expected nominal depreciation
zz_G	Share of investment expenditure on public goods
zz_P	Share of investment expenditure on formal private goods

Appendix C
Calibration and Parameter Values

The calibration of our IMMPA model for Turkey was carried out using *a*) a 1996 Financial Social Accounting Matrix (FSAM); *b*) an auxiliary data set; and *c*) a set of non-calibrated parameters. A summary description of each of these sources of information is provided in this appendix. A complete description of the creation of the 1996 Turkey FSAM and the auxiliary data set, as well as the derivation of non-calibrated parameter estimates, can be found in Jensen and Yeldan (2004).

The main data sources for the creation of the FSAM include the website of the Turkish State Planning Organization (SPO), http://www.dpt.gov.tr, and various publications by the State Institute of Statistics (SIS) and the Central Bank of Turkey (CBT). The FSAM itself was built in two steps: *a*) construction of a MacroSAM; and *b*) disaggregation into a MicroSAM. The construction of the MacroSAM was split into a real MacroSAM and a financial MacroSAM. The link between the two types of MacroSAMs was made through the savings-investment balance account. Accordingly, this account was forced to be identical in the two SAMs. In the following, the construction and key characteristics of the real and financial MacroSAMs are described. The more disaggregated characteristics are presented in the publication mentioned above.

The real MacroSAM was built around final demand and cost components of GDP data from the SIS. SIS publications were generally preferred as the main data source for the input-output part of the MacroSAM, because they allowed for better correspondence with other data sources. Intermediate consumption, however, was derived from the 1996 Turkey Input-Output table.

SPO data were used as the main source for public sector budget data, whereas the CBT publications were used as the main source for the current account of the balance of payments. Data regarding commercial banks and the Central Bank of Turkey were mainly obtained from the SIS publications. The balanced real MacroSAM is presented in Table C1.

The real MacroSAM indicates that foreign trade (as measured by the sum of exports and imports) makes up around 50 percent of GDP, implying that Turkey is a fairly open economy. Exports make up around 13 percent of total production, while imports make up around 13 percent of absorption. The large current account deficit, which amounts in the MacroSAM to about 5

percent of GDP, indicates that absorption is significantly larger than production. Accordingly, the trade balance deficit amounts to more than 20 percent of export earnings.

Looking at savings rates, the data show that firms save around 20 percent of their disposable income whereas households save around 14 percent of their disposable income. In comparison, the government primary surplus amounts to 3.4 percent of GDP. Finally, it can be noticed that interest payments by the public sector amount to around 39 percent of tax revenues, indicating that the public sector is running an unsustainable overall budget deficit of 6.9 percent of GDP.

The financial MacroSAM was built around the savings and investment aggregates from the real MacroSAM. Accordingly, the correspondence between the savings-investment balance accounts of the two SAMs were ensured by construction. The main data sources used in the construction of the financial MacroSAM, as noted earlier, were CBT and SIS publications. SIS publications were used to obtain information about public sector financial flows as well as private sector borrowing in foreign currency. The remaining data in the financial MacroSAM were derived from CBT publications. The balanced financial MacroSAM is presented in Table C2.

The financial MacroSAM shows that government bond issuing was around 7.1 percent of GDP. This is slightly higher than the overall financing need of 6.9 percent, reflecting the fact that the Turkish government reduced foreign borrowing slightly in 1996. The increase in bond holdings of commercial banks accounts for around 90 percent of the total increase in government bonds. Profit earners and the CBT hold the remaining 10 percent of newly issued bonds. Money issuing, including lending to commercial banks, stood at 2.4 percent of GDP. This is a relatively small number, but it reflects the fact that inflation was high in 1996. Money issuing would therefore represent a substantially higher proportion of lagged GDP, reflecting significant use of the inflation tax in 1996. Foreign exchange reserves increased by around 6.1 percent of imports. Again, the current import number is inflated by strong depreciation of the exchange rate in 1996. The change in foreign exchange reserves would therefore be significant when compared to lagged imports, indicating that significant exchange reserve accumulation took place in 1996. Households increased borrowing from commercial banks by around 2.9 percent of GDP or 25 percent of household savings. In comparison, firms increased their borrowing by around 9.3 percent of GDP or 95 percent of firms' savings. This pattern indicates that commercial banks mainly invest their

funds in *a*) loans to firms for investment purposes; and b) government bonds. Finally, it may be noticed that commercial banks mainly funds themselves out of domestic deposits. The share of deposits in total additional funding was around 65 percent in 1996.

The auxiliary data set includes mainly level data and interest rates that could not be directly derived from the 1996 Turkey FSAM. The Turkish economy was characterized by much instability over the 1996-2003 period. The base year of 1996 was a relatively normal year, but it was still characterized by very high inflation and underlying volatility. Accordingly, it does not make much sense to use 1995-96 financial stock data to derive implicit interest rates, or to use 1995-96 interest rates to derive implicit data on financial stocks. Instead, initial and lagged values for interest rates, inflation rates and depreciation rates were chosen (in close correspondence with country experts) so as to match 2003 values and to give rise to reasonable stock numbers. In sum, auxiliary data on financial stocks were derived by applying the chosen interest rates to the interest payments recorded in the FSAM.

The auxiliary data for the labor market indicate that unskilled labor is overwhelmingly employed in the rural and informal sectors. Specifically, 49 percent of the unskilled employed workers are working in the rural sector while 39 percent are working in the urban informal sector. In comparison, 11 percent of unskilled employed are working in the urban private formal sector while only 1 percent is initially employed in the public sector. Skilled employment is more of an urban public sector phenomenon. Indeed, the data indicate that 62 percent of employed skilled workers are working in the urban private formal sector whereas 38 percent of the total are working in the urban public sector. Initial rates of open unemployment among workers in the urban formal sector can be derived from estimates of sectoral labor supply. Initial unemployment rates are estimated to be 11 percent among unskilled workers and 15 percent among skilled workers.

Initial levels of the private formal sector capital stock, as well as public capital stocks of infrastructure and education capital, were derived from a combination of initial data and sensitivity analyses. Depreciation rates were estimated to be 2.1 percent for public sector infrastructure capital and 3.4 percent for public sector education capital and private formal sector capital.

Growth rates of rural and urban labor stocks were estimated to be respectively 0.1 percent and 2.3 percent. The reason why the rural labor supply growth rate is so low is because of the relatively high level of migration of families from rural to urban areas. While fertility levels remain relatively

high in rural compared to urban areas, migration of families bring children into urban areas before they reach the age for entering the labor market.

The relatively high levels of migration between segments of the Turkish labor market is evident from the data as well. Estimates indicate that yearly migration from rural to urban areas amounts to around 2.5 percent of the rural labor force. In comparison, overseas migration amounts to around 1.5 percent of the urban labor force, while migration between the informal and formal labor market segments amounts to around 0.9 percent of the informal sector labor force. Accordingly, migration plays a very important role for labor market developments in Turkey. In addition, the yearly number of unskilled workers receiving education to achieve skilled status, is estimated to be around 1.7 percent of the urban labor force.

The initial inflation rate was set at around 30 percent while the initial depreciation rate of the nominal exchange rate was set at around 10 percent. The initial expected depreciation rate was also set at 10 percent. In addition, the levels of bond holdings of profit earners, commercial banks, and the CBT, were set so as to imply an initial bond rate of about 16 percent (consistent with the interest payments on government bonds given in the FSAM). The initial bond rate was allowed to be relatively low so as to achieve a sensible balance between the financial stocks and flows. Accordingly, these initial levels allowed for a public debt stock of around 66 percent of GDP. Nevertheless, inflation and exchange rate depreciation were allowed to increase to levels around 30-40 percent (and the bond rate around 45-50 percent) as part of the baserun solution underlying the simulations reported in this paper. In addition, the level of household deposits with commercial banks, as well as commercial bank borrowing from the CBT, were set so as to allow for a deposit rate/official rate of 25 percent and a foreign-currency deposit rate of about 10 percent. In addition, the stock of money holdings by households were set so as to allow for a reserve requirement ratio of around 5 percent.

Levels of household and firm loan stocks with commercial banks were subsequently set so as to allow for a lending rate around 35 percent. Given the levels of domestic deposit rates and expected depreciation, as well as the reserve requirement ratio and the lending rate, a domestic premium of about 3 percent was derived. Again, the initial level of the domestic premium was set at a relatively low level in order to allow for a sensible balance between financial stocks and flows. Nevertheless, the domestic premium was allowed to increase to levels of 5-8 percent as part of the baserun solution underlying the simulations reported in the text.

The probability of default was initially set at 50 percent, but was allowed to decline to levels around 30-40 percent over the baserun. The mirror image of the decline in the probability of default was that credibility was allowed to increase from an initial level of 50 percent to around 60-70 percent over the baserun period. This also meant that expected inflation was allowed to decline slightly from an initial level of about 18 percent over the baserun. The expected depreciation rate was subsequently allowed to increase gradually from an initial level of around 10 percent (as noted above) to levels slightly below expected inflation over the baserun. Foreign inflation was set at an exogenous rate of 2 percent per year.

Most of the non-calibrated parameters were estimated from time-series data. The relative wage elasticity of rural-urban migration was estimated to be 0.019 whereas the relative wage elasticity of overseas migration was estimated to be 0.012. The partial adjustment (weighting) parameters were estimated to be respectively 0.56 and 0.28. Subsequently, the wage elasticity and partial adjustment speed of informal-formal sector migration were set at intermediate levels of 0.016 and 0.40. The rate of decline in the number of Turkish workers abroad was set at 1 percent per year, whereas the share of remittances in foreign workers' wage income was set at 10 percent. In addition, the substitution elasticity between teachers and education capital in the CES skills upgrading function (that is, the education production function) was set at a low value of 0.3.

In the money demand specification, the domestic currency interest rate elasticity was set at the commonly estimated value of -0.21 for all households, except for profit earners where the elasticity was set at the estimated value of -0.91. The foreign currency interest rate elasticity was set at the commonly estimated value of -0.63. Finally, the disposable income elasticity of money demand was set at the commonly estimated value of 0.42 for all households.

In the demand equation for foreign currency deposits, the foreign currency interest rate elasticity was set at the commonly estimated value of 0.37 for the formal sector household and profit earners (the only two categories of households in the model in possession of foreign exchange deposits). In the demand equation for government bonds by profit earners, the foreign currency interest rate elasticity was set at the estimated value of -0.37, and the domestic currency interest rate elasticity at the estimated value of -0.91 (similar to the money demand elasticity given earlier). In addition, the bond rate elasticity was set at a level of 2.0, above the estimated level of 1.20, at the suggestion of country experts.

Turning to the private wage specifications, parameters measuring worker's bargaining strength were set at the same estimated level of 0.63. The public sector wage "leadership" elasticities were set at estimated levels of respectively 0.75 and 0.06 for the unskilled and skilled wage specifications; the expected urban price elasticities were set at estimated levels of respectively 0.32 and 0.26 for the unskilled and skilled wage specifications; and the unemployment elasticities were set at estimated levels of respectively 0.23 and 0.25 for the unskilled and skilled wage specifications. Finally, the minimum wage elasticity was set at an estimated level of 0.47 for the unskilled wage specification. The plausibility of parameter values was assessed through sensitivity analysis.

Production elasticities were not immediately available but we relied to some extent on existing CGE applications for Turkey. The share of land in rural production was assumed to be 0.3, leaving a production share of 0.7 for unskilled labor (assuming that no capital is used in agricultural production). Similarly, it was assumed that there are moderate substitution possibilities between public sector infrastructure investment and unskilled rural labor, through the adoption of an elasticity of substitution of 0.75. Finally, the elasticity of transformation between domestic market and export of domestic production was taken to be at a middle level, that is, 1.0. In addition, it was assumed as a starting point that there are constant returns to scale in urban informal sector production.

Looking at urban private formal production, the top-level CES substitution elasticity between public infrastructure capital and composite primary production factors was assumed to be a moderate 0.75. At the second level, CES substitution possibilities between formal urban unskilled labor and the composite factor consisting of skilled labor and private physical capital was assumed to be higher at 1.2. Finally, the bottom-nest CES substitution elasticity between skilled labor and the private capital stock was assumed to be 0.4, reflecting little substitution possibilities at this level (as suggested by the evidence). Finally, public sector composite labor was assumed to be moderately substitutable to public infrastructure capital in the top-level public production nest, whereas substitution possibilities between unskilled and skilled public employees was assumed to be moderately high at 1.2.

Parameter estimates for the private investment equation were taken in part from the studies cited in the text. The elasticity with respect to real GDP growth (which captures the accelerator effect) was set at 1.5 and the real lending rate elasticity was set at the relatively high value of -2.5. How-

ever, for the infrastructure elasticity of investment demand, we found no reliable estimate in the literature. We chose to set it to a relatively low value, 0.1. Given that we did not consider changes in public investment in infrastructure, this particular choice has actually little effect on the simulation results reported in the text. The partial adjustment rate of actual to desired investment was set at an estimated value of 0.63.

The relative interest rate elasticity of commercial banks' foreign borrowing was set at an estimated value of 0.46, whereas the elasticity of commercial banks' demand for government bonds with respect to the expected bond rate was set at the estimated value of 0.46. The elasticity of the banks' domestic risk premium with respect to the collateral ratio could not be estimated due to a lack of time series data. The elasticity was chosen to be 0.2, in order to avoid very large (and potentially destabilizing) amplification effects. Similarly, the partial adjustment coefficient of the expected rate of depreciation was chosen to be 0.9 at the suggestion of country experts. Finally, the direct placement ratio of government bonds with commercial banks was set at 0.9, reflecting the placement ratio of newly issued bonds observed in the 1996 Turkey FSAM.

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Table 1
Financial Balance Sheets
(in domestic-currency terms, at current prices)

Households

Assets	Liabilities
Cash holdings (H)	Borrowing from Banks (DL_F)
Dom. bank dep. ($DD + ER \cdot FD$)	Net financial wealth (WT)
Foreign bank deposits ($ER \cdot FD^W$)	
Government bonds (GB_E)	

Firms

Assets	Liabilities
Private capital Stock ($PK \cdot K_P$)	Dom. borr. ($DL_P + ER \cdot DLF_P$)
	Foreign borrowing ($ER \cdot FL_P$)
	Net worth (NW_P)

Commercial Banks

Assets	Liabilities
Government bonds (GB_B^T)	Dom. bank dep. ($DD + ER \cdot FD$)
Loans to firms ($DL_P + ER \cdot DLF_P$)	Foreign borrowing ($ER \cdot FL_B$)
Loans to households (DL_F)	Borr. from central bank (DL^B)
Reserve requirements (RR)	Net worth (NW^B)

Central Bank

Assets	Liabilities
Loans to commercial banks (DL^B)	Cash in circulation (H)
Foreign reserves ($ER \cdot FF$)	Reserve requirements (RR)
Government bonds (GB_{CB})	Net worth (NW_{CB})

Government

Assets	Liabilities
Education Capital ($PK \cdot K_{EDU}$)	Government bonds (GB)
Infrastructure capital ($PK \cdot K_{INF}$)	Foreign borrowing ($ER \cdot FL_G$)
	Net worth (NW^G)

Consolidated Public Sector

Assets	Liabilities
Loans to commercial banks (DL^{BC})	Cash in circulation (H)
Foreign reserves ($ER \cdot FF$)	Reserve requirements (RR)
Education capital ($PK \cdot K_{EDU}$)	Government bonds (GB)
Infrastructure capital ($PK \cdot K_{INF}$)	Foreign borrowing ($ER \cdot FL_G$)
	Net worth (NW^{PS})

Table 2
Turkey: Simulation Results
Permanent, 5 Percentage Point Increase in the Official Interest Rate
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	-3.51	-6.06	-7.57	-8.67	-9.43	-9.56	-8.85	-7.58	-6.44	-5.94
Gross domestic product	-3.48	-5.85	-7.33	-8.47	-9.28	-9.42	-8.71	-7.45	-6.33	-5.88
Imports of goods and NFS	-3.61	-6.74	-8.41	-9.36	-9.95	-10.01	-9.31	-8.02	-6.76	-6.12
Total expenditure	-3.51	-6.06	-7.57	-8.67	-9.43	-9.56	-8.85	-7.58	-6.44	-5.94
Total consumption	-3.46	-5.25	-6.39	-7.40	-8.15	-8.24	-7.49	-6.29	-5.30	-4.99
Private consumption	-3.46	-5.24	-6.34	-7.32	-8.04	-8.12	-7.37	-6.18	-5.19	-4.87
Public consumption	-3.44	-5.35	-6.67	-7.87	-8.76	-8.91	-8.13	-6.85	-5.80	-5.50
Total investment	-4.08	-9.44	-12.06	-13.15	-13.68	-13.65	-12.73	-11.10	-9.51	-8.70
Private investment	-4.29	-10.89	-14.32	-15.61	-16.18	-16.17	-15.25	-13.52	-11.81	-10.99
Public investment	-3.46	-6.03	-7.57	-8.66	-9.37	-9.45	-8.68	-7.33	-6.08	-5.49
Exports of goods and NFS	-3.15	-5.64	-7.73	-9.27	-10.23	-10.50	-9.92	-8.64	-7.24	-6.35
External Sector (% of GDP)[1]										
Current account	0.15	0.35	0.24	0.09	-0.01	-0.07	-0.11	-0.11	-0.07	0.00
Exports of goods and NFS	0.10	0.06	-0.11	-0.22	-0.26	-0.29	-0.32	-0.32	-0.24	-0.13
Imports of goods and NFS	-0.04	-0.28	-0.34	-0.29	-0.22	-0.19	-0.20	-0.19	-0.14	-0.08
Labor Remittances	0.01	-0.01	-0.03	-0.03	-0.03	-0.03	-0.03	-0.02	0.00	0.02
Factor services	0.00	0.01	0.04	0.05	0.06	0.05	0.05	0.04	0.04	0.03
Capital account	-0.15	-0.35	-0.24	-0.09	0.01	0.07	0.11	0.11	0.07	0.00
Private borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial bank borrowing	-0.08	-0.09	-0.02	0.08	0.12	0.09	0.02	-0.03	-0.06	-0.07
Public borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Household deposits abroad	0.08	0.26	0.22	0.17	0.10	0.01	-0.09	-0.14	-0.13	-0.06
Government Sector (% of GDP)[1]										
Total revenue	0.35	0.23	0.27	0.37	0.42	0.36	0.24	0.15	0.14	0.21
Direct taxes	0.36	0.36	0.43	0.51	0.53	0.46	0.35	0.25	0.22	0.25
Indirect taxes	-0.01	-0.12	-0.16	-0.15	-0.12	-0.11	-0.11	-0.11	-0.08	-0.04
Total expenditure	0.70	0.99	1.40	1.82	2.07	2.02	1.71	1.35	1.14	1.14
Consumption	0.00	0.06	0.09	0.09	0.08	0.08	0.10	0.11	0.10	0.08
Investment	0.00	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.03	0.04
Transfers to households	-1.17	-2.32	-3.72	-4.81	-5.24	-4.97	-4.25	-3.44	-2.84	-2.56
Domestic interest payments	1.86	3.27	5.06	6.56	7.24	6.92	5.87	4.68	3.86	3.58
Foreign interest payments	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.01
Total financing	0.35	0.76	1.13	1.45	1.65	1.66	1.47	1.20	1.00	0.94
Foreign borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bond financing	0.35	0.76	1.13	1.45	1.65	1.66	1.47	1.20	1.00	0.94
Labor Market										
Nominal wages										
Rural sector	-3.45	-5.23	-6.52	-7.76	-8.72	-8.93	-8.24	-7.06	-6.10	-5.79
Informal sector	-3.37	-3.88	-4.78	-6.18	-7.39	-7.60	-6.69	-5.40	-4.78	-5.24
Private formal sector										
Unskilled	-3.55	-6.84	-8.57	-9.56	-10.12	-10.10	-9.25	-7.78	-6.39	-5.68
Skilled	-3.15	-6.40	-8.16	-9.14	-9.71	-9.79	-9.14	-7.82	-6.41	-5.54
Public sector										
Unskilled	-3.45	-5.62	-7.02	-8.17	-9.00	-9.12	-8.34	-7.03	-5.91	-5.50
Skilled	-3.45	-5.62	-7.02	-8.17	-9.00	-9.12	-8.34	-7.03	-5.91	-5.50
Employment										
Rural sector	0.00	0.00	0.04	0.10	0.16	0.22	0.26	0.30	0.33	0.35
Informal sector	0.00	0.00	-0.04	-0.11	-0.17	-0.22	-0.26	-0.28	-0.29	-0.29
Private formal sector										
Unskilled	0.05	-0.08	-0.36	-0.40	-0.34	-0.41	-0.59	-0.73	-0.68	-0.50
Skilled	-0.17	-0.25	-0.40	-0.49	-0.54	-0.58	-0.62	-0.66	-0.71	-0.78
Public sector										
Unskilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor supply (urban formal)										
Unskilled	0.00	0.00	-0.04	-0.11	-0.19	-0.26	-0.33	-0.39	-0.45	-0.49
Skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unemployment rate[1]										
Unskilled	-0.04	0.06	0.24	0.20	0.10	0.08	0.15	0.19	0.12	-0.03
Skilled	0.09	0.13	0.19	0.22	0.23	0.23	0.23	0.24	0.24	0.24
Real wage ratios[1]										
Expected urban-rural	0.00	-0.13	-2.55	-3.02	-2.46	-1.81	-1.46	-1.28	-0.92	-0.31
Expected formal-informal	0.00	-0.47	-8.07	-9.16	-7.57	-5.83	-5.28	-5.63	-5.47	-3.80
Expected international-urban	0.00	0.52	1.97	1.71	0.84	0.20	-0.20	-0.45	-0.53	-0.35
Migration[1]										
Rural-urban (% of urban unskilled labor supply)	0.00	0.00	-0.03	-0.05	-0.05	-0.04	-0.03	-0.03	-0.02	-0.01
Formal-informal (% of urban formal unskilled labor supply)	0.00	0.00	-0.04	-0.07	-0.08	-0.07	-0.07	-0.06	-0.06	-0.04
International-Urban (% of urban unskilled labor supply)	0.00	0.00	0.01	0.02	0.02	0.01	0.01	0.00	0.00	0.00
Financial Sector										
Deposit rate	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
Deposit rate (Foreign Currency)	-0.02	-0.04	-0.04	-0.01	0.04	0.08	0.10	0.10	0.09	0.07
Lending rate	4.79	4.74	4.70	4.64	4.57	4.50	4.47	4.48	4.52	4.57
Lending rate (Foreign Currency)	4.18	4.28	4.34	4.33	4.25	4.12	3.95	3.76	3.61	3.54
Bond rate	6.17	7.65	9.48	10.71	11.07	10.60	9.47	8.06	6.88	6.29
Credibility	0.00	-0.81	-1.87	-2.67	-3.16	-3.41	-3.39	-3.07	-2.54	-2.07
Domestic premium	0.00	-0.02	-0.04	-0.06	-0.08	-0.09	-0.11	-0.11	-0.09	-0.08
External premium	-0.02	-0.04	-0.04	-0.01	0.03	0.07	0.10	0.10	0.09	0.07
Probability of default	0.00	0.81	1.87	2.67	3.16	3.41	3.39	3.07	2.54	2.07
Memorandum items										
GDP at market prices[2]	-0.03	-0.07	-0.10	-0.12	-0.14	-0.17	-0.21	-0.24	-0.27	-0.29
Value added at factor cos[2]	-0.01	-0.02	-0.07	-0.10	-0.13	-0.15	-0.19	-0.22	-0.23	-0.24
Value added in rural secto[2]	0.00	0.00	0.02	0.05	0.08	0.11	0.13	0.15	0.17	0.18
Value added in urban informal secto[2]	0.00	0.00	-0.01	-0.02	-0.04	-0.05	-0.05	-0.06	-0.06	-0.06
Value added in urban formal secto[2]	-0.02	-0.06	-0.18	-0.28	-0.36	-0.45	-0.56	-0.66	-0.73	-0.78
Private Consumptior[2]	-0.01	0.36	0.66	0.86	0.97	1.01	0.96	0.83	0.69	0.58
Private Investmen[2]	-0.85	-4.78	-6.78	-7.16	-7.15	-7.11	-6.88	-6.41	-5.94	-5.82
Disposable income[2]	0.99	1.59	1.91	2.16	2.33	2.31	2.09	1.81	1.65	1.71
Nominal exchange rat[1]	-3.30	-5.98	-7.80	-9.04	-9.80	-9.91	-9.19	-7.81	-6.41	-5.59
real exchange rate[1]	0.22	0.33	0.02	-0.24	-0.36	-0.44	-0.49	-0.45	-0.31	-0.13
Inflation rate[1]	-3.78	-2.48	-1.76	-1.60	-1.25	-0.20	1.23	2.04	1.67	0.57
Ratio of debt to GDP	1.23	2.66	3.96	5.07	5.79	5.82	5.16	4.22	3.50	3.28
Ratio of tax revenues to government domestic det[1]	-2.92	-4.21	-4.44	-4.54	-4.71	-4.86	-4.76	-4.32	-3.73	-3.35
Ratio of foreign currency deposits in total bank deposit[1]	-0.52	-0.57	-0.60	-0.59	-0.56	-0.50	-0.44	-0.38	-0.33	-0.32
Ratio of foreign currency loans in total bank loan[1]	-1.34	-1.36	-1.05	-0.23	0.79	1.54	1.71	1.39	0.93	0.59
Ratio of government primary surplus to GDP	1.50	2.51	3.93	5.11	5.59	5.26	4.40	3.48	2.86	2.64
Ratio of Interest payments to tax revenue	6.47	12.32	19.84	25.69	27.84	26.12	21.80	17.03	13.63	12.19

[1] Absolute deviations from baseline. [2] In real terms.

Table 3
Turkey: Prices and Structural Indicators
Permanent, 5 Percentage Point Increase in the Official Interest Rate
(Absolute deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Consumer Prices and the Real Exchange Rate [1]										
Rural CPI	-3.44	-5.37	-6.68	-7.87	-8.77	-8.91	-8.14	-6.85	-5.81	-5.50
Urban CPI	-3.45	-5.62	-7.02	-8.17	-9.00	-9.12	-8.34	-7.03	-5.91	-5.50
Real exchange rate	0.22	0.33	0.02	-0.24	-0.36	-0.44	-0.49	-0.45	-0.31	-0.13
Value Added Prices [1]										
Rural	-3.45	-5.23	-6.50	-7.71	-8.63	-8.81	-8.10	-6.90	-5.92	-5.60
Urban private informal	-3.37	-3.89	-4.81	-6.26	-7.51	-7.76	-6.88	-5.61	-5.00	-5.46
Urban private formal	-3.50	-6.85	-8.71	-9.65	-10.11	-10.06	-9.27	-7.83	-6.35	-5.46
Urban public	-3.45	-5.62	-7.02	-8.17	-9.00	-9.12	-8.34	-7.03	-5.91	-5.50
Real Disposable Income [1]										
Rural households	0.31	0.70	1.40	1.91	2.12	2.07	1.88	1.65	1.47	1.40
Urban households	-0.12	0.29	0.46	0.54	0.62	0.69	0.70	0.61	0.45	0.30
Informal	0.35	1.70	2.16	1.97	1.61	1.45	1.50	1.45	1.04	0.35
Formal	-1.34	-3.95	-7.49	-10.66	-12.10	-11.50	-9.64	-7.57	-6.00	-5.17
Capitalists and rentiers	0.84	3.03	5.72	8.23	9.84	10.15	9.17	7.61	6.39	5.99
Real Private Consumption [1]										
Rural households	1.38	2.23	2.82	3.15	3.20	2.98	2.58	2.19	1.99	2.03
Urban households	0.84	1.47	1.73	1.93	2.07	2.08	1.90	1.64	1.44	1.40
Informal	0.73	2.20	2.63	2.39	1.99	1.79	1.79	1.70	1.29	0.62
Formal	-0.93	-3.38	-6.98	-10.23	-11.72	-11.18	-9.39	-7.39	-5.82	-4.95
Capitalists and rentiers	3.11	5.71	8.38	10.79	12.30	12.46	11.28	9.54	8.28	7.98
Production Structure										
Size of informal sector (% of total output)	0.00	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.07
Size of rural sector (% of total output)	0.00	0.01	0.02	0.03	0.04	0.06	0.07	0.08	0.09	0.10
Composition of Employment										
Employment in rural sector (% of total employment)	0.00	0.01	0.04	0.07	0.09	0.11	0.14	0.16	0.16	0.16
Employment in informal sector (% of total employment)	0.00	0.01	0.01	-0.01	-0.03	-0.04	-0.05	-0.05	-0.05	-0.06
Employment in informal sector (% of urban employment)	0.01	0.03	0.05	0.04	0.03	0.02	0.03	0.03	0.03	0.02
Employment in public sector (% of total employment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employment in public sector (% of urban employment)	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Private Expenditures										
Consumption (% of GDP)	0.01	0.45	0.76	0.90	0.98	1.02	1.02	0.95	0.82	0.71
Consumption (% of total consumption)	0.00	0.01	0.04	0.07	0.10	0.11	0.11	0.10	0.09	0.10
Investment (% of GDP)	-0.16	-0.84	-1.04	-1.03	-1.00	-1.00	-0.98	-0.92	-0.83	-0.76
Investment (% of total investment)	-0.16	-1.12	-1.71	-1.83	-1.83	-1.83	-1.78	-1.66	-1.52	-1.46
Public Expenditures										
Consumption (% of GDP)	0.00	0.06	0.09	0.09	0.08	0.08	0.10	0.11	0.10	0.08
Investment (% of GDP)	0.00	-0.01	-0.02	-0.02	-0.01	0.00	0.00	0.01	0.03	0.04
Infrastructure (% of public investment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Education (% of public investment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public sector wage bill (% of public expenditure)	0.70	1.69	3.52	5.62	6.65	6.10	4.79	3.61	2.86	2.56
External Sector										
Rural sector exports (% of total exports)	0.00	-0.06	-0.07	-0.06	-0.04	-0.02	-0.01	0.01	0.04	0.08
Imports of non-rural sector goods (% of total imports)	-0.01	-0.06	-0.07	-0.06	-0.05	-0.05	-0.05	-0.05	-0.04	-0.03
External debt (% of GDP)	-0.13	-0.51	-0.76	-0.84	-0.83	-0.77	-0.67	-0.57	-0.49	-0.46
Degree of openness (total trade in % of GDP)	0.06	-0.22	-0.45	-0.50	-0.47	-0.48	-0.52	-0.50	-0.38	-0.21

[1] Percentage deviations from baseline.

Table 4
Turkey: Simulation Results
Permanent, 2.5 Percentage Point Increase in the Value Added Tax Rate
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	2.49	5.76	8.81	11.65	13.95	15.04	14.68	13.52	12.68	12.89
Gross domestic product	3.19	6.43	9.51	12.46	14.84	15.96	15.59	14.45	13.65	13.92
Imports of goods and NFS	0.25	3.49	6.40	8.90	10.93	11.94	11.63	10.47	9.53	9.58
Total expenditure	2.49	5.76	8.81	11.65	13.95	15.04	14.68	13.52	12.68	12.89
Total consumption	3.90	6.97	9.80	12.62	14.92	15.97	15.64	14.66	14.11	14.60
Private consumption	3.93	6.98	9.77	12.54	14.80	15.83	15.49	14.53	13.98	14.44
Public consumption	3.69	6.93	10.00	13.11	15.64	16.79	16.40	15.32	14.74	15.29
Total investment	0.74	4.97	8.63	11.53	13.77	14.79	14.14	12.42	11.00	10.90
Private investment	-0.11	4.33	8.19	11.06	13.24	14.18	13.30	11.18	9.31	8.86
Public investment	3.21	6.46	9.53	12.37	14.68	15.81	15.49	14.35	13.52	13.75
Exports of goods and NFS	0.35	2.93	5.83	8.52	10.77	12.03	11.88	10.73	9.59	9.33
External Sector (% of GDP)[1]										
Current account	-0.01	-0.19	-0.15	-0.06	0.03	0.10	0.16	0.16	0.12	0.04
Exports of goods and NFS	-0.80	-0.92	-0.88	-0.88	-0.87	-0.82	-0.78	-0.80	-0.90	-1.03
Imports of goods and NFS	-0.89	-0.83	-0.83	-0.92	-1.00	-1.03	-1.03	-1.06	-1.12	-1.19
Labor Remittances	-0.13	-0.14	-0.13	-0.14	-0.14	-0.14	-0.14	-0.15	-0.17	-0.21
Factor services	0.04	0.04	0.03	0.03	0.03	0.04	0.05	0.06	0.07	0.09
Capital account	0.01	0.19	0.15	0.06	-0.03	-0.10	-0.16	-0.16	-0.12	-0.04
Private borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial bank borrowing	0.00	0.02	-0.04	-0.10	-0.13	-0.11	-0.05	0.00	0.02	0.02
Public borrowing	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02
Household deposits abroad	-0.01	-0.18	-0.20	-0.17	-0.12	-0.02	0.09	0.15	0.13	0.04
Government Sector (% of GDP)[1]										
Total revenue	1.58	1.38	1.19	0.99	0.90	0.96	1.09	1.18	1.19	1.14
Direct taxes	-0.60	-0.71	-0.83	-0.97	-1.04	-1.00	-0.91	-0.84	-0.83	-0.86
Indirect taxes	2.18	2.09	2.02	1.96	1.94	1.96	2.00	2.02	2.01	2.00
Total expenditure	1.27	0.63	-0.06	-0.75	-1.20	-1.25	-1.01	-0.72	-0.60	-0.70
Consumption	0.05	0.06	0.06	0.08	0.10	0.10	0.11	0.12	0.16	0.21
Investment	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Transfers to households	1.69	2.23	3.09	3.99	4.54	4.57	4.22	3.75	3.43	3.38
Domestic interest payments	-0.43	-1.61	-3.17	-4.77	-5.77	-5.87	-5.28	-4.53	-4.11	-4.20
Foreign interest payments	-0.04	-0.04	-0.04	-0.05	-0.05	-0.05	-0.05	-0.06	-0.07	-0.08
Total financing	-0.31	-0.75	-1.25	-1.74	-2.10	-2.21	-2.10	-1.90	-1.79	-1.85
Foreign borrowing	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02
Bond financing	-0.30	-0.74	-1.24	-1.74	-2.09	-2.20	-2.08	-1.89	-1.78	-1.83
Labor Market										
Nominal wages										
Rural sector	3.32	6.26	8.94	11.61	13.69	14.44	13.78	12.50	11.67	11.90
Informal sector	5.14	8.58	12.03	16.20	19.73	21.40	21.26	20.72	21.22	23.24
Private formal sector										
Unskilled	-1.35	2.06	5.23	8.00	10.27	11.45	11.21	10.10	9.25	9.47
Skilled	-2.46	0.16	2.61	4.71	6.52	7.61	7.54	6.58	5.70	5.72
Public sector										
Unskilled	3.49	6.74	9.81	12.82	15.28	16.41	16.05	14.94	14.25	14.68
Skilled	3.49	6.74	9.81	12.82	15.28	16.41	16.05	14.94	14.25	14.68
Employment										
Rural sector	0.00	0.13	0.30	0.48	0.64	0.80	0.93	1.05	1.15	1.23
Informal sector	0.00	-0.16	-0.37	-0.59	-0.80	-0.99	-1.15	-1.29	-1.40	-1.49
Private formal sector										
Unskilled	-2.12	-2.72	-3.18	-3.66	-3.97	-4.01	-3.90	-3.85	-4.00	-4.28
Skilled	-0.29	-0.23	-0.13	-0.07	-0.04	-0.04	-0.07	-0.12	-0.17	-0.23
Public sector										
Unskilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor supply (urban formal)										
Unskilled	0.00	-0.10	-0.26	-0.45	-0.67	-0.90	-1.14	-1.36	-1.58	-1.80
Skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unemployment rate[1]										
Unskilled	1.75	2.05	2.18	2.29	2.28	2.07	1.78	1.55	1.46	1.47
Skilled	0.16	0.11	0.06	0.03	0.02	0.02	0.03	0.04	0.06	0.07
Real wage ratios[1]										
Expected urban-rural	0.00	-10.67	-8.42	-6.60	-5.84	-5.21	-4.39	-3.64	-3.24	-3.10
Expected formal-informal	0.00	-26.74	-21.70	-18.81	-19.59	-20.62	-20.62	-20.38	-21.39	-24.03
Expected international-urban	0.00	8.07	7.07	6.13	5.37	4.66	4.06	3.57	3.01	2.20
Migration [1]										
Rural-urban (% of urban unskilled labor supply)	0.00	-0.11	-0.14	-0.14	-0.13	-0.11	-0.09	-0.07	-0.05	-0.04
Formal-informal (% of urban formal unskilled labor supply)	0.00	-0.10	-0.16	-0.19	-0.21	-0.23	-0.23	-0.23	-0.22	-0.21
International-Urban (% of urban unskilled labor supply)	0.00	0.04	0.06	0.07	0.07	0.07	0.07	0.07	0.06	0.05
Financial Sector										
Deposit rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Deposit rate (Foreign Currency)	0.01	0.03	0.03	0.02	-0.01	-0.04	-0.06	-0.06	-0.05	-0.02
Lending rate	0.00	0.05	0.12	0.20	0.27	0.32	0.34	0.33	0.30	0.29
Lending rate (Foreign Currency)	0.00	-0.06	-0.09	-0.08	-0.03	0.08	0.26	0.47	0.66	0.80
Bond rate	-0.75	-2.94	-4.99	-6.89	-8.10	-8.42	-7.90	-7.02	-6.39	-6.39
Credibility	0.00	1.94	3.09	4.21	5.11	5.71	5.90	5.68	5.23	4.89
Domestic premium	0.00	0.02	0.06	0.11	0.17	0.22	0.26	0.29	0.31	0.33
External premium	0.01	0.03	0.03	0.02	-0.01	-0.04	-0.06	-0.06	-0.04	-0.02
Probability of default	0.00	-1.94	-3.09	-4.21	-5.11	-5.71	-5.90	-5.68	-5.23	-4.89
Memorandum items										
GDP at market prices[2]	-0.15	-0.18	-0.21	-0.24	-0.25	-0.25	-0.24	-0.23	-0.24	-0.25
Value added at factor cos[2]	-0.14	-0.18	-0.19	-0.21	-0.22	-0.21	-0.20	-0.19	-0.20	-0.22
Value added in rural secto[2]	0.00	0.06	0.15	0.24	0.32	0.40	0.47	0.53	0.59	0.64
Value added in urban informal secto[2]	0.00	-0.03	-0.08	-0.12	-0.17	-0.21	-0.24	-0.27	-0.30	-0.31
Value added in urban formal secto[2]	-0.34	-0.46	-0.53	-0.60	-0.65	-0.66	-0.66	-0.68	-0.73	-0.82
Private Consumptior[2]	0.40	0.22	-0.02	-0.21	-0.34	-0.40	-0.35	-0.21	-0.07	0.02
Private Investmeni[2]	-2.97	-1.77	-0.99	-0.80	-0.80	-0.96	-1.48	-2.33	-3.15	-3.61
Disposable incom[2]	0.29	-0.20	-0.58	-0.93	-1.16	-1.16	-0.95	-0.69	-0.59	-0.71
Nominal exchange rat[1]	0.71	3.64	6.63	9.33	11.56	12.75	12.53	11.38	10.37	10.34
real exchange rat[1]	-0.50	-0.79	-0.75	-0.68	-0.58	-0.42	-0.29	-0.27	-0.37	-0.52
Inflation rate[1]	3.88	3.56	3.48	3.55	2.97	1.40	-0.46	-1.36	-0.82	0.55
Ratio of debt to GDP	-1.05	-2.59	-4.35	-6.07	-7.32	-7.70	-7.30	-6.61	-6.22	-6.41
Ratio of tax revenues to government domestic del[1]	7.71	8.04	8.37	8.93	9.77	10.58	10.99	10.91	10.67	10.72
Ratio of foreign currency deposits in total bank deposit[1]	0.01	0.05	0.05	0.01	-0.06	-0.16	-0.28	-0.38	-0.46	-0.50
Ratio of foreign currency loans in total bank loan[1]	-0.64	-1.74	-3.52	-5.84	-8.19	-9.82	-10.48	-10.53	-10.53	-10.90
Ratio of government primary surplus to GDP	-0.13	-0.86	-1.91	-3.02	-3.67	-3.66	-3.18	-2.63	-2.32	-2.35
Ratio of Interest payments to tax revenue	-3.03	-8.02	-14.73	-21.05	-24.52	-24.33	-21.53	-18.26	-16.24	-16.13

[1] Absolute deviations from baseline. [2] In real terms.

Table 5
Turkey: Prices and Structural Indicators
Permanent, 2.5 Percentage Point Increase in the Value Added Tax Rate
(Absolute deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Consumer Prices and the Real Exchange Rate [1]										
Rural CPI	3.67	6.92	10.00	13.12	15.65	16.80	16.40	15.32	14.73	15.27
Urban CPI	3.49	6.74	9.81	12.82	15.28	16.41	16.05	14.94	14.25	14.68
Real exchange rate	-0.50	-0.79	-0.75	-0.68	-0.58	-0.42	-0.29	-0.27	-0.37	-0.52
Value Added Prices [1]										
Rural	3.32	6.35	9.14	11.93	14.13	14.99	14.40	13.18	12.41	12.69
Urban private informal	5.14	8.45	11.71	15.66	18.99	20.46	20.17	19.51	19.89	21.80
Urban private formal	-2.82	0.13	2.89	5.22	7.18	8.31	8.18	7.16	6.24	6.28
Urban public	3.49	6.74	9.81	12.82	15.28	16.41	16.05	14.94	14.25	14.68
Real Disposable Income [1]										
Rural households	-0.59	-0.61	-0.94	-1.33	-1.64	-1.83	-1.93	-1.96	-1.99	-2.06
Urban households	0.76	0.52	0.29	0.17	0.09	0.08	0.18	0.38	0.61	0.77
Informal	1.37	1.39	1.53	2.20	2.81	3.06	3.15	3.48	4.24	5.28
Formal	0.91	2.16	4.38	6.77	8.24	8.25	7.20	5.88	4.92	4.65
Capitalists and rentiers	-0.41	-2.89	-5.75	-8.64	-10.61	-11.18	-10.51	-9.39	-8.74	-8.97
Real Private Consumption [1]										
Rural households	-0.59	-0.92	-1.25	-1.54	-1.73	-1.74	-1.61	-1.47	-1.46	-1.63
Urban households	0.67	0.16	-0.22	-0.52	-0.69	-0.63	-0.36	-0.03	0.20	0.23
Informal	1.37	1.32	1.46	2.15	2.79	3.08	3.22	3.59	4.36	5.38
Formal	0.91	2.02	4.23	6.66	8.19	8.30	7.38	6.16	5.22	4.89
Capitalists and rentiers	-0.41	-3.11	-5.97	-8.79	-10.67	-11.11	-10.27	-9.02	-8.33	-8.64
Production Structure										
Size of informal sector (% of total output)	0.05	0.05	0.05	0.04	0.04	0.03	0.01	0.01	0.01	0.01
Size of rural sector (% of total output)	0.03	0.05	0.07	0.09	0.11	0.13	0.14	0.15	0.17	0.18
Composition of Employment										
Employment in rural sector (% of total employment)	0.09	0.17	0.25	0.33	0.41	0.47	0.51	0.55	0.59	0.63
Employment in informal sector (% of total employment)	0.08	0.05	-0.01	-0.07	-0.12	-0.18	-0.22	-0.26	-0.28	-0.28
Employment in informal sector (% of urban employment)	0.22	0.22	0.20	0.17	0.14	0.09	0.03	-0.01	-0.03	-0.03
Employment in public sector (% of total employment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Employment in public sector (% of urban employment)	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
Private Expenditures										
Consumption (% of GDP)	0.48	0.35	0.17	0.06	-0.03	-0.08	-0.06	0.05	0.19	0.30
Consumption (% of total consumption)	0.02	0.01	-0.02	-0.06	-0.09	-0.11	-0.11	-0.10	-0.10	-0.11
Investment (% of GDP)	-0.61	-0.31	-0.17	-0.16	-0.18	-0.21	-0.27	-0.40	-0.54	-0.63
Investment (% of total investment)	-0.62	-0.43	-0.27	-0.27	-0.29	-0.33	-0.45	-0.67	-0.91	-1.07
Public Expenditures										
Consumption (% of GDP)	0.05	0.06	0.06	0.08	0.10	0.10	0.11	0.12	0.16	0.21
Investment (% of GDP)	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Infrastructure (% of public investment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Education (% of public investment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public sector wage bill (% of public expenditure)	-0.94	-1.35	-2.23	-3.29	-3.94	-3.90	-3.44	-2.93	-2.61	-2.56
External Sector										
Rural sector exports (% of total exports)	-0.13	-0.11	-0.09	-0.09	-0.09	-0.08	-0.07	-0.07	-0.08	-0.08
Imports of non-rural sector goods (% of total imports)	-0.11	-0.10	-0.11	-0.12	-0.13	-0.13	-0.12	-0.12	-0.13	-0.13
External debt (% of GDP)	-0.26	-0.08	0.07	0.12	0.09	0.00	-0.15	-0.32	-0.47	-0.55
Degree of openness (total trade in % of GDP)	-1.69	-1.75	-1.72	-1.80	-1.87	-1.85	-1.81	-1.86	-2.02	-2.21

[1] Percentage deviations from baseline.

Table 6
Turkey: Simulation Results
Permanent, 5 Percentage Point Increase in Income Tax Rate on Profit Earners
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	0.78	1.69	2.28	2.64	2.74	2.45	1.78	0.96	0.35	0.11
Gross domestic product	0.94	1.84	2.43	2.81	2.92	2.62	1.93	1.11	0.49	0.25
Imports of goods and NFS	0.27	1.19	1.78	2.07	2.13	1.87	1.26	0.48	-0.12	-0.35
Total expenditure	0.78	1.69	2.28	2.64	2.74	2.45	1.78	0.96	0.35	0.11
Total consumption	1.27	2.08	2.55	2.88	2.97	2.65	1.97	1.19	0.63	0.43
Private consumption	1.22	2.03	2.50	2.82	2.89	2.57	1.89	1.12	0.57	0.36
Public consumption	1.57	2.39	2.91	3.30	3.43	3.10	2.36	1.51	0.92	0.71
Total investment	0.17	1.45	2.29	2.59	2.57	2.19	1.39	0.42	-0.32	-0.57
Private investment	-0.02	1.39	2.35	2.62	2.53	2.08	1.19	0.10	-0.74	-1.04
Public investment	0.73	1.60	2.18	2.53	2.64	2.37	1.72	0.92	0.31	0.08
Exports of goods and NFS	0.07	0.76	1.43	1.87	2.10	1.98	1.47	0.72	0.06	-0.25
External Sector (% of GDP)[1]										
Current account	-0.07	-0.14	-0.12	-0.07	-0.03	0.01	0.03	0.03	0.01	-0.01
Exports of goods and NFS	-0.25	-0.30	-0.26	-0.23	-0.20	-0.15	-0.11	-0.10	-0.11	-0.13
Imports of goods and NFS	-0.21	-0.19	-0.19	-0.21	-0.23	-0.22	-0.20	-0.19	-0.19	-0.19
Labor Remittances	-0.04	-0.04	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.04	-0.04
Factor services	0.01	0.01	0.00	-0.01	-0.02	-0.02	-0.02	-0.03	-0.03	-0.03
Capital account	0.07	0.14	0.12	0.07	0.03	-0.01	-0.03	-0.03	-0.01	0.01
Private borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Commercial bank borrowing	0.00	0.02	0.01	-0.01	-0.02	-0.01	0.01	0.02	0.03	0.02
Public borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Household deposits abroad	-0.07	-0.12	-0.11	-0.08	-0.05	0.00	0.04	0.05	0.04	0.01
Government Sector (% of GDP)[1]										
Total revenue	0.89	0.95	1.03	1.08	1.11	1.14	1.17	1.19	1.21	1.23
Direct taxes	1.01	1.06	1.14	1.19	1.23	1.25	1.27	1.29	1.30	1.33
Indirect taxes	-0.12	-0.11	-0.11	-0.12	-0.12	-0.11	-0.10	-0.09	-0.09	-0.09
Total expenditure	0.80	0.73	0.69	0.65	0.65	0.73	0.88	1.03	1.13	1.19
Consumption	0.07	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.07	0.08
Investment	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Transfers to households	0.70	0.82	1.05	1.27	1.34	1.22	0.99	0.75	0.59	0.53
Domestic interest payments	0.06	-0.13	-0.39	-0.65	-0.73	-0.53	-0.15	0.24	0.50	0.61
Foreign interest payments	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Total financing	-0.09	-0.22	-0.34	-0.43	-0.46	-0.41	-0.29	-0.17	-0.07	-0.04
Foreign borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bond financing	-0.09	-0.22	-0.34	-0.43	-0.46	-0.41	-0.29	-0.16	-0.07	-0.04
Labor Market										
Nominal wages										
Rural sector	1.42	2.21	2.66	2.98	3.04	2.67	1.92	1.08	0.48	0.26
Informal sector	3.78	4.39	4.72	5.24	5.48	5.07	4.17	3.27	2.75	2.66
Private formal sector										
Unskilled	0.16	1.12	1.78	2.13	2.25	2.02	1.40	0.61	0.02	-0.18
Skilled	-0.14	0.62	1.17	1.43	1.52	1.36	0.87	0.17	-0.41	-0.63
Public sector										
Unskilled	1.22	2.08	2.63	3.01	3.13	2.82	2.11	1.28	0.68	0.46
Skilled	1.22	2.08	2.63	3.01	3.13	2.82	2.11	1.28	0.68	0.46
Employment										
Rural sector	0.00	0.03	0.07	0.11	0.15	0.17	0.20	0.21	0.22	0.23
Informal sector	0.00	-0.02	-0.05	-0.06	-0.06	-0.06	-0.04	-0.01	0.03	0.08
Private formal sector										
Unskilled	-0.46	-0.62	-0.67	-0.74	-0.76	-0.69	-0.58	-0.51	-0.51	-0.55
Skilled	-0.04	-0.02	0.02	0.03	0.04	0.04	0.03	0.02	0.00	-0.01
Public sector										
Unskilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Labor supply (urban formal)										
Unskilled	0.00	-0.05	-0.12	-0.19	-0.27	-0.34	-0.41	-0.47	-0.53	-0.57
Skilled	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Unemployment rate[1]										
Unskilled	0.38	0.44	0.41	0.38	0.33	0.22	0.08	-0.01	-0.05	-0.06
Skilled	0.02	0.01	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.00
Real wage ratios[1]										
Expected urban-rural	0.00	-2.70	-2.01	-1.36	-1.13	-0.93	-0.63	-0.33	-0.18	-0.12
Expected formal-informal	0.00	-12.90	-9.44	-7.12	-6.80	-6.65	-6.04	-5.29	-4.99	-5.23
Expected international-urban	0.00	0.65	0.19	-0.14	-0.29	-0.40	-0.50	-0.58	-0.70	-0.90
Migration [1]										
Rural-urban (% of urban unskilled labor supply)	0.00	-0.03	-0.03	-0.03	-0.03	-0.02	-0.01	-0.01	0.00	0.00
Formal-informal (% of urban formal unskilled labor supply)	0.00	-0.05	-0.07	-0.07	-0.08	-0.07	-0.07	-0.06	-0.05	-0.04
International-Urban (% of urban unskilled labor supply)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Financial Sector										
Deposit rate	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Deposit rate (Foreign Currency)	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.04
Lending rate	0.00	0.01	0.03	0.05	0.05	0.05	0.03	0.00	-0.03	-0.06
Lending rate (Foreign Currency)	0.00	-0.03	-0.03	-0.02	0.01	0.07	0.14	0.21	0.26	0.28
Bond rate	0.59	0.34	0.08	-0.18	-0.22	0.06	0.59	1.17	1.59	1.76
Credibility	0.00	0.90	1.41	1.87	2.15	2.23	2.11	1.84	1.52	1.30
Domestic premium	0.00	0.00	0.01	0.02	0.03	0.04	0.04	0.03	0.02	0.01
External premium	0.01	0.01	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.03
Probability of default	0.00	-0.90	-1.41	-1.87	-2.15	-2.23	-2.11	-1.84	-1.52	-1.30
Memorandum items										
GDP at market prices[2]	-0.02	-0.02	-0.02	-0.03	-0.02	-0.02	-0.01	0.00	0.00	0.00
Value added at factor cos[2]	-0.03	-0.03	-0.03	-0.03	-0.02	-0.01	0.00	0.00	0.01	0.00
Value added in rural secto[2]	0.00	0.02	0.04	0.06	0.07	0.09	0.10	0.11	0.11	0.12
Value added in urban informal secto[2]	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	0.00	0.01	0.02
Value added in urban formal secto[2]	-0.07	-0.09	-0.09	-0.09	-0.09	-0.08	-0.06	-0.05	-0.06	-0.08
Private Consumptior[2]	0.01	-0.04	-0.12	-0.17	-0.20	-0.20	-0.16	-0.11	-0.05	-0.02
Private Investmen[2]	-0.30	0.23	0.57	0.51	0.32	0.11	-0.16	-0.48	-0.72	-0.79
Disposable incom[2]	-0.36	-0.49	-0.56	-0.62	-0.64	-0.58	-0.46	-0.34	-0.28	-0.30
Nominal exchange rat[1]	0.23	1.03	1.67	2.06	2.21	2.03	1.46	0.69	0.06	-0.20
real exchange rat[1]	-0.31	-0.40	-0.35	-0.27	-0.19	-0.10	-0.02	0.01	-0.01	-0.05
Inflation rate[1]	1.43	0.95	0.64	0.48	0.16	-0.43	-1.01	-1.17	-0.84	-0.30
Ratio of debt to GDP	-0.32	-0.77	-1.19	-1.50	-1.61	-1.43	-1.02	-0.57	-0.25	-0.13
Ratio of tax revenues to government domestic del[1]	3.45	3.49	3.49	3.49	3.50	3.43	3.21	2.87	2.57	2.44
Ratio of foreign currency deposits in total bank deposit[1]	-0.06	-0.09	-0.12	-0.16	-0.20	-0.25	-0.29	-0.33	-0.34	-0.34
Ratio of foreign currency loans in total bank loan[1]	-0.25	-0.56	-1.00	-1.51	-1.96	-2.12	-1.96	-1.61	-1.27	-1.03
Ratio of government primary surplus to GDP	0.16	0.10	-0.05	-0.22	-0.26	-0.12	0.15	0.40	0.58	0.65
Ratio of Interest payments to tax revenue	-0.66	-2.01	-3.95	-5.65	-6.10	-5.14	-3.38	-1.69	-0.62	-0.28

[1] Absolute deviations from baseline. [2] In real terms.

Table 7
Turkey: Simulation Results
Permanent, 5 Percentage Point Increase in Income Tax Rate on Profit Earners
(Absolute deviations from baseline, unless otherwise indicated)

	Periods									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Consumer Prices and the Real Exchange Rate [1]										
Rural CPI	1.53	2.38	2.90	3.30	3.43	3.10	2.35	1.51	0.91	0.69
Urban CPI	1.22	2.08	2.63	3.01	3.13	2.82	2.11	1.28	0.68	0.46
Real exchange rate	-0.31	-0.40	-0.35	-0.27	-0.19	-0.10	-0.02	0.01	-0.01	-0.05
Value Added Prices [1]										
Rural	1.42	2.23	2.70	3.05	3.13	2.78	2.03	1.20	0.61	0.39
Urban private informal	3.78	4.37	4.68	5.19	5.42	5.03	4.14	3.26	2.78	2.72
Urban private formal	-0.17	0.67	1.29	1.58	1.67	1.49	0.96	0.23	-0.36	-0.58
Urban public	1.22	2.08	2.63	3.01	3.13	2.82	2.11	1.28	0.68	0.46
Real Disposable Income [1]										
Rural households	-0.22	-0.19	-0.27	-0.37	-0.43	-0.43	-0.39	-0.34	-0.29	-0.25
Urban households	0.16	0.05	-0.05	-0.09	-0.10	-0.10	-0.06	0.01	0.07	0.11
Informal	2.01	1.82	1.67	1.80	1.92	1.88	1.77	1.74	1.85	2.00
Formal	0.89	1.27	1.98	2.66	2.92	2.66	2.10	1.53	1.15	1.02
Capitalists and rentiers	-3.87	-4.32	-4.81	-5.32	-5.52	-5.27	-4.63	-3.91	-3.41	-3.22
Real Private Consumption [1]										
Rural households	-0.22	-0.31	-0.35	-0.38	-0.37	-0.30	-0.20	-0.10	-0.06	-0.07
Urban households	-0.15	-0.34	-0.45	-0.50	-0.51	-0.44	-0.31	-0.18	-0.10	-0.09
Informal	2.01	1.80	1.65	1.80	1.93	1.91	1.81	1.80	1.90	2.04
Formal	0.89	1.21	1.95	2.66	2.95	2.73	2.20	1.66	1.27	1.11
Capitalists and rentiers	-3.87	-4.40	-4.86	-5.32	-5.48	-5.17	-4.47	-3.72	-3.23	-3.08
Production Structure										
Size of informal sector (% of total output)	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.01
Size of Rural sector (% of total output)	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Composition of Employment										
Employment in rural sector (% of total employment)	0.02	0.04	0.05	0.06	0.07	0.07	0.07	0.07	0.07	0.07
Employment in informal sector (% of total employment)	0.02	0.01	0.00	0.00	-0.01	-0.01	-0.01	-0.01	0.00	0.01
Employment in informal sector (% of urban employment)	0.05	0.05	0.05	0.05	0.05	0.04	0.03	0.04	0.05	0.06
Employment in public sector (% of total employment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Employment in public sector (% of urban employment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Private Expenditures										
Consumption (% of GDP)	0.18	0.13	0.05	0.01	-0.02	-0.03	-0.03	0.01	0.05	0.07
Consumption (% of total consumption)	-0.04	-0.04	-0.05	-0.06	-0.07	-0.07	-0.06	-0.06	-0.05	-0.05
Investment (% of GDP)	-0.18	-0.07	-0.01	-0.02	-0.05	-0.07	-0.10	-0.14	-0.17	-0.18
Investment (% of total investment)	-0.14	-0.04	0.04	0.02	-0.03	-0.07	-0.12	-0.19	-0.25	-0.28
Public Expenditures										
Consumption (% of GDP)	0.07	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.07	0.08
Investment (% of GDP)	-0.01	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Infrastructure (% of public investment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Education (% of public investment)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Public sector wage bill (% of public expenditure)	-0.39	-0.52	-0.82	-1.17	-1.33	-1.21	-0.95	-0.71	-0.57	-0.53
External Sector										
Rural exports (% of total exports)	-0.05	-0.05	-0.04	-0.04	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03
Imports of non-rural sector goods (% of total imports)	-0.04	-0.03	-0.03	-0.04	-0.04	-0.03	-0.03	-0.03	-0.03	-0.03
External debt (% of GDP)	-0.01	0.13	0.24	0.31	0.34	0.35	0.33	0.31	0.30	0.32
Degree of openness (total trade in % of GDP)	-0.46	-0.49	-0.44	-0.44	-0.42	-0.37	-0.31	-0.28	-0.30	-0.32

[1] Percentage deviations from baseline.

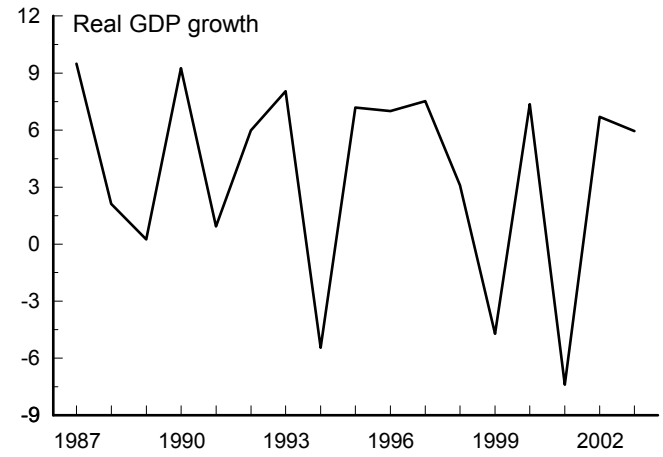
Table C1. Real 1996 MacroSAM for Turkey (Billions of Turkish Lira)

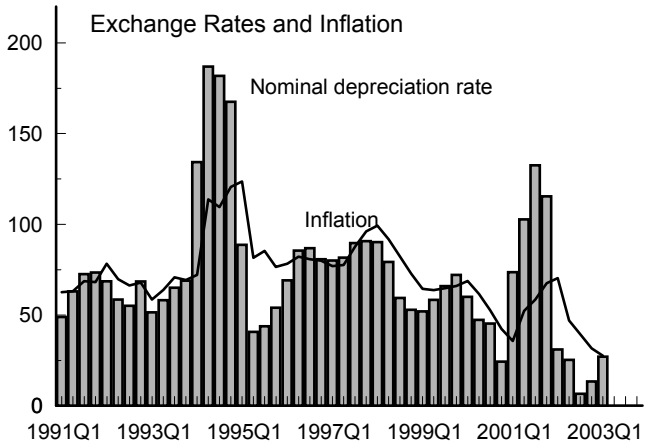
	Activities	Commodities	*Labor Factor*	*Capital Factor*	Households	Domestic Banks	Central Bank	Government	*Private Investment*	*Public Investment*	ROW	Total Receipts
Activities		25,276,448										**25,276,448**
Commodities	11,752,353				10,543,236			1,170,126	2,893,335	796,975	3,182,305	**30,338,330**
Labor Factor	4,993,374							296,717				**5,290,091**
Capital Factor	7,734,324							599,936			287,550	**8,621,809**
Households			4,616,421	5,789,799		1,898,905		464,618		55,279	287,387	**13,112,408**
Domestic Banks	46,811			375,181	598,218		2,914			1,109,926		**2,133,051**
Central Bank						2,904				150,574	30,021	**183,500**
Government	749,586	951,298	673,670	864,225	301,420	94,032	180,586					**3,814,817**
Private Investment				1,419,097	1,669,534	64,358	0			-997,648	737,995	**2,893,335**
Public Investment								1,283,420				**1,283,420**
Rest of the World		4,110,584		173,507		72,853				168,314		**4,525,258**
Total Expenditures	**25,276,448**	**30,338,330**	**5,290,091**	**8,621,809**	**13,112,408**	**2,133,051**	**183,500**	**3,814,817**	**2,893,335**	**1,283,420**	**4,525,258**	

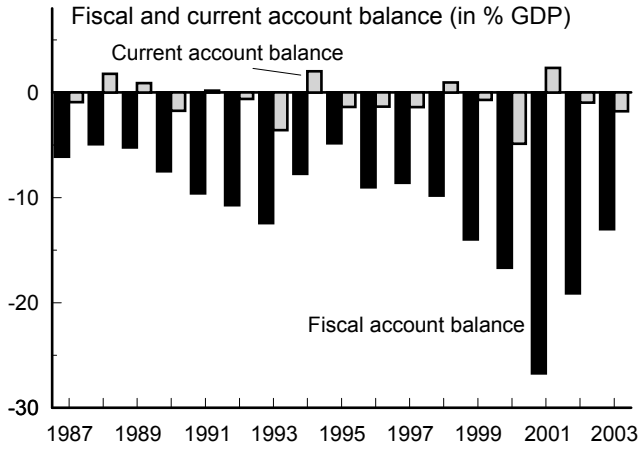
Table C2. Financial 1996 MacroSAM for Turkey (Billions of Turkish Lira)

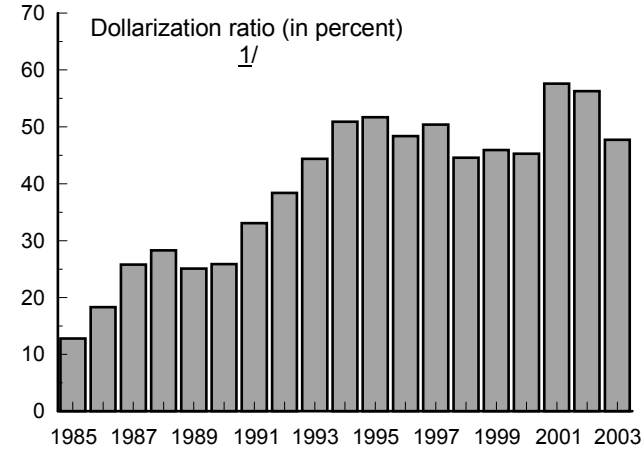
	HOUSEHOLDS	CAPITAL	GOVERNMENT	DOMESTIC BANKS	REST OF THE WORLD	CENTRAL BANK	PRIVATE INVESTMENT	TOTAL
HOUSEHOLDS			8,851	1,878,328	70,816	129,559		2,087,554
CAPITAL							2,893,335	2,893,335
GOVERNMENT								0
DOMESTIC BANKS	418,020	1,341,625	922,757			218,150		2,900,552
REST OF THE WORLD		132,613	-29,564	955,982				1,059,031
CENTRAL BANK			95,604	1,885	250,220			347,709
PRIVATE INVESTMENT	1,669,534	1,419,097	-997,648	64,358	737,995			2,893,335
TOTAL	2,087,554	2,893,335	0	2,900,552	1,059,031	347,709	2,893,335	

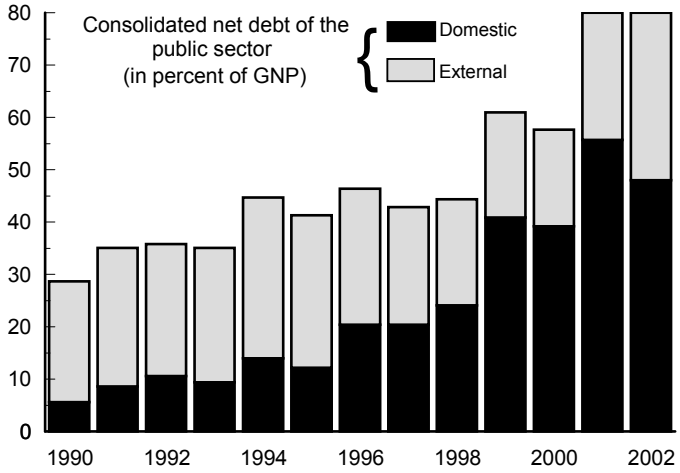
Figure 1
Turkey: Macroeconomic Indicators, 1987-2003
(In percent per annum, unless otherwise indicated)

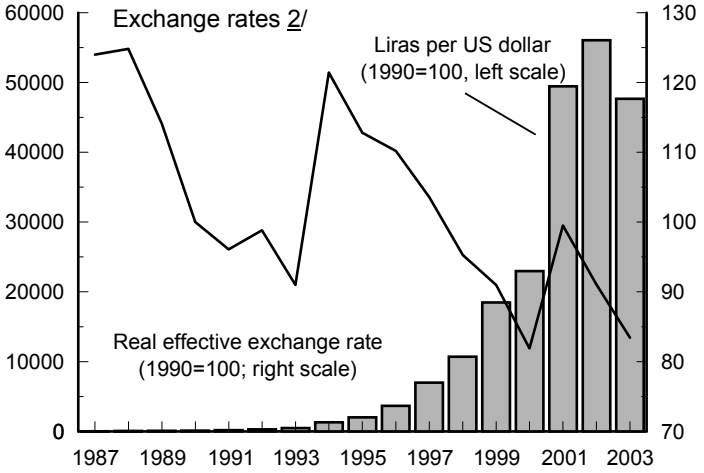






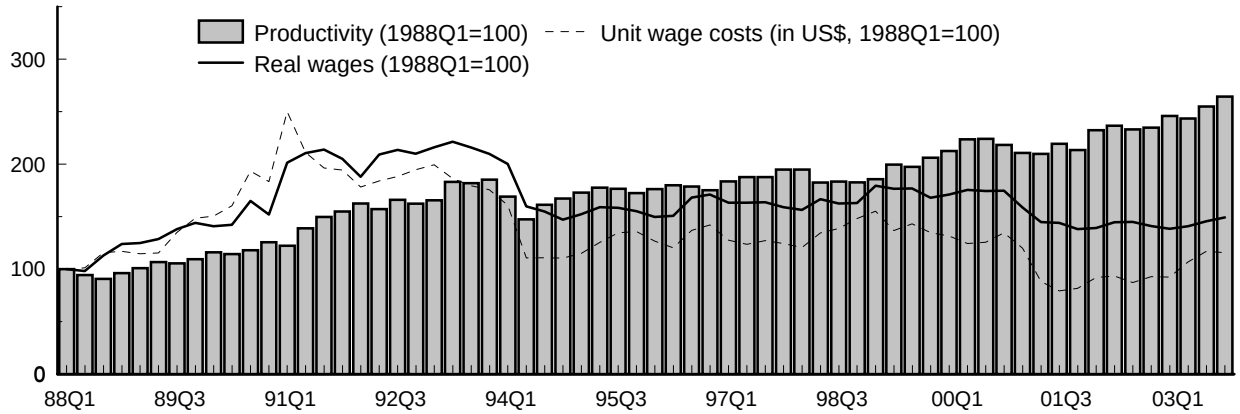


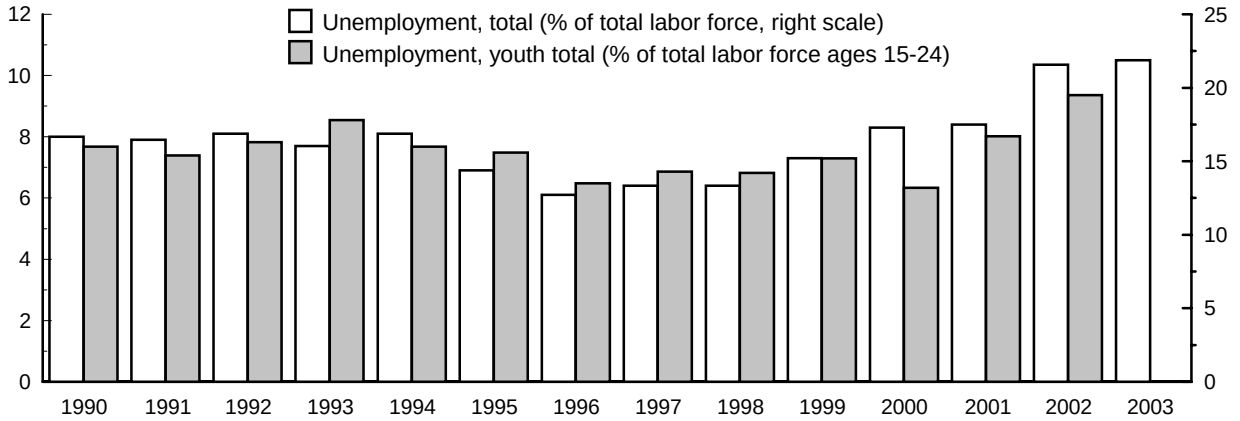


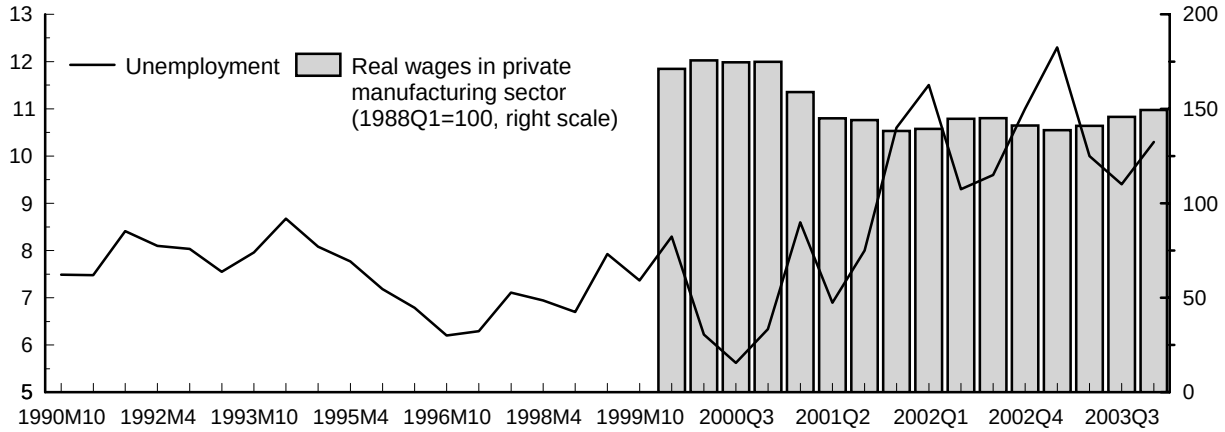


Source: International Monetary Fund and official estimates.
1/ Share of foreign currency deposits in total bank deposits.
2/ A rise is a depreciation.

Figure 2
Turkey:Wages and Unemployment

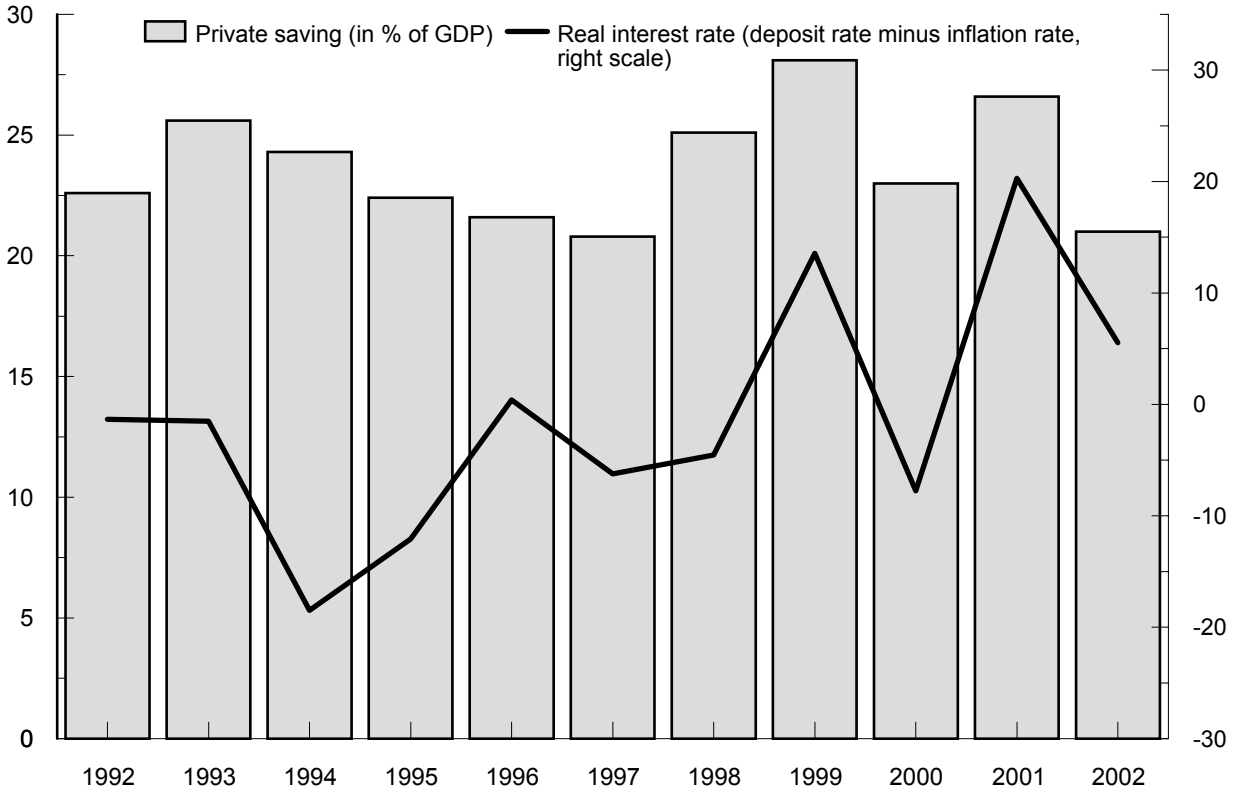






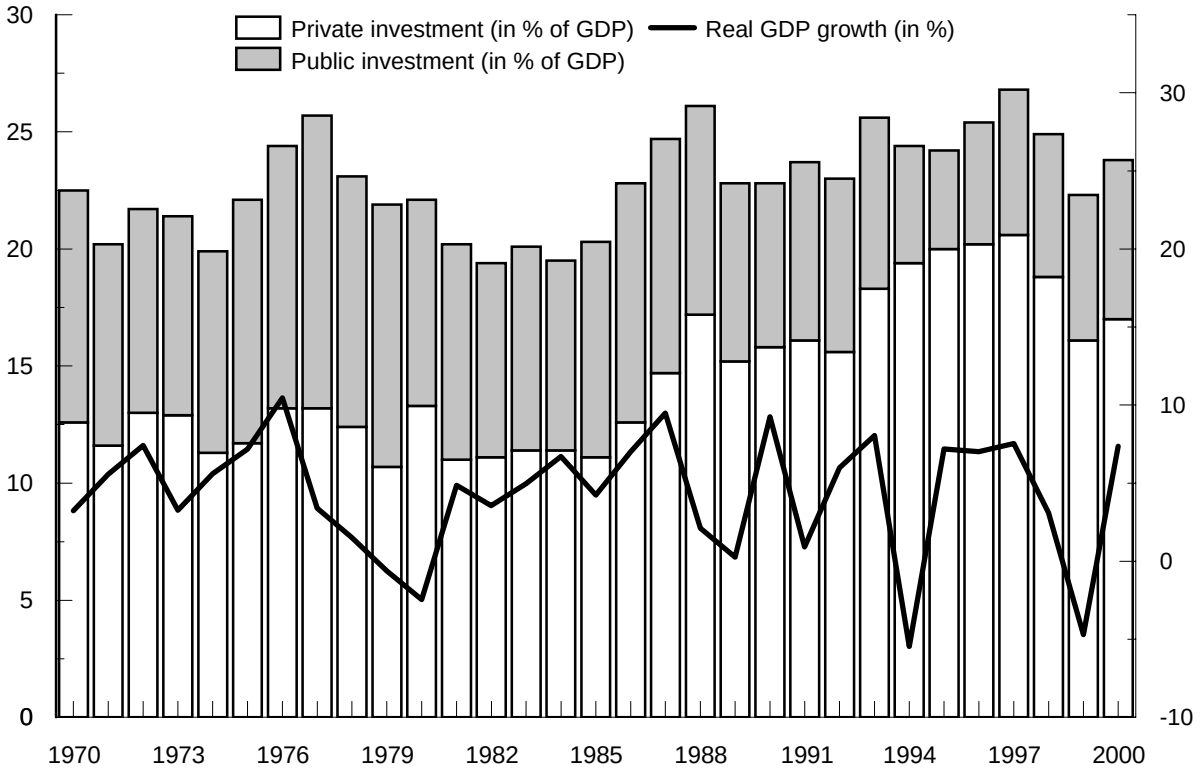
Source: Central Bank of Turkey.

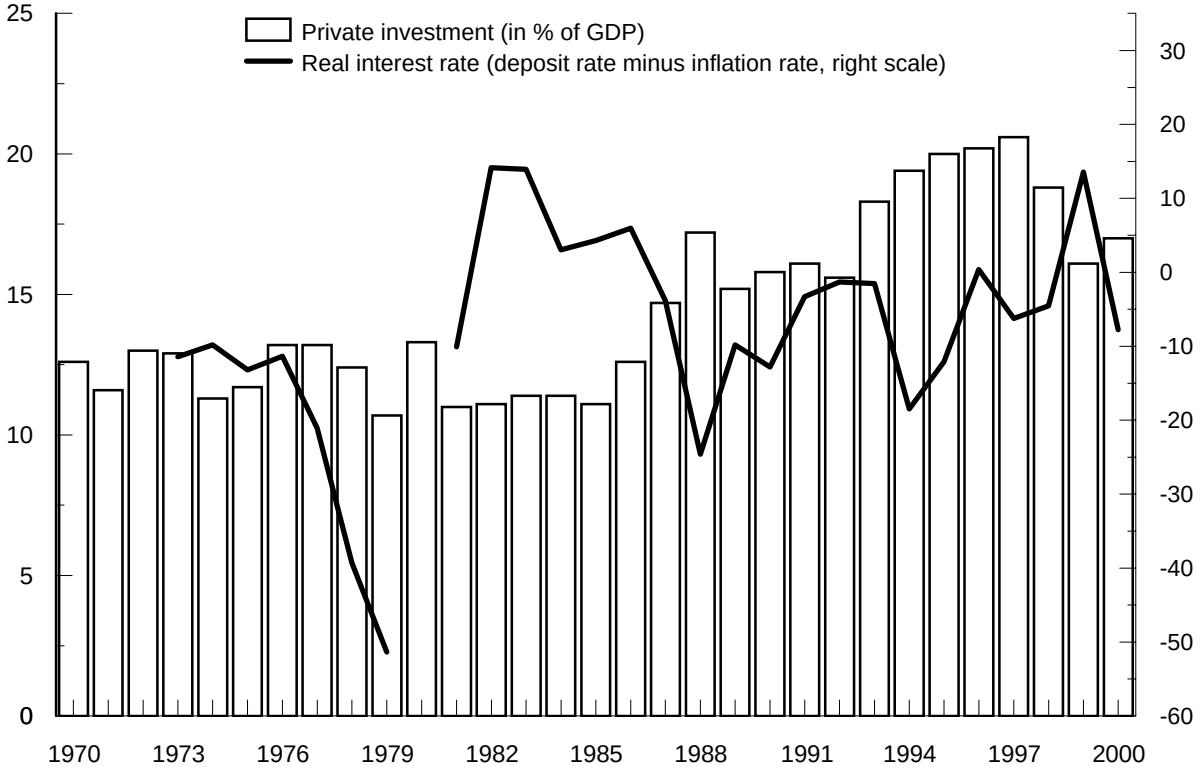
Figure 3
Turkey: Saving and Interest Rates, 1992-2002



Source: IMF.

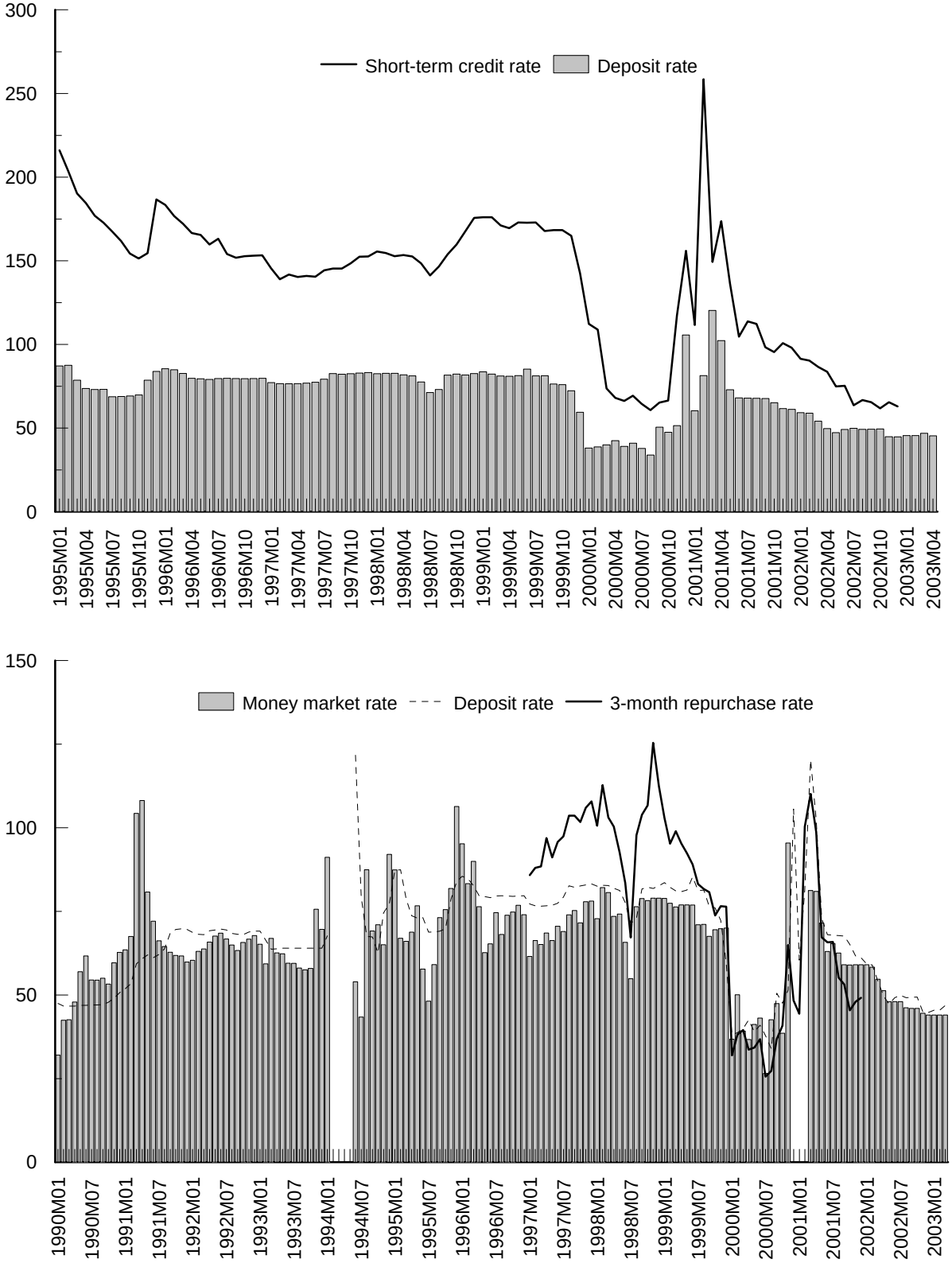
Figure 4
Turkey: Investment, Growth, and Interest Rates, 1970-2000





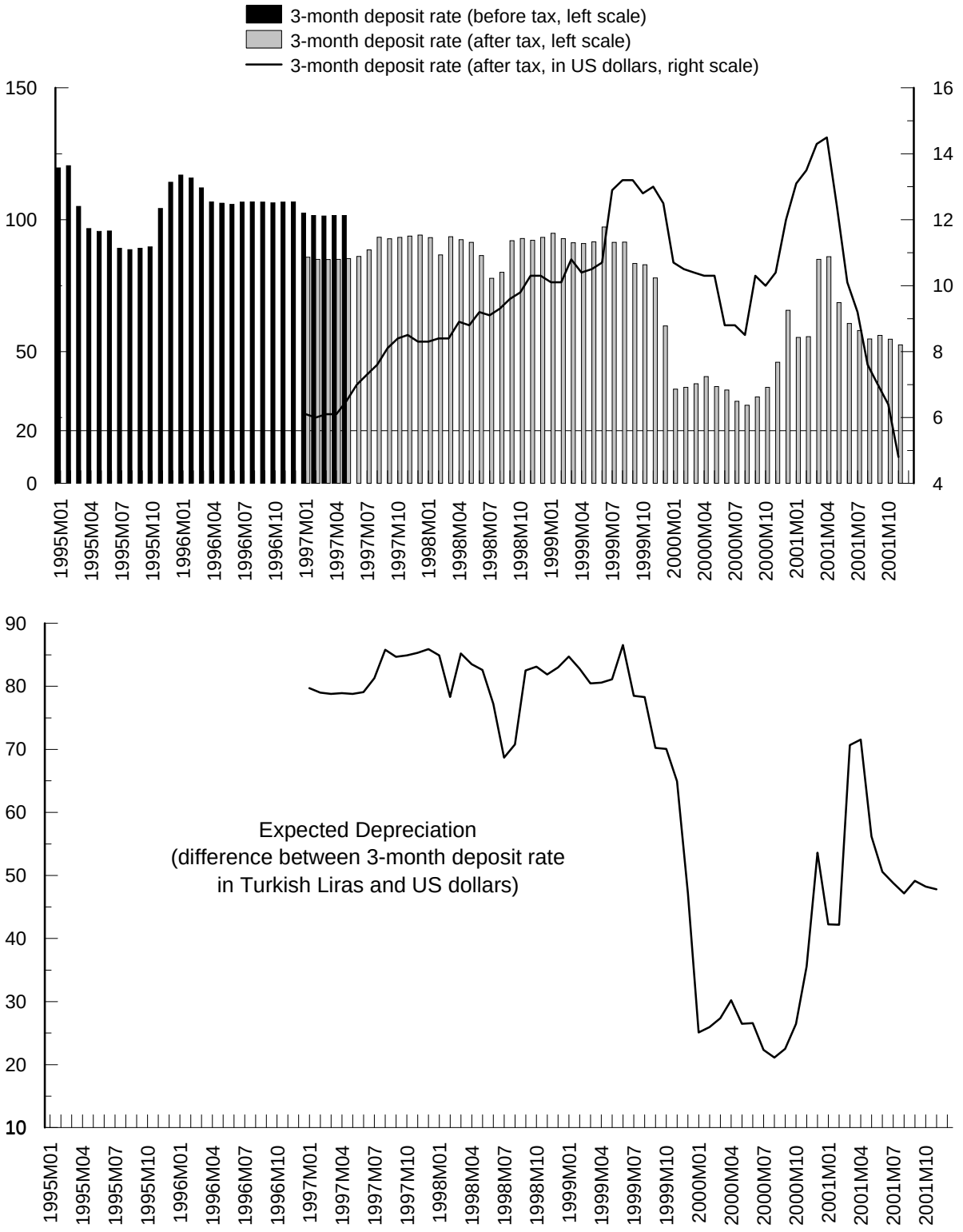
Source: Everhart and Sumlinski (2001) and WDI.

Figure 5
Turkey: Domestic Interest Rates
(Monthly, in percent)



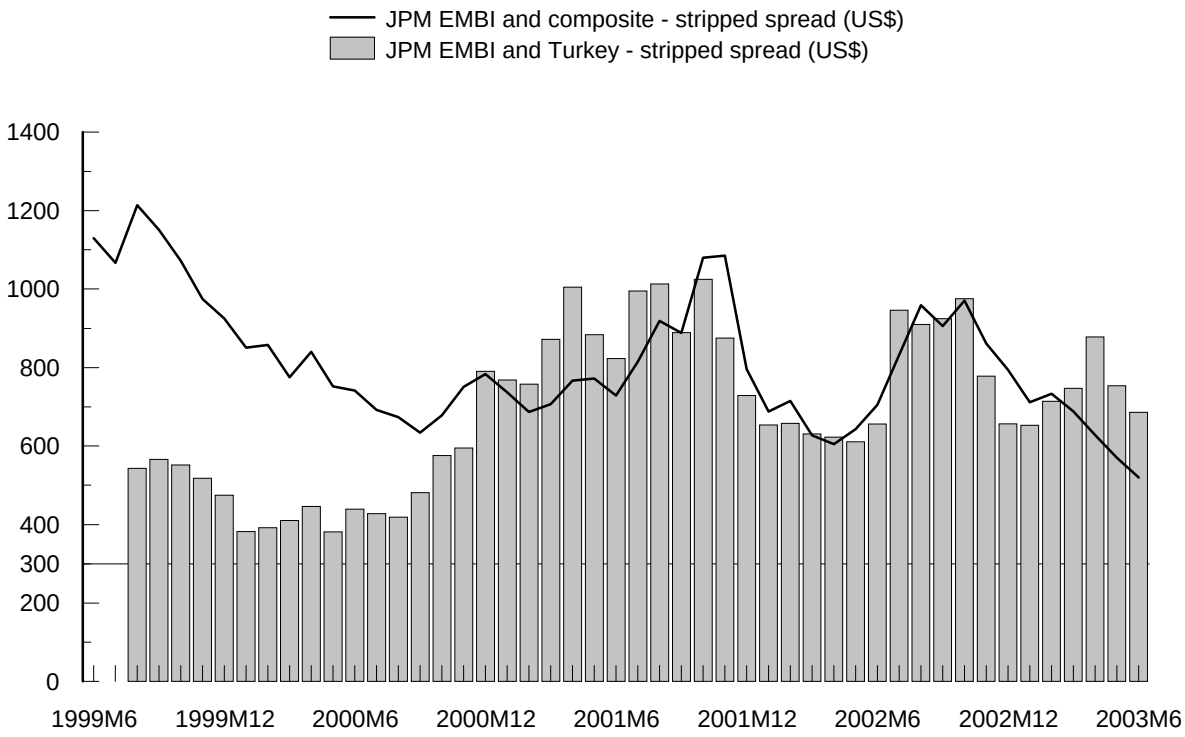
Source: IMF and Central Bank of Turkey.

Figure 6
Turkey: Interest Rates and Exchange Rate Expectations
(in percent, annualized)



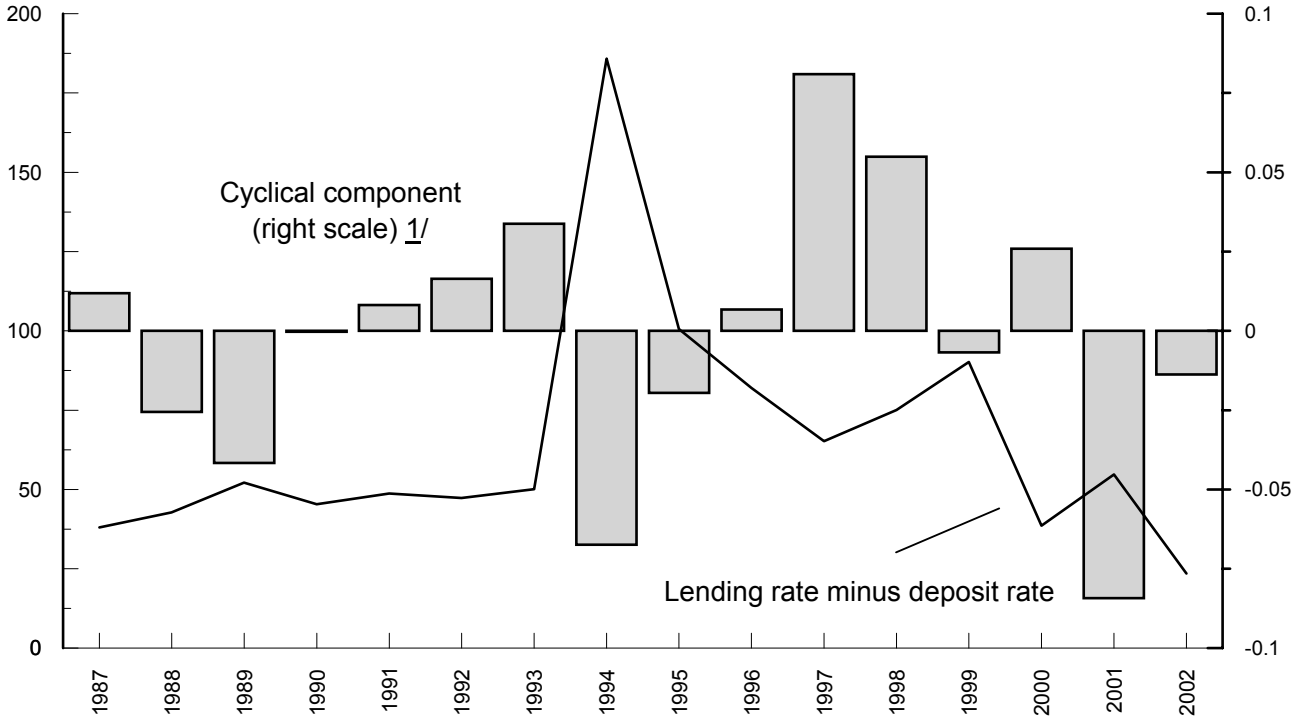
Source: IMF.
Note: Expected depreciation is the difference between 3 month time deposit rates after tax in Turkish Lira and in US dollars.

Figure 7
Turkey: External Spreads, June 1999-June 2003
(in basis points)



Source: JP Morgan.

Figure 8
Turkey: Bank Lending Spread and Cyclical Output, 1987-2002



Source: International Monetary Fund and Central Bank of Turkey.

1/ Cyclical component is the log difference between manufacturing production and the Hodrick-Prescott trend of it.