

EXERCISES ON IMMPA-TURKEY

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In this note my aim is to provide a series of policy experiments utilizing the IMMPA (Integrated Macroeconomic Model for Poverty Analysis) framework that was recently developed for Turkey.¹ The model is in the tradition of recursively-static computable general equilibrium modeling. Among many features, it accommodates a full-blown financial sector interacting with the real production units, a detailed treatment of a segmented labor market along informalization and skilled versus unskilled labor types, various fiscal and monetary instruments and a foreign sector. The model is designed specifically for the analysis of post-crisis policy adjustments in the Turkish economy and to aid the policy-makers for contrasting various policy alternatives, given their benefits and costs.

In this note I report on three sets of exercises: (1) an expansionary monetary policy using the central bank's (CB's) official interest rate and the reserve requirement ratio; (2) Fiscal policy shocks emanating from foreign interest rates and from increased supply of government bonds; (3) change in the characteristics of the labor market via decreased union power. All three issues are quite relevant for the current conjuncture of the Turkish economy and their analysis is quite timely.

Leaving the details of the model's characteristics to the documentation referred in footnote 1, I directly report on the results of the policy analysis below.

I) Exercises on Monetary Policy Instruments

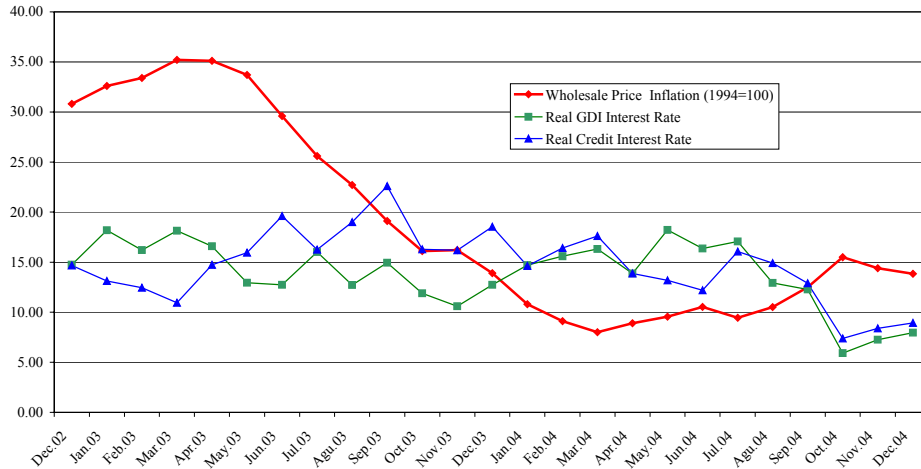
I-1. Decrease in the Central Bank's Official Interest Rate (E-1)

The burden of the real rate of interest remains a critical issue for the Turkish financial markets. It is observed that despite significant gains in reducing inflation in the after-math of the 2001 crisis, the real rate of interest has proven significant inertia. The real rate of interest on the government

¹ For the description of the full model, see Agenor, Richard, Henning tarp-Jensen, Mathew Verghis and Erinc Yeldan (2004) "Disinflation, Fiscal Sustainability and Labor Market Adjustment in Turkey" Undersecretariat of Treasury, Ankara, mimeo. This class of models is originally developed by Agénor (2003a), Agénor, Izquierdo, and Fofack (2003), and Agénor, Fernandes, Haddad, and Jensen (2003).

debt instruments (GDIs) remained on the order of 12-18 percent, and the real cost of credit steadily followed the same trend. (See Figure 1). As the persistently high interest burden increased the fragility of fiscal debt management, the Central Bank came under strong pressure to lead the path for lower interest rates. The Bank, in return, is hesitant in doing so, fearing that such a move would fuel inflationary expectations.

Inflation (WPI, 1994=100) and Real Interest Rates



In this experiment I try to study these trade offs within a general equilibrium setting. To this end, first consider a permanent, 5 percentage point decrease in the official interest rate. Before going further, however, the reader has to be reminded that common to all sets of policy scenarios, the original IMMPA framework works with the presumption that the authorities would act to prevent domestic bond financing from following an unstable path. More specifically, given each policy shock, we presume that the government adjusts public transfers to private households so as to keep the growth rate of the actual stock of domestic debt constant. Here the main motivation is that the borrowing requirement characterizes a binding constraint for the government, and that the fiscal authority would find it necessary to adjust its expenditures elsewhere—here transfers to households. The fiscal adjustment experiments are therefore allowed to affect the size of the public sector budget. We find this important because it allows for the possibility of changes in the probability of default, which, in our modeling framework, depends on the tax revenue-to-domestic debt ratio.

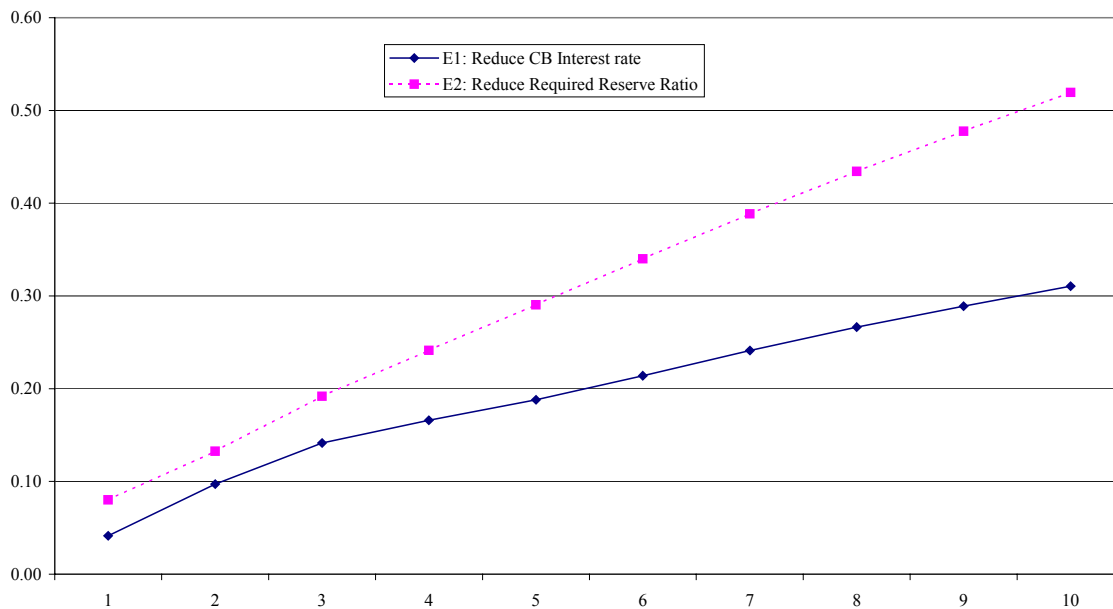
The results of this experiment is summarized in tables 1 and 2 below. In order to comprehend the nature of the general equilibrium effects of the experiment, note that banks set both deposit and lending interest rates. The deposit rate on domestic currency-denominated deposits, ID , is set equal to the cost of funds provided by the central bank, IR . Thus,

$$1 + ID = 1 + IR$$

On the other hand, demand for government bonds by commercial banks (as a ratio of net wealth) is positively related to the interest rate on these bonds and negatively to their opportunity cost, that is, the lending rate: $\frac{GB_B^d}{NW_B} = \phi_{GB}^{B,d} \left(\frac{1 + EIB}{1 + IL} \right)^{\theta_{GB}^B}$ where EIB is the expected rate of return on government bonds.

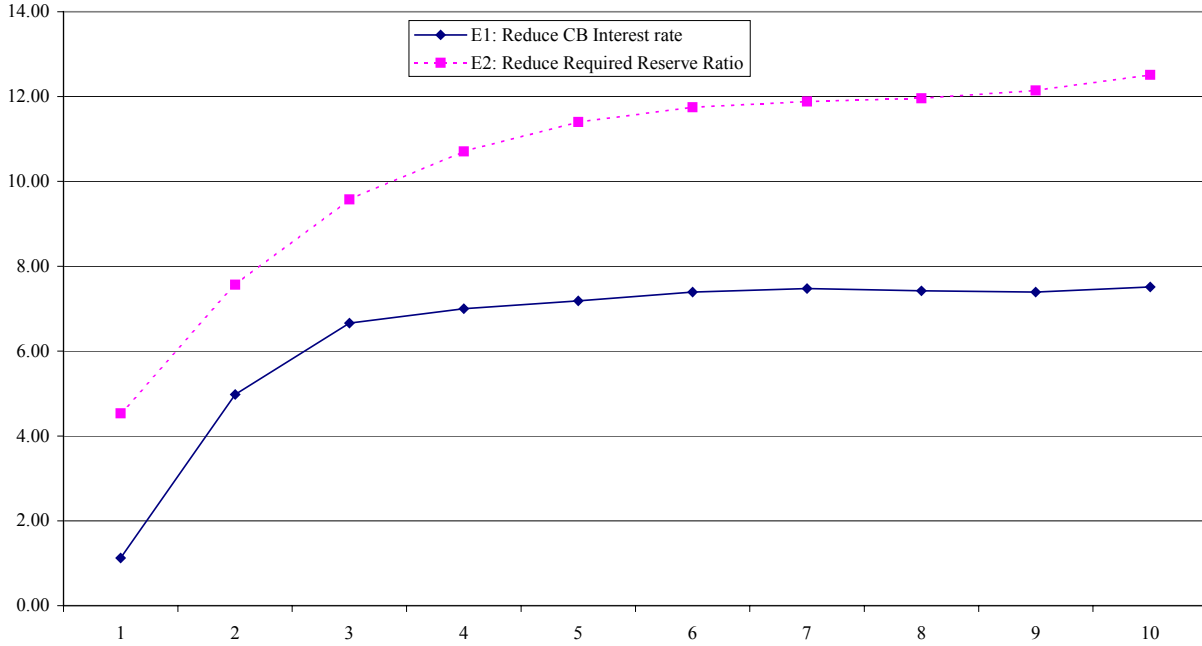
Given this analytical reminder, it is easy to see that the immediate effect of the experiment will be to lower the lending rate, IL . The decrease in the banks' lending rate stimulates private investment directly. On the other hand, savings of households fall since the saving rate of households directly depends on IL as well. As a consequence private consumption demand in the aggregate also goes up. The increase in aggregate demand components generate expansionary effects on gross domestic product, thus both output supply and employment increases.

Gross Domestic Product under Monetary Expansion



Desired private investment behaviour is affected by both the expansion of the GDP (acceleration effect) and the decrease of the lending rate. Thus the fall in the credit interest costs is complemented by the rise of the GDP and the private investment expands vigorously.

Private Investment under Monetary Expansion



The expansionary environment is conducive in increasing the revenue base of the government. As tax revenues increase relative to the interest payments, *credibility* of the government increases and the risk of default decreases. Algebraically, the expected rate of return on government bonds, *EIB*, is defined as $EIB = (1 - PDEF)IB$. Here *PDEF* is the subjective probability of default, which, in turn, depends (with a one-period lag) on the current debt-to-tax ratio:

$$PDEF = 1 - \exp\left[-\chi\left(\frac{GB_{-1}}{TAXREV_{-1}}\right)\right].$$

Our measure of credibility is defined as $CREDIB = 1 - PDEF$. Thus, we assume that the expected rate of inflation (which affects directly the demand for domestic currency, private investment, saving rates, and wage formation in the private formal sector), is given as a weighted average of the perceived (or explicitly announced) inflation target of the central bank, $INFL^{TARG}$, and the one-period lagged inflation rate:

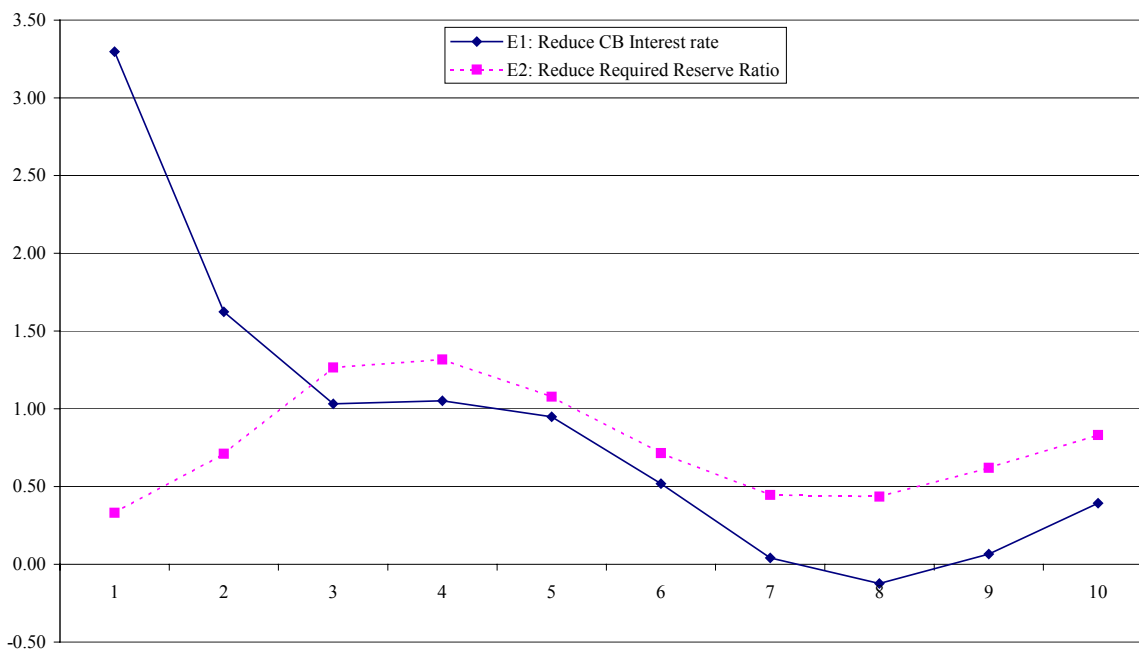
$$EINFL = CREDIB \cdot INFL^{TARG} + (1 - CREDIB)INFL_{-1}$$

where *INFL* is the change in consumer price index

The positive developments on the public sector credibility thus lowers inflationary expectations in the longer run. Through this way the immediate inflationary effect of the expansionary

environment is checked and the rate of inflation follows a declining trend after the immediate jump by 3.5% over its base path.

Inflation under Monetary Expansion



The decline in the rates of interest is welcome for the formal sector households. On the other hand, the rentiers, and the rural and informal households suffer a fall in their real disposable income. This is mostly due to the inflationary environment. The fall in rentier income is more pronounced, since they derive a significant portion of their income from interest-bearing assets.

The increase in investments along with a fall in savings generate, not surprisingly, significant pressures for the current account balance towards a deficit. The current account deficit widens to 0.3% above the base path by period 2, and then recovers a bit. Yet, overall the time horizon considered, the economy suffers from a current deficit.

Current Account Balance under Monetary Expansion

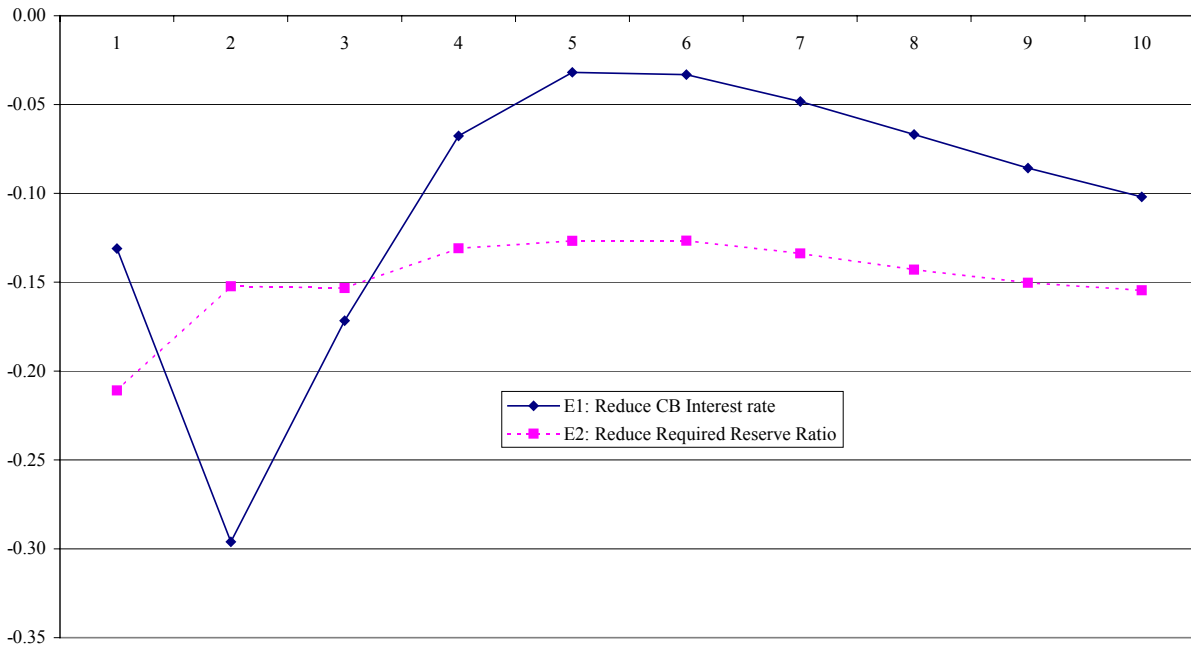


Table 1
Turkey: Simulation Results
5 Percentage point decrease in discount rate
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	3.43	5.70	6.83	7.67	8.39	8.81	8.86	8.74	8.70	8.89
Gross domestic product	3.29	5.26	6.31	7.17	7.91	8.34	8.41	8.32	8.34	8.58
Imports of goods and NFS	3.90	7.16	8.62	9.40	10.02	10.39	10.38	10.12	9.88	9.87
Total expenditure	3.43	5.70	6.83	7.67	8.39	8.81	8.86	8.74	8.70	8.89
Total consumption	3.04	4.21	4.87	5.62	6.32	6.70	6.76	6.73	6.84	7.18
Private consumption	3.07	4.25	4.89	5.63	6.30	6.68	6.74	6.71	6.82	7.14
Public consumption	2.82	3.93	4.71	5.60	6.38	6.79	6.85	6.81	6.95	7.35
Total investment	4.52	10.21	12.62	13.54	14.20	14.58	14.46	14.00	13.58	13.47
Private investment	4.90	12.11	15.47	16.70	17.52	18.06	18.01	17.54	17.13	17.12
Public investment	3.41	5.76	6.97	7.80	8.46	8.79	8.74	8.48	8.31	8.38
Exports of goods and NFS	3.50	6.32	8.39	9.71	10.57	11.01	10.96	10.57	10.17	9.99
External Sector (% of GDP)¹										
Current account	-0.13	-0.30	-0.17	-0.07	-0.03	-0.03	-0.05	-0.07	-0.09	-0.10
Exports of goods and NFS	0.06	0.28	0.51	0.60	0.60	0.60	0.57	0.51	0.43	0.33
Imports of goods and NFS	0.18	0.54	0.64	0.61	0.58	0.56	0.55	0.50	0.44	0.37
Labor Remittances	0.01	0.06	0.09	0.10	0.10	0.10	0.09	0.08	0.06	0.04
Factor services	-0.01	-0.02	-0.04	-0.04	-0.04	-0.03	-0.02	0.00	0.01	0.02
Capital account	0.12	0.23	0.08	-0.04	-0.09	-0.10	-0.10	-0.09	-0.06	-0.03
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	0.06	-0.01	-0.08	-0.10	-0.08	-0.04	-0.01	0.01	0.01
Public borrowing	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Household deposits abroad	-0.04	-0.16	-0.08	-0.04	-0.01	0.03	0.07	0.08	0.07	0.04
Government Sector (% of GDP)¹										
Total revenue	-0.97	-1.48	-1.73	-1.95	-2.14	-2.26	-2.29	-2.30	-2.34	-2.45
Direct taxes	-1.06	-1.75	-2.06	-2.27	-2.45	-2.56	-2.58	-2.56	-2.57	-2.63
Indirect taxes	0.09	0.27	0.33	0.33	0.31	0.30	0.29	0.27	0.23	0.19
Total expenditure	0.55	0.47	1.03	1.35	1.32	1.05	0.71	0.43	0.27	0.21
Consumption	-0.05	-0.15	-0.18	-0.19	-0.20	-0.21	-0.22	-0.22	-0.22	-0.20
Investment	0.01	0.03	0.04	0.04	0.04	0.03	0.03	0.01	0.00	-0.02
Transfers to households	0.65	1.17	2.04	2.66	2.82	2.60	2.23	1.88	1.67	1.60
Domestic interest payments	-0.06	-0.60	-0.90	-1.19	-1.37	-1.41	-1.35	-1.26	-1.20	-1.18
Foreign interest payments	0.00	0.02	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.01
Total financing	-0.31	-0.61	-0.84	-1.04	-1.18	-1.22	-1.19	-1.14	-1.13	-1.18
Foreign borrowing	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Bond financing	-0.31	-0.61	-0.85	-1.05	-1.19	-1.23	-1.20	-1.15	-1.14	-1.18
Labor Market										
Nominal wages										
Agricultural sector	2.92	3.99	4.83	5.87	6.84	7.44	7.68	7.79	8.02	8.43
Informal sector	1.25	-0.27	-0.25	0.65	1.46	1.77	1.79	1.98	2.64	3.82
Private formal sector										
Unskilled	3.90	7.39	8.87	9.60	10.10	10.31	10.10	9.64	9.26	9.14
Skilled	3.65	7.38	9.14	10.02	10.63	10.96	10.85	10.38	9.88	9.56
Public sector										
Unskilled	3.06	4.65	5.58	6.44	7.18	7.56	7.58	7.47	7.49	7.76
Skilled	3.06	4.65	5.58	6.44	7.18	7.56	7.58	7.47	7.49	7.76
Employment										
Agricultural sector	0.00	-0.02	-0.11	-0.22	-0.35	-0.46	-0.55	-0.62	-0.68	-0.71
Informal sector	0.00	0.02	0.09	0.18	0.26	0.32	0.34	0.34	0.30	0.22
Private formal sector										
Unskilled	0.25	0.78	1.30	1.46	1.49	1.55	1.60	1.57	1.45	1.28
Skilled	0.21	0.31	0.45	0.51	0.55	0.59	0.64	0.70	0.77	0.86
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	0.03	0.15	0.31	0.51	0.70	0.89	1.06	1.21	1.34
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	-0.21	-0.58	-0.85	-0.80	-0.65	-0.53	-0.41	-0.26	-0.06	0.14
Skilled	-0.11	-0.16	-0.21	-0.23	-0.23	-0.24	-0.24	-0.25	-0.26	-0.27
Real wage ratios ¹										
Expected urban-rural	0.00	1.95	5.46	5.71	4.74	3.79	3.08	2.39	1.56	0.67
Expected formal-informal	0.00	9.42	21.74	22.19	19.76	18.02	17.30	16.76	15.50	13.23
Expected international-urban	0.00	-0.99	-2.46	-1.79	-0.63	0.23	0.83	1.26	1.52	1.60
Migration ¹										
Rural-urban (% of urban unskilled labor supply)	0.00	0.02	0.07	0.09	0.10	0.08	0.07	0.05	0.03	0.01
Formal-informal (% of urban formal unskilled labor supply)	0.00	0.03	0.11	0.16	0.19	0.19	0.18	0.17	0.15	0.12
International-Urban (% of urban unskilled labor supply)	0.00	0.00	-0.02	-0.02	-0.02	-0.01	-0.01	0.00	0.01	0.01
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	0.03	0.01	-0.03	-0.07	-0.10	-0.13	-0.14	-0.15	-0.15
Lending rate	-4.82	-4.72	-4.66	-4.61	-4.55	-4.49	-4.44	-4.41	-4.41	-4.41
Lending rate (Foreign Currency)	-4.20	-4.23	-4.25	-4.24	-4.20	-4.14	-4.07	-3.99	-3.94	-3.92
Bond rate	-6.92	-8.71	-10.26	-11.22	-11.63	-11.61	-11.31	-10.94	-10.68	-10.62
Credibility	0.00	0.23	0.32	0.42	0.46	0.43	0.37	0.30	0.25	0.21
Domestic premium	0.00	0.02	0.04	0.06	0.07	0.08	0.10	0.11	0.11	0.12

Table 2
Turkey: Simulation Results
5 Percent Reduction in discount 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	2.84	3.98	4.75	5.62	6.40	6.81	6.87	6.84	6.98	7.38
Urban CPI	3.06	4.65	5.58	6.44	7.18	7.56	7.58	7.47	7.49	7.76
Real Exchange Rate	-0.04	0.12	0.52	0.72	0.75	0.72	0.64	0.51	0.36	0.21
Value Added Prices ¹										
Rural agriculture	2.92	3.98	4.76	5.73	6.62	7.15	7.33	7.40	7.59	7.99
Urban private informal	1.25	-0.26	-0.18	0.79	1.66	2.03	2.06	2.24	2.88	4.00
Urban private formal	4.06	7.93	9.75	10.53	10.99	11.16	10.91	10.34	9.78	9.44
Urban public	3.06	4.65	5.58	6.44	7.18	7.56	7.58	7.47	7.49	7.76
Real Disposable Income ¹										
Rural households	-0.15	-0.37	-0.89	-1.18	-1.23	-1.13	-0.98	-0.86	-0.81	-0.84
Urban households	0.00	-0.46	-0.61	-0.66	-0.71	-0.77	-0.80	-0.76	-0.69	-0.61
Informal	-1.68	-4.00	-4.65	-4.59	-4.48	-4.48	-4.47	-4.28	-3.86	-3.28
Formal	0.73	2.26	4.49	6.25	6.84	6.32	5.27	4.27	3.56	3.18
Capitalists and rentiers	1.69	2.12	0.70	-0.85	-1.65	-1.68	-1.28	-0.93	-0.91	-1.24
Real Private Consumption ¹										
Rural households	-1.17	-1.73	-2.11	-2.29	-2.28	-2.12	-1.90	-1.73	-1.67	-1.75
Urban households	-0.75	-1.16	-1.28	-1.38	-1.48	-1.52	-1.48	-1.43	-1.40	-1.41
Informal	-2.04	-4.43	-5.05	-4.96	-4.83	-4.82	-4.79	-4.59	-4.17	-3.60
Formal	0.31	1.68	3.96	5.75	6.35	5.85	4.84	3.86	3.16	2.77
Capitalists and rentiers	-0.59	-0.44	-1.74	-3.15	-3.89	-3.86	-3.41	-3.02	-3.00	-3.36
Production Structure										
Size of Informal Sector (% of total output)	-0.01	-0.02	-0.04	-0.04	-0.05	-0.05	-0.06	-0.07	-0.08	-0.09
Size of Agricultural Sector (% of total output)	-0.01	-0.02	-0.04	-0.06	-0.07	-0.09	-0.11	-0.12	-0.13	-0.14
Composition of Employment										
Employment in rural sector (% of total employment)	-0.02	-0.05	-0.10	-0.15	-0.19	-0.23	-0.26	-0.27	-0.28	-0.28
Employment in informal sector (% of total employment)	-0.01	-0.03	-0.02	0.01	0.03	0.06	0.07	0.07	0.07	0.06
Employment in informal sector (% of urban employment)	-0.04	-0.09	-0.13	-0.12	-0.10	-0.09	-0.09	-0.09	-0.09	-0.10
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	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Private Expenditures										
Consumption (% of GDP)	-0.14	-0.67	-0.95	-1.03	-1.07	-1.09	-1.07	-1.02	-0.95	-0.88
Consumption (% of total consumption)	0.03	0.03	0.02	0.00	-0.01	-0.01	-0.01	-0.01	-0.02	-0.03
Investment (% of GDP)	0.30	1.03	1.19	1.18	1.18	1.20	1.22	1.19	1.15	1.11
Investment (% of total investment)	0.27	1.21	1.68	1.79	1.84	1.90	1.91	1.89	1.87	1.87
Public Expenditures										
Consumption (% of GDP)	-0.05	-0.15	-0.18	-0.19	-0.20	-0.21	-0.22	-0.22	-0.22	-0.20
Investment (% of GDP)	0.01	0.03	0.04	0.04	0.04	0.03	0.03	0.01	0.00	-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)	-0.37	-0.77	-1.64	-2.46	-2.75	-2.49	-2.00	-1.59	-1.35	-1.26
External Sector										
Agricultural exports (% of total exports)	0.04	0.12	0.14	0.13	0.11	0.09	0.07	0.04	0.01	-0.03
Imports of non-agricultural goods (% of total imports)	0.03	0.10	0.12	0.12	0.11	0.11	0.10	0.09	0.08	0.07
External debt (% of GDP)	0.15	0.44	0.55	0.51	0.42	0.31	0.20	0.09	0.00	-0.07
Degree of openness (total trade in % of GDP)	0.25	0.82	1.15	1.20	1.18	1.16	1.12	1.02	0.87	0.70

¹ Percentage deviations from the base line

I-2. Reduce Reserve Requirement Ratio for the Banking Sector: Experiment E2

The results of the above experiment can be contrasted with yet another monetary policy instrument. Rather than lowering the CB's official interest rate, a similar monetary expansion can be achieved by lowering the reserve requirement ratio. The current level of this ratio is 10%, and in this experiment, I lower it by 5%. The results of this experiment are tabulated in Tables 3 and 4 below.

The decrease in the reserve requirement ratio increases the money multiplier, and the banks' ability to "create" liquidity is expanded. The supply of credit increases and the credit interest rate falls. Thus the effects of the experiment can be indirectly felt on the lending rate, while there is no change in the deposit rate (as this rate is tied to the CB rate which remains unchanged in this experiment). As in the above mechanism, the GDP and the private investment demand increases. The figures above contrast the paths of these macro aggregates across E1 and E2. The expansion in the GDP and investment turns out to be more pronounced in E2, and consequently the current account deficit is wider under E2.

The rate of inflation, on the other hand, is "milder" under experiment E2. This is mostly due to the higher algebraic value of the credibility index under E2. Nevertheless, the basic lesson from both experiments remains qualitatively very clear: there is a trade off between the anti-inflationary policies on the one hand, and those policies aiming for lowering the real interest rate, on the other. This signals a clear need for a careful coordination of the monetary and the fiscal policies to fine-tune the desired fall in the interest burden of the fiscal authority, against the necessities of the anti-inflationary programme.

Table 3
Turkey: Simulation Results
5 Percentage point decrease in reserve requirement ratio
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	1.53	2.70	3.71	4.77	5.65	6.25	6.63	6.96	7.40	7.97
Gross domestic product	1.12	2.10	3.11	4.17	5.04	5.65	6.04	6.41	6.90	7.53
Imports of goods and NFS	2.82	4.71	5.78	6.84	7.70	8.26	8.57	8.77	9.03	9.40
Total expenditure	1.53	2.70	3.71	4.77	5.65	6.25	6.63	6.96	7.40	7.97
Total consumption	-0.20	0.11	1.06	2.03	2.81	3.34	3.71	4.08	4.59	5.25
Private consumption	-0.19	0.12	1.03	1.99	2.76	3.28	3.64	4.01	4.51	5.16
Public consumption	-0.28	0.09	1.22	2.30	3.14	3.68	4.04	4.41	4.95	5.68
Total investment	5.76	9.49	11.58	13.15	14.26	14.83	14.99	15.01	15.13	15.46
Private investment	7.21	12.31	15.44	17.70	19.24	20.07	20.37	20.48	20.78	21.40
Public investment	1.55	2.85	3.84	4.84	5.61	6.08	6.30	6.46	6.72	7.12
Exports of goods and NFS	2.35	4.64	5.79	7.07	8.06	8.70	8.99	9.12	9.29	9.57
External Sector (% of GDP)¹										
Current account	-0.21	-0.15	-0.15	-0.13	-0.13	-0.13	-0.13	-0.14	-0.15	-0.15
Exports of goods and NFS	0.35	0.69	0.68	0.70	0.70	0.70	0.68	0.63	0.56	0.49
Imports of goods and NFS	0.52	0.77	0.76	0.75	0.74	0.73	0.71	0.67	0.61	0.54
Labor Remittances	0.06	0.11	0.11	0.11	0.11	0.10	0.10	0.08	0.06	0.04
Factor services	-0.02	-0.04	-0.03	-0.03	-0.02	-0.01	0.00	0.02	0.04	0.06
Capital account	0.13	0.00	0.00	-0.03	-0.05	-0.06	-0.07	-0.06	-0.05	-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	0.04	-0.08	-0.03	-0.08	-0.07	-0.06	-0.03	-0.02	-0.01	-0.02
Public borrowing	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Household deposits abroad	-0.09	-0.07	-0.02	-0.04	-0.02	0.01	0.04	0.05	0.04	0.02
Government Sector (% of GDP)¹										
Total revenue	-0.34	-0.60	-0.87	-1.16	-1.40	-1.56	-1.68	-1.80	-1.97	-2.18
Direct taxes	-0.60	-1.01	-1.27	-1.55	-1.78	-1.94	-2.05	-2.15	-2.28	-2.45
Indirect taxes	0.26	0.40	0.40	0.39	0.39	0.38	0.37	0.34	0.31	0.27
Total expenditure	-0.17	-0.29	-0.12	-0.13	-0.20	-0.38	-0.61	-0.82	-1.00	-1.14
Consumption	-0.15	-0.22	-0.23	-0.23	-0.25	-0.27	-0.29	-0.30	-0.31	-0.30
Investment	0.03	0.05	0.05	0.05	0.04	0.03	0.02	0.00	-0.02	-0.04
Transfers to households	-0.05	-0.04	0.24	0.43	0.52	0.44	0.25	0.05	-0.10	-0.19
Domestic interest payments	-0.02	-0.11	-0.22	-0.40	-0.54	-0.61	-0.62	-0.60	-0.59	-0.62
Foreign interest payments	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.01
Total financing	-0.10	-0.24	-0.42	-0.62	-0.77	-0.85	-0.87	-0.90	-0.95	-1.05
Foreign borrowing	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00
Bond financing	-0.11	-0.25	-0.43	-0.62	-0.77	-0.85	-0.88	-0.90	-0.96	-1.05
Labor Market										
Nominal wages										
Agricultural sector	-0.32	0.06	1.27	2.55	3.64	4.43	5.02	5.59	6.26	7.05
Informal sector	-4.65	-6.01	-4.46	-3.37	-2.67	-2.29	-2.01	-1.51	-0.60	0.77
Private formal sector										
Unskilled	2.92	5.08	5.97	6.87	7.51	7.84	7.89	7.85	7.92	8.15
Skilled	3.17	5.79	6.81	7.81	8.56	8.98	9.07	8.97	8.88	8.89
Public sector										
Unskilled	0.47	1.18	2.23	3.27	4.09	4.61	4.92	5.21	5.65	6.26
Skilled	0.47	1.18	2.23	3.27	4.09	4.61	4.92	5.21	5.65	6.26
Employment										
Agricultural sector	0.00	-0.08	-0.23	-0.40	-0.56	-0.70	-0.82	-0.92	-0.99	-1.04
Informal sector	0.00	0.07	0.19	0.31	0.42	0.49	0.53	0.53	0.49	0.42
Private formal sector										
Unskilled	0.92	1.49	1.75	1.92	2.06	2.18	2.25	2.25	2.17	2.04
Skilled	0.24	0.31	0.44	0.56	0.68	0.79	0.92	1.05	1.20	1.36
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	0.30	0.54	0.79	1.03	1.27	1.48	1.67	1.84
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	-0.76	-1.10	-1.07	-0.97	-0.84	-0.71	-0.57	-0.39	-0.19	0.01
Skilled	-0.13	-0.16	-0.21	-0.25	-0.29	-0.32	-0.35	-0.38	-0.40	-0.43
Real wage ratios ¹										
Expected urban-rural	0.00	7.13	9.10	7.30	6.00	4.97	4.09	3.19	2.24	1.27
Expected formal-informal	0.00	29.80	35.23	27.71	24.62	23.28	22.69	22.09	21.01	19.12
Expected international-urban	0.00	-2.34	-2.72	-1.92	-0.97	-0.18	0.49	0.98	1.32	1.52
Migration ¹										
Rural-urban (% of urban unskilled labor supply)	0.00	0.07	0.12	0.13	0.12	0.10	0.08	0.06	0.04	0.01
Formal-informal (% of urban formal unskilled labor supply)	0.00	0.10	0.19	0.23	0.24	0.24	0.23	0.21	0.19	0.16
International-Urban (% of urban unskilled labor supply)	0.00	-0.01	-0.02	-0.03	-0.02	-0.02	-0.01	-0.01	0.00	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)	0.00	-0.02	-0.04	-0.07	-0.11	-0.15	-0.18	-0.21	-0.23	-0.25
Lending rate	-6.87	-6.88	-6.87	-6.87	-6.87	-6.88	-6.91	-6.94	-6.98	-7.02
Lending rate (Foreign Currency)	-5.99	-6.05	-6.09	-6.14	-6.17	-6.17	-6.15	-6.14	-6.13	-6.14
Bond rate	-0.84	-1.37	-2.50	-3.20	-3.71	-3.94	-3.99	-3.99	-4.07	-4.25
Credibility	0.00	0.01	0.56	0.74	0.82	0.82	0.76	0.68	0.62	0.59
Domestic premium	0.00	0.02	0.04	0.05	0.07	0.08	0.10	0.11	0.12	0.13

Table 4
Turkey: Simulation Results
5 Percentage point decrease in reserve requirement ratio
(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	-0.19	0.18	1.26	2.32	3.16	3.71	4.07	4.45	5.00	5.73
Urban CPI	0.47	1.18	2.23	3.27	4.09	4.61	4.92	5.21	5.65	6.26
Real Exchange Rate	0.29	0.76	0.78	0.82	0.81	0.77	0.69	0.57	0.44	0.32
Value Added Prices ¹										
Rural agriculture	-0.32	0.01	1.12	2.30	3.29	4.00	4.52	5.03	5.66	6.41
Urban private informal	-4.65	-5.96	-4.32	-3.13	-2.35	-1.92	-1.60	-1.10	-0.22	1.10
Urban private formal	3.57	6.10	7.09	8.02	8.65	8.94	8.92	8.74	8.61	8.61
Urban public	0.47	1.18	2.23	3.27	4.09	4.61	4.92	5.21	5.65	6.26
Real Disposable Income ¹										
Rural households	0.05	0.08	-0.02	-0.03	-0.02	0.01	0.07	0.12	0.15	0.12
Urban households	-0.95	-1.45	-1.53	-1.63	-1.69	-1.72	-1.70	-1.66	-1.60	-1.53
Informal	-3.90	-5.45	-4.98	-4.87	-4.88	-4.95	-4.97	-4.84	-4.53	-4.02
Formal	1.46	2.07	2.72	3.20	3.35	3.00	2.36	1.71	1.19	0.82
Capitalists and rentiers	0.56	0.96	-0.28	-1.02	-1.36	-1.26	-0.92	-0.65	-0.65	-0.93
Real Private Consumption ¹										
Rural households	0.05	0.05	-0.09	-0.14	-0.13	-0.05	0.06	0.14	0.16	0.11
Urban households	-0.63	-0.99	-1.17	-1.34	-1.42	-1.43	-1.38	-1.33	-1.31	-1.32
Informal	-3.90	-5.45	-5.00	-4.89	-4.90	-4.97	-4.97	-4.84	-4.53	-4.02
Formal	1.46	2.06	2.69	3.14	3.30	2.97	2.35	1.72	1.19	0.81
Capitalists and rentiers	0.56	0.94	-0.33	-1.11	-1.44	-1.30	-0.93	-0.64	-0.64	-0.94
Production Structure										
Size of Informal Sector (% of total output)	-0.02	-0.04	-0.05	-0.06	-0.07	-0.08	-0.10	-0.11	-0.12	-0.14
Size of Agricultural Sector (% of total output)	-0.01	-0.03	-0.06	-0.09	-0.11	-0.14	-0.16	-0.18	-0.20	-0.22
Composition of Employment										
Employment in rural sector (% of total employment)	-0.04	-0.10	-0.16	-0.23	-0.29	-0.34	-0.38	-0.40	-0.42	-0.42
Employment in informal sector (% of total employment)	-0.04	-0.03	0.00	0.04	0.07	0.09	0.11	0.11	0.11	0.09
Employment in informal sector (% of urban employment)	-0.10	-0.14	-0.14	-0.13	-0.12	-0.12	-0.12	-0.12	-0.13	-0.14
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	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.02	-0.02
Private Expenditures										
Consumption (% of GDP)	-0.87	-1.35	-1.43	-1.51	-1.56	-1.59	-1.59	-1.55	-1.51	-1.46
Consumption (% of total consumption)	0.01	0.00	-0.02	-0.04	-0.05	-0.05	-0.05	-0.05	-0.06	-0.08
Investment (% of GDP)	1.14	1.58	1.66	1.72	1.78	1.83	1.85	1.85	1.84	1.82
Investment (% of total investment)	1.02	1.81	2.31	2.60	2.77	2.85	2.89	2.90	2.94	3.01
Public Expenditures										
Consumption (% of GDP)	-0.15	-0.22	-0.23	-0.23	-0.25	-0.27	-0.29	-0.30	-0.31	-0.30
Investment (% of GDP)	0.03	0.05	0.05	0.05	0.04	0.03	0.02	0.00	-0.02	-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)	-0.03	-0.02	-0.19	-0.32	-0.37	-0.23	0.00	0.23	0.42	0.59
External Sector										
Agricultural exports (% of total exports)	0.13	0.19	0.17	0.15	0.13	0.11	0.08	0.04	-0.01	-0.05
Imports of non-agricultural goods (% of total imports)	0.10	0.15	0.16	0.15	0.15	0.15	0.14	0.13	0.12	0.11
External debt (% of GDP)	0.26	0.33	0.32	0.28	0.23	0.16	0.08	-0.01	-0.10	-0.19
Degree of openness (total trade in % of GDP)	0.88	1.46	1.44	1.45	1.44	1.44	1.39	1.30	1.18	1.03

¹ Percentage deviations from the base line

II. Analysis of Selected Fiscal Shocks

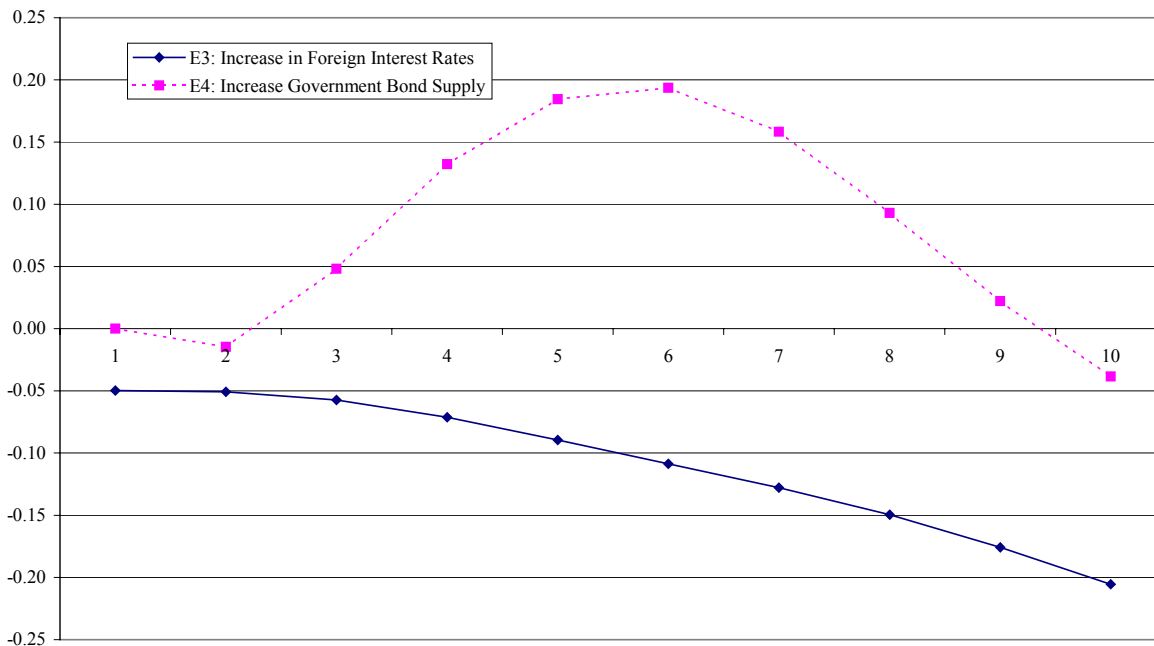
II-1. Increase foreign interest rates: Experiment E3

The persistent current account deficit and the continued need for foreign borrowing by the public sector currently places the Turkish economy under a heavy risk against foreign interest shocks. One source of this shock is expected to be generated from the US Fed. If the rate of interest accelerates in the US and the direction of foreign flows are changed against the Turkish securities, it is feared that the financing of the existing current account deficit and the public sector's borrowing requirement may be endangered.

In this experiment, I investigate the consequences of such a negative shock and increase the foreign interest rate on both private and public sector borrowing by 5% over the base path.

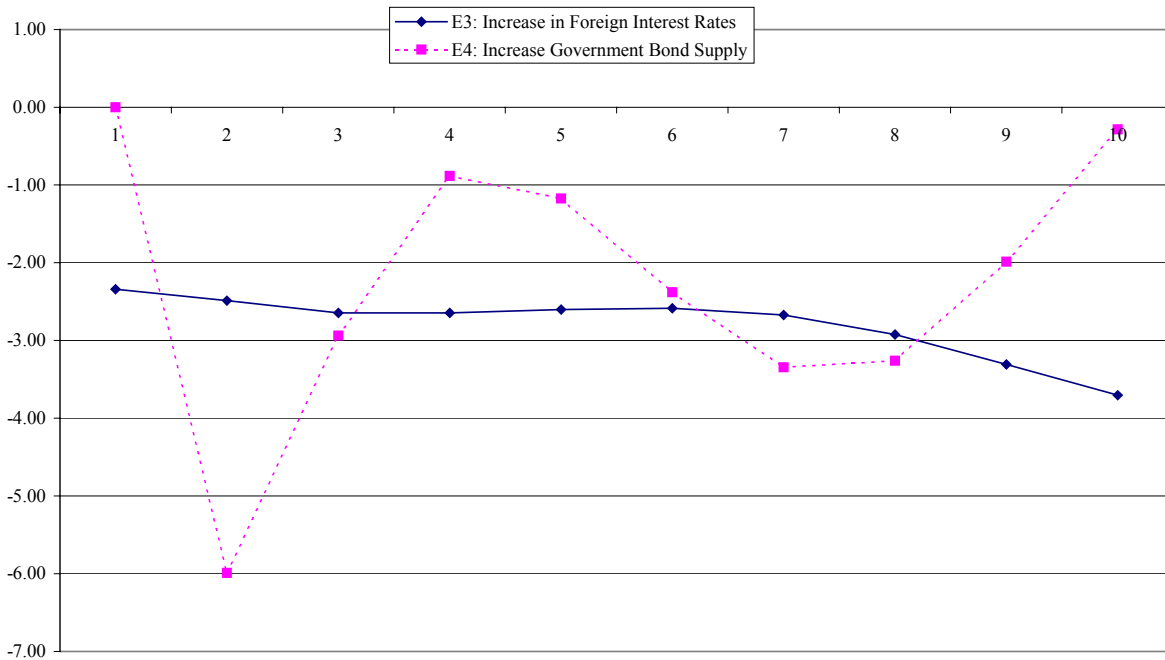
With the rise of foreign interest costs, the exchange rate depreciates both nominally and in real terms. This induces an increase in exports and a fall in imports. The lending rate increases significantly. Given higher import costs and higher costs of credit, private consumption investment demand are adversely affected. Gross domestic product contracts and generate further contractionary pressures on future desired investment demand via negative accelerationist effects.

Gross Domestic Product under Fiscal Shocks



As the fall in the GDP continues, the fall in investment demand is accentuated and reaches to a decline of 3.7 percentage points below its base value by period 10.

Private Investment under Fiscal Shocks

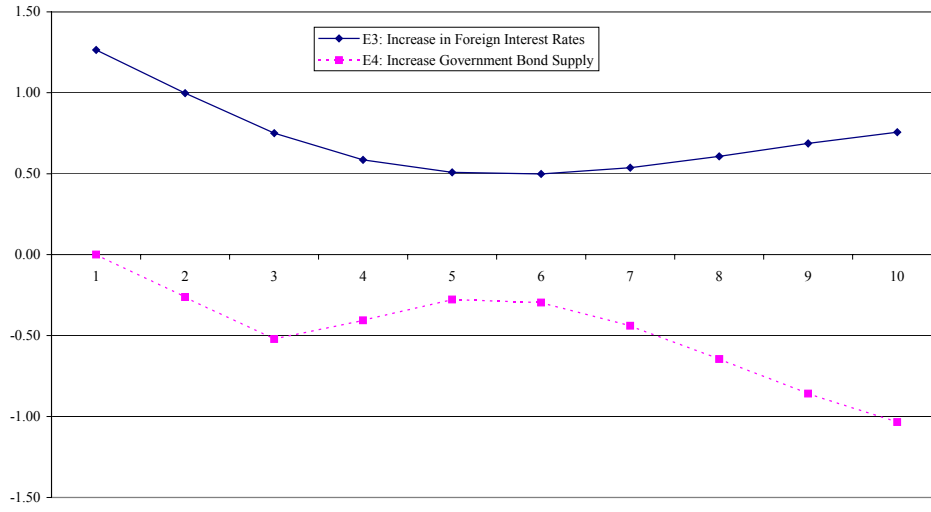


The fall in investment demand generates a slack of funds for the banking sector in its demand for the government bonds. Along with the rise in supply of funds to be used for government bonds, the bond interest rate falls. Yet on the other hand, lowering of the domestic activity generates a fall in the tax revenues of the government and the credibility index deteriorates. The government tries to improve its fiscal position by reducing the transfer expenditures granted to the households. As a result, the household disposable income is adversely affected. The rentier households succeed in counterveiling this negative development by the increase in their interest income.

The overall effect of the experiment is mildly inflationary. This result is the direct consequence of the negative supply shock. The inflationary environment is checked by the fall in aggregate demand, thus the net effect turns out to be a low increase in price inflation.

The current account balance is maintained by the real exchange rate depreciation. Thus the net effects of the experiment are stagflationary: inflation rises, GDP contracts and consumption and investment demand falls. These adjustments are the costs of improved current balance as was experienced in Turkey under post-crisis adjustments of 1994 and 2001.

Current Account Balance under Fiscal Shocks



Inflation rate under Fiscal Shocks

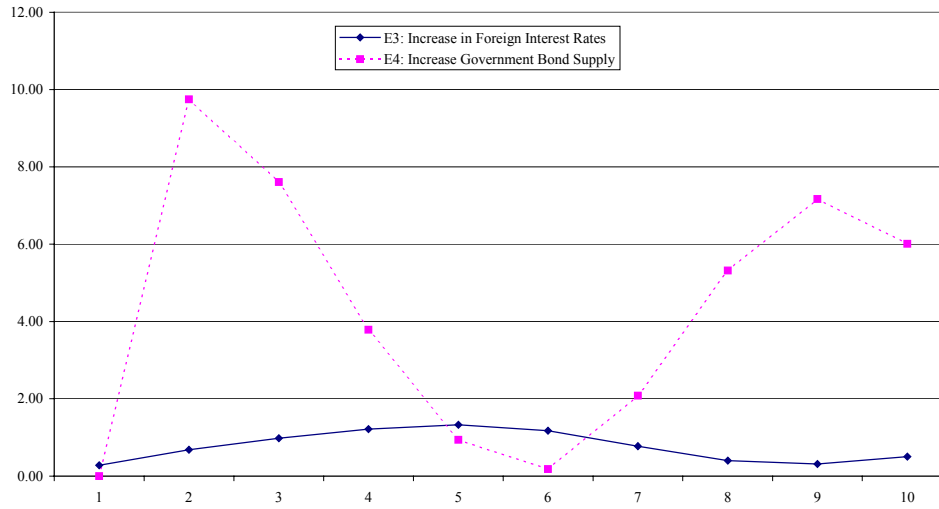


Table 5
Turkey: Simulation Results
5 Percentage point increase in the foreign interest rates (on deposits and gov borrowing)
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	0.79	1.26	1.95	2.82	3.78	4.63	5.23	5.54	5.77	6.12
Gross domestic product	0.69	1.17	1.87	2.76	3.72	4.57	5.15	5.46	5.69	6.05
Imports of goods and NFS	1.11	1.57	2.21	3.04	3.97	4.84	5.48	5.82	6.02	6.33
Total expenditure	0.79	1.26	1.95	2.82	3.78	4.63	5.23	5.54	5.77	6.12
Total consumption	0.11	0.77	1.64	2.62	3.63	4.47	5.03	5.32	5.56	5.95
Private consumption	0.14	0.80	1.67	2.65	3.65	4.50	5.06	5.36	5.61	6.00
Public consumption	-0.10	0.57	1.45	2.45	3.47	4.32	4.85	5.11	5.33	5.72
Total investment	-0.28	0.11	0.69	1.56	2.56	3.48	4.10	4.33	4.38	4.56
Private investment	-0.73	-0.49	-0.07	0.73	1.69	2.60	3.17	3.30	3.16	3.10
Public investment	1.03	1.52	2.21	3.10	4.07	4.96	5.59	5.95	6.20	6.59
Exports of goods and NFS	3.50	3.61	3.92	4.52	5.34	6.21	6.93	7.41	7.73	8.13
External Sector (% of GDP)¹										
Current account	1.26	1.00	0.75	0.59	0.51	0.50	0.54	0.61	0.69	0.76
Exports of goods and NFS	0.81	0.67	0.53	0.43	0.38	0.38	0.41	0.46	0.49	0.50
Imports of goods and NFS	0.13	0.12	0.10	0.08	0.07	0.08	0.09	0.10	0.10	0.08
Labor Remittances	0.09	0.09	0.08	0.07	0.07	0.08	0.10	0.12	0.14	0.15
Factor services	-0.68	-0.53	-0.40	-0.31	-0.27	-0.28	-0.32	-0.37	-0.43	-0.49
Capital account	-0.10	-0.11	-0.11	-0.11	-0.11	-0.11	-0.11	-0.10	-0.09	-0.08
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	0.07	0.00	-0.02	-0.05	-0.06	-0.07	-0.06	-0.04	-0.03	-0.04
Public borrowing	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Household deposits abroad	0.18	0.11	0.10	0.07	0.05	0.05	0.05	0.07	0.07	0.06
Government Sector (% of GDP)¹										
Total revenue	-0.21	-0.34	-0.53	-0.78	-1.04	-1.28	-1.45	-1.55	-1.64	-1.77
Direct taxes	-0.33	-0.44	-0.61	-0.85	-1.10	-1.34	-1.52	-1.63	-1.72	-1.85
Indirect taxes	0.12	0.10	0.08	0.07	0.06	0.06	0.07	0.08	0.08	0.08
Total expenditure	-0.34	-0.30	-0.27	-0.21	-0.17	-0.19	-0.25	-0.31	-0.32	-0.31
Consumption	-0.08	-0.07	-0.05	-0.04	-0.03	-0.03	-0.04	-0.05	-0.05	-0.05
Investment	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05
Transfers to households	-0.87	-0.87	-0.79	-0.65	-0.51	-0.45	-0.48	-0.55	-0.60	-0.61
Domestic interest payments	-0.01	0.01	-0.07	-0.19	-0.33	-0.45	-0.53	-0.58	-0.61	-0.66
Foreign interest payments	0.60	0.61	0.62	0.63	0.67	0.71	0.76	0.83	0.89	0.97
Total financing	-0.06	-0.14	-0.26	-0.41	-0.57	-0.69	-0.75	-0.77	-0.79	-0.85
Foreign borrowing	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
Bond financing	-0.07	-0.14	-0.26	-0.42	-0.58	-0.70	-0.76	-0.78	-0.80	-0.86
Labor Market										
Nominal wages										
Agricultural sector	0.16	0.82	1.74	2.78	3.84	4.71	5.28	5.60	5.87	6.29
Informal sector	-3.06	-1.75	-0.40	0.84	1.95	2.69	2.94	2.91	2.94	3.25
Private formal sector										
Unskilled	1.83	2.15	2.68	3.47	4.40	5.30	5.95	6.31	6.54	6.89
Skilled	1.97	2.30	2.81	3.54	4.45	5.39	6.15	6.62	6.92	7.29
Public sector										
Unskilled	0.36	0.95	1.75	2.70	3.70	4.56	5.14	5.44	5.68	6.07
Skilled	0.36	0.95	1.75	2.70	3.70	4.56	5.14	5.44	5.68	6.07
Employment										
Agricultural sector	0.00	-0.04	-0.09	-0.13	-0.16	-0.18	-0.19	-0.20	-0.21	-0.22
Informal sector	0.00	0.02	0.03	0.02	0.00	-0.04	-0.10	-0.17	-0.25	-0.35
Private formal sector										
Unskilled	0.56	0.58	0.50	0.39	0.31	0.28	0.32	0.36	0.35	0.29
Skilled	0.15	0.12	0.08	0.03	-0.02	-0.07	-0.12	-0.18	-0.24	-0.30
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	0.07	0.15	0.23	0.31	0.37	0.42	0.47	0.52	0.56
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	-0.46	-0.41	-0.26	-0.10	0.02	0.08	0.10	0.10	0.14	0.21
Skilled	-0.08	-0.06	-0.04	-0.01	0.01	0.03	0.05	0.06	0.08	0.09
Real wage ratios ¹										
Expected urban-rural	0.00	3.69	2.43	1.37	0.74	0.40	0.30	0.32	0.30	0.14
Expected formal-informal	0.00	18.79	11.87	7.63	5.62	4.71	4.78	5.57	6.49	7.01
Expected international-urban	0.00	0.91	1.14	1.43	1.64	1.83	2.06	2.37	2.75	3.14
Migration ¹										
Rural-urban (% of urban unskilled labor supply)	0.00	0.03	0.04	0.03	0.02	0.01	0.01	0.01	0.00	0.00
Formal-informal (% of urban formal unskilled labor supply)	0.00	0.06	0.08	0.08	0.07	0.06	0.05	0.05	0.05	0.04
International-Urban (% of urban unskilled labor supply)	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.04
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)	5.06	5.07	5.08	5.09	5.09	5.09	5.08	5.07	5.06	5.06
Lending rate	0.81	0.92	0.96	1.04	1.14	1.27	1.40	1.50	1.59	1.66
Lending rate (Foreign Currency)	0.70	0.80	0.82	0.85	0.89	0.95	1.02	1.09	1.16	1.22
Bond rate	0.50	-0.09	-0.76	-1.57	-2.49	-3.38	-4.13	-4.69	-5.13	-5.60
Credibility	0.00	-0.12	-0.12	-0.11	-0.10	-0.08	-0.07	-0.07	-0.08	-0.09
Domestic premium	0.00	0.02	0.03	0.04	0.06	0.08	0.11	0.14	0.16	0.19

Table 6
Turkey: Simulation Results
5 Percentage point increase in the foreign interest rates (on deposits and gov borrowing)
(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	-0.05	0.60	1.46	2.45	3.47	4.32	4.86	5.13	5.35	5.74
Urban CPI	0.36	0.95	1.75	2.70	3.70	4.56	5.14	5.44	5.68	6.07
Real Exchange Rate	1.40	1.19	0.98	0.83	0.75	0.75	0.80	0.86	0.91	0.93
Value Added Prices ¹										
Rural agriculture	0.16	0.80	1.68	2.70	3.73	4.60	5.16	5.48	5.75	6.16
Urban private informal	-3.06	-1.73	-0.37	0.86	1.94	2.65	2.86	2.78	2.74	2.96
Urban private formal	2.22	2.59	3.10	3.84	4.74	5.66	6.37	6.79	7.05	7.40
Urban public	0.36	0.95	1.75	2.70	3.70	4.56	5.14	5.44	5.68	6.07
Real Disposable Income ¹										
Rural households	0.30	0.22	0.17	0.13	0.10	0.10	0.14	0.19	0.24	0.28
Urban households	-0.47	-0.31	-0.18	-0.12	-0.12	-0.15	-0.20	-0.25	-0.29	-0.34
Informal	-2.77	-2.22	-1.82	-1.62	-1.55	-1.66	-1.93	-2.23	-2.45	-2.58
Formal	-0.31	-0.31	-0.18	0.12	0.43	0.54	0.44	0.26	0.12	0.07
Capitalists and rentiers	3.10	2.87	2.44	1.91	1.48	1.38	1.62	1.97	2.14	2.04
Real Private Consumption ¹										
Rural households	0.30	0.20	0.10	0.02	-0.04	-0.04	0.02	0.11	0.20	0.25
Urban households	-0.14	-0.02	0.05	0.05	0.01	-0.02	-0.04	-0.03	-0.04	-0.08
Informal	-2.77	-2.23	-1.83	-1.64	-1.58	-1.69	-1.96	-2.25	-2.45	-2.59
Formal	-0.31	-0.32	-0.22	0.06	0.36	0.46	0.37	0.22	0.10	0.05
Capitalists and rentiers	3.10	2.86	2.39	1.82	1.37	1.26	1.52	1.90	2.10	2.01
Production Structure										
Size of Informal Sector (% of total output)	-0.01	-0.01	0.00	0.01	0.01	0.02	0.02	0.02	0.02	0.02
Size of Agricultural Sector (% of total output)	-0.01	-0.01	-0.01	-0.01	0.00	0.00	0.00	0.00	0.01	0.01
Composition of Employment										
Employment in rural sector (% of total employment)	-0.03	-0.04	-0.05	-0.05	-0.05	-0.05	-0.04	-0.04	-0.03	-0.02
Employment in informal sector (% of total employment)	-0.02	-0.01	0.00	0.01	0.01	0.00	-0.01	-0.02	-0.03	-0.05
Employment in informal sector (% of urban employment)	-0.06	-0.06	-0.04	-0.03	-0.03	-0.03	-0.04	-0.06	-0.07	-0.09
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)	-0.36	-0.26	-0.14	-0.08	-0.05	-0.05	-0.06	-0.06	-0.05	-0.03
Consumption (% of total consumption)	0.03	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04
Investment (% of GDP)	-0.27	-0.26	-0.26	-0.26	-0.26	-0.25	-0.26	-0.29	-0.34	-0.39
Investment (% of total investment)	-0.34	-0.42	-0.50	-0.53	-0.54	-0.53	-0.55	-0.60	-0.70	-0.81
Public Expenditures										
Consumption (% of GDP)	-0.08	-0.07	-0.05	-0.04	-0.03	-0.03	-0.04	-0.05	-0.05	-0.05
Investment (% of GDP)	0.02	0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.05
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)	0.16	0.23	0.26	0.20	0.09	0.02	0.02	0.04	0.03	-0.01
External Sector										
Agricultural exports (% of total exports)	0.07	0.06	0.04	0.04	0.04	0.04	0.05	0.06	0.07	0.07
Imports of non-agricultural goods (% of total imports)	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01
External debt (% of GDP)	0.10	-0.03	-0.16	-0.28	-0.39	-0.50	-0.61	-0.72	-0.83	-0.93
Degree of openness (total trade in % of GDP)	0.95	0.79	0.62	0.51	0.45	0.46	0.51	0.56	0.59	0.58

¹ Percentage deviations from the base line

II-2. Increase Government's Bond Supply, Experiment E4

Next I study the effects of an exogenous increase of the government's bond supply. This policy maneuver may come from a decision to finance the increased public expenditures on, for example, education investments. Since monetization of such increases in public expenditures is out of fiscal realm, it would necessitate an increase in bond financing.

Increased supply of bonds in the financial markets result in market values of government bonds; hence the interest on such assets increase. The bond rate is observed to rise continuously and reach to 22% above its base path by period 10. The increase in the bond supply crowds out investment funds as well and the credit interest rate also increases. As a result private investment demand falls. The fall in private investment is very strong upon impact (see Figure above). Despite some recovery towards period 5, investment expenditures lie below its base path.

The government tries to achieve fiscal balance by reducing transfers to the private households. This development along with the rise in costs of credit leads to a reduction in private consumption for the urban formal and informal households. Yet, we observe that the rentier households capitalize on the rising bond interest income and they experience a rise of their disposable income and consumption. In the aggregate, private consumption is observed to rise slightly.

The increased costs of debt servicing lead to a deterioration of the credibility index, thereby worsening inflation expectations. Inflation picks up significantly above its base path. Thus the model captures quite well the inflationary effects of bond financing, as observed as a continuous threat for shaping the inertial inflation in the Turkish context.

The rise of the inflation calls for adjustments in the exchange rate. As exchange rate depreciates, exports expand and imports fall. Together with the fall in investment demand, the current account balance improves.

Table 7
Turkey: Simulation Results
10 Percentage point increase in Government Supply of Bonds
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	0.00	7.60	16.09	21.76	24.58	26.22	29.01	34.64	42.88	51.41
Gross domestic product	0.00	7.92	15.78	20.65	22.81	24.00	26.48	31.81	39.56	47.40
Imports of goods and NFS	0.00	6.56	17.14	25.56	30.60	33.70	37.41	43.95	53.64	64.25
Total expenditure	0.00	7.60	16.09	21.76	24.58	26.22	29.01	34.64	42.88	51.41
Total consumption	0.00	10.01	16.97	20.44	21.74	22.67	25.24	30.56	37.89	44.91
Private consumption	0.00	10.14	17.25	20.93	22.50	23.74	26.62	32.30	40.11	47.81
Public consumption	0.00	9.13	15.15	17.42	17.27	16.74	18.00	21.98	27.58	32.17
Total investment	0.00	2.14	14.14	23.39	27.56	29.12	31.51	37.48	47.35	58.24
Private investment	0.00	-0.06	13.17	23.99	28.77	30.26	32.46	38.76	49.90	62.86
Public investment	0.00	7.32	16.08	22.28	25.47	27.23	29.97	35.49	43.55	51.77
Exports of goods and NFS	0.00	5.13	14.87	24.82	31.81	35.91	39.59	45.61	54.88	65.60
External Sector (% of GDP)¹										
Current account	0.00	-0.26	-0.52	-0.41	-0.28	-0.30	-0.44	-0.64	-0.86	-1.04
Exports of goods and NFS	0.00	-0.72	-0.21	0.87	1.79	2.34	2.53	2.60	2.77	3.16
Imports of goods and NFS	0.00	-0.38	0.34	1.19	1.86	2.32	2.59	2.80	3.11	3.56
Labor Remittances	0.00	-0.10	0.00	0.19	0.36	0.49	0.56	0.61	0.70	0.84
Factor services	0.00	0.02	-0.03	-0.10	-0.15	-0.18	-0.18	-0.18	-0.18	-0.20
Capital account	0.00	0.42	0.58	0.24	-0.14	-0.32	-0.32	-0.23	-0.18	-0.24
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	0.07	0.16	0.13	0.11	0.13	0.13	0.06	-0.01	-0.03
Public borrowing	0.00	-0.01	0.00	0.01	0.02	0.03	0.03	0.04	0.04	0.05
Household deposits abroad	0.00	-0.36	-0.41	-0.10	0.27	0.49	0.48	0.33	0.21	0.26
Government Sector (% of GDP)¹										
Total revenue	0.00	-2.16	-3.94	-4.95	-5.40	-5.66	-6.18	-7.23	-8.65	-10.00
Direct taxes	0.00	-1.93	-4.08	-5.55	-6.37	-6.87	-7.52	-8.66	-10.22	-11.79
Indirect taxes	0.00	-0.23	0.13	0.60	0.97	1.21	1.34	1.43	1.57	1.79
Total expenditure	0.00	-0.80	-2.82	-4.55	-6.32	-7.87	-8.96	-9.84	-10.97	-12.60
Consumption	0.00	0.13	-0.07	-0.35	-0.61	-0.83	-1.00	-1.16	-1.39	-1.75
Investment	0.00	-0.04	0.02	0.10	0.16	0.21	0.23	0.25	0.27	0.30
Transfers to households	0.00	-0.67	-2.87	-4.80	-7.02	-9.21	-10.84	-11.93	-12.94	-14.37
Domestic interest payments	0.00	-0.18	0.10	0.45	1.04	1.81	2.47	2.80	2.87	2.95
Foreign interest payments	0.00	-0.03	0.00	0.06	0.11	0.15	0.17	0.19	0.22	0.27
Total financing	0.00	1.91	2.23	2.96	4.07	5.26	6.14	6.55	6.74	7.17
Foreign borrowing	0.00	-0.01	0.00	0.01	0.02	0.03	0.03	0.04	0.04	0.05
Bond financing	0.00	1.92	2.23	2.95	4.05	5.23	6.10	6.51	6.70	7.12
Labor Market										
Nominal wages										
Agricultural sector	0.00	9.70	15.80	18.48	19.37	20.30	23.20	29.02	36.93	44.60
Informal sector	0.00	12.75	12.60	6.32	-1.68	-8.51	-12.51	-14.62	-18.26	-27.08
Private formal sector										
Unskilled	0.00	6.22	17.49	26.54	31.69	34.47	37.73	43.92	53.23	63.11
Skilled	0.00	4.76	15.85	26.42	33.80	38.59	43.24	50.44	61.06	73.06
Public sector										
Unskilled	0.00	8.41	15.51	19.28	20.42	20.78	22.64	27.27	33.90	40.01
Skilled	0.00	8.41	15.51	19.28	20.42	20.78	22.64	27.27	33.90	40.01
Employment										
Agricultural sector	0.00	0.00	0.08	0.09	-0.04	-0.31	-0.66	-1.03	-1.39	-1.72
Informal sector	0.00	0.00	-0.06	-0.06	0.04	0.20	0.35	0.40	0.32	0.05
Private formal sector										
Unskilled	0.00	-1.25	-0.21	2.08	4.19	5.64	6.34	6.60	7.04	8.06
Skilled	0.00	0.15	0.49	0.72	0.72	0.58	0.40	0.23	0.10	0.02
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	-0.08	-0.08	0.12	0.55	1.18	1.96	2.84	3.80
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	0.00	0.99	0.09	-1.58	-2.86	-3.44	-3.34	-2.87	-2.46	-2.35
Skilled	0.00	-0.08	-0.24	-0.33	-0.31	-0.24	-0.15	-0.08	-0.04	-0.01
Real wage ratios ¹										
Expected urban-rural	0.00	0.00	-6.08	1.62	9.69	14.83	16.70	16.05	14.57	13.73
Expected formal-informal	0.00	0.00	-18.38	9.36	44.04	77.77	106.89	130.33	156.35	202.13
Expected international-urban	0.00	0.00	0.28	-2.69	-3.13	-1.91	-0.07	2.00	4.21	6.80
Migration ¹										
Rural-urban (% of urban unskilled labor supply)	0.00	0.00	-0.07	-0.01	0.11	0.22	0.29	0.30	0.28	0.25
Formal-informal (% of urban formal unskilled labor supply)	0.00	0.00	-0.08	0.00	0.19	0.42	0.62	0.75	0.84	0.92
International-Urban (% of urban unskilled labor supply)	0.00	0.00	0.00	-0.01	-0.02	-0.03	-0.03	-0.01	0.00	0.03
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)	0.00	0.04	0.08	0.07	0.04	0.03	0.05	0.08	0.09	0.06
Lending rate	0.00	0.01	0.10	0.22	0.33	0.43	0.56	0.78	1.10	1.52
Lending rate (Foreign Currency)	0.00	0.01	-0.29	-0.55	-0.72	-0.85	-1.03	-1.33	-1.73	-2.14
Bond rate	0.00	4.60	7.63	10.89	14.90	18.73	21.14	21.69	21.29	21.66
Credibility	0.00	0.00	-2.08	-4.73	-7.52	-10.21	-12.68	-14.91	-17.06	-19.32
Domestic premium	0.00	0.00	0.02	0.07	0.12	0.15	0.16	0.18	0.25	0.36

Table 8
10 Percentage point increase in Government Supply of Bonds
(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	0.00	9.08	15.15	17.48	17.41	16.97	18.32	22.44	28.26	33.19
Urban CPI	0.00	8.41	15.51	19.28	20.42	20.78	22.64	27.27	33.90	40.01
Real Exchange Rate	0.00	-1.22	-0.79	0.74	2.04	2.62	2.58	2.30	2.13	2.21
Value Added Prices ¹										
Rural agriculture	0.00	9.70	15.86	18.54	19.34	20.08	22.72	28.25	35.84	43.17
Urban private informal	0.00	12.75	12.54	6.27	-1.64	-8.37	-12.27	-14.35	-18.06	-27.05
Urban private formal	0.00	5.25	17.32	28.43	35.65	39.93	44.06	50.88	61.18	72.78
Urban public	0.00	8.41	15.51	19.28	20.42	20.78	22.64	27.27	33.90	40.01
Real Disposable Income ¹										
Rural households	0.00	-0.38	0.47	0.85	1.57	2.59	3.69	4.83	6.15	7.81
Urban households	0.00	2.11	1.65	1.04	0.63	0.44	0.32	0.00	-0.72	-1.78
Informal	0.00	2.49	-2.84	-9.77	-16.23	-21.53	-25.65	-29.68	-35.37	-43.86
Formal	0.00	-3.02	-6.96	-10.45	-14.82	-19.08	-21.90	-23.41	-24.72	-27.07
Capitalists and rentiers	0.00	7.69	17.56	27.51	37.99	48.65	57.84	64.81	70.82	77.91
Real Private Consumption ¹										
Rural households	0.00	-0.38	-0.59	-0.21	0.72	1.84	2.75	3.42	4.19	5.48
Urban households	0.00	2.29	2.21	2.66	3.38	4.07	4.43	4.28	3.79	3.37
Informal	0.00	2.49	-3.06	-9.98	-16.38	-21.66	-25.79	-29.89	-35.64	-44.13
Formal	0.00	-3.02	-7.44	-10.92	-15.19	-19.39	-22.29	-23.97	-25.49	-27.93
Capitalists and rentiers	0.00	7.69	16.62	26.46	37.07	47.75	56.63	62.92	68.11	74.63
Production Structure										
Size of Informal Sector (% of total output)	0.00	0.02	0.00	-0.04	-0.07	-0.08	-0.07	-0.05	-0.04	-0.06
Size of Agricultural Sector (% of total output)	0.00	0.01	0.01	-0.02	-0.05	-0.09	-0.12	-0.15	-0.17	-0.21
Composition of Employment										
Employment in rural sector (% of total employment)	0.00	0.04	0.02	-0.08	-0.20	-0.34	-0.46	-0.56	-0.66	-0.75
Employment in informal sector (% of total employment)	0.00	0.04	-0.03	-0.11	-0.14	-0.11	-0.06	-0.01	0.00	-0.05
Employment in informal sector (% of urban employment)	0.00	0.10	-0.04	-0.25	-0.39	-0.45	-0.45	-0.43	-0.47	-0.59
Employment in public sector (% of total employment)	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	0.00	0.00	0.00
Employment in public sector (% of urban employment)	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.02	-0.03	-0.03
Private Expenditures										
Consumption (% of GDP)	0.00	1.43	0.91	0.17	-0.18	-0.15	0.08	0.26	0.27	0.18
Consumption (% of total consumption)	0.00	0.10	0.21	0.35	0.53	0.74	0.93	1.11	1.32	1.63
Investment (% of GDP)	0.00	-1.16	-0.31	0.37	0.64	0.68	0.65	0.74	1.05	1.48
Investment (% of total investment)	0.00	-1.51	-0.57	0.32	0.60	0.55	0.45	0.57	1.04	1.70
Public Expenditures										
Consumption (% of GDP)	0.00	0.13	-0.07	-0.35	-0.61	-0.83	-1.00	-1.16	-1.39	-1.75
Investment (% of GDP)	0.00	-0.04	0.02	0.10	0.16	0.21	0.23	0.25	0.27	0.30
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)	0.00	0.91	3.55	6.95	11.21	14.98	17.03	18.09	19.80	23.63
External Sector										
Agricultural exports (% of total exports)	0.00	-0.14	0.04	0.27	0.46	0.57	0.63	0.68	0.75	0.88
Imports of non-agricultural goods (% of total imports)	0.00	-0.09	0.04	0.20	0.30	0.36	0.38	0.39	0.41	0.46
External debt (% of GDP)	0.00	0.25	0.96	1.42	1.49	1.32	1.08	0.91	0.82	0.73
Degree of openness (total trade in % of GDP)	0.00	-1.09	0.14	2.06	3.66	4.66	5.13	5.40	5.88	6.73

¹ Percentage deviations from the base line

III. Decrease in Unions' Bargaining Power

In this final experiment, I report on a simulation that involves the characteristics of the labor markets. The IMMPA structure has a detailed treatment of the labor markets and attempts to capture the existing segmentation and dualities in the Turkish labor force.

It is envisaged that unskilled workers in the economy may be employed either in the rural sector or in the urban sector, whereas skilled workers are employed only in the urban economy. We further hypothesize that wages in the rural sector adjust to clear the labor market. Labor supply in the rural sector grows exogenously over time. We also accommodate a migration function in the Harris-Todaro (1970) tradition and assume that the incentives to migrate depend negatively on the ratio of the average expected wage in the rural sector to that prevailing in the urban sector.

In the *urban sector* both public and private production require skilled and unskilled labor, whereas production in the informal urban sector requires only unskilled labor. In the public sector, both skilled and unskilled employment, U_G and S_G , are considered exogenous. Wages of both categories of workers, W_{UG} and W_{SG} , are assumed to be fully indexed on the urban consumption price index.

To determine the skilled and unskilled wage rates in the private formal sector, W_{UP} and W_{SP} , we assume direct bargaining, in each period, between workers and employers over the nominal wage, as in Agénor (2003a).

The *Nash Bargaining* problem can be formulated as:

$$\max_{w_{SP}} (W_{SP} - \Omega_S)^v (PJ_1 m_S - W_{SP}^E)^{1-v}, \quad 0 < v < 1,$$

where Ω_{SP} is the worker's reservation wage and $PJ_1 m_S - W_{SP}^E$ the firm's bargaining surplus. V measures the bargaining strength of the worker relative to the firm. The effective cost of (skilled) labor, W_{SP}^E , is defined as:

$$W_{SP}^E = (1 + IL)(1 + \text{paytax}_S)W_{SP}.$$

The IL is the bank lending rate on domestic currency loans as defined above in E1, paytax_S is the payroll tax rate on skilled labor, and $m_S = \partial J_1(S_P, K_P) / \partial S_P$ denotes the physical marginal product of the worker.

From the first order condition of the above maximization problem and given the definition of W_{SP}^E , the (equilibrium) wage negotiated wage can be derived as

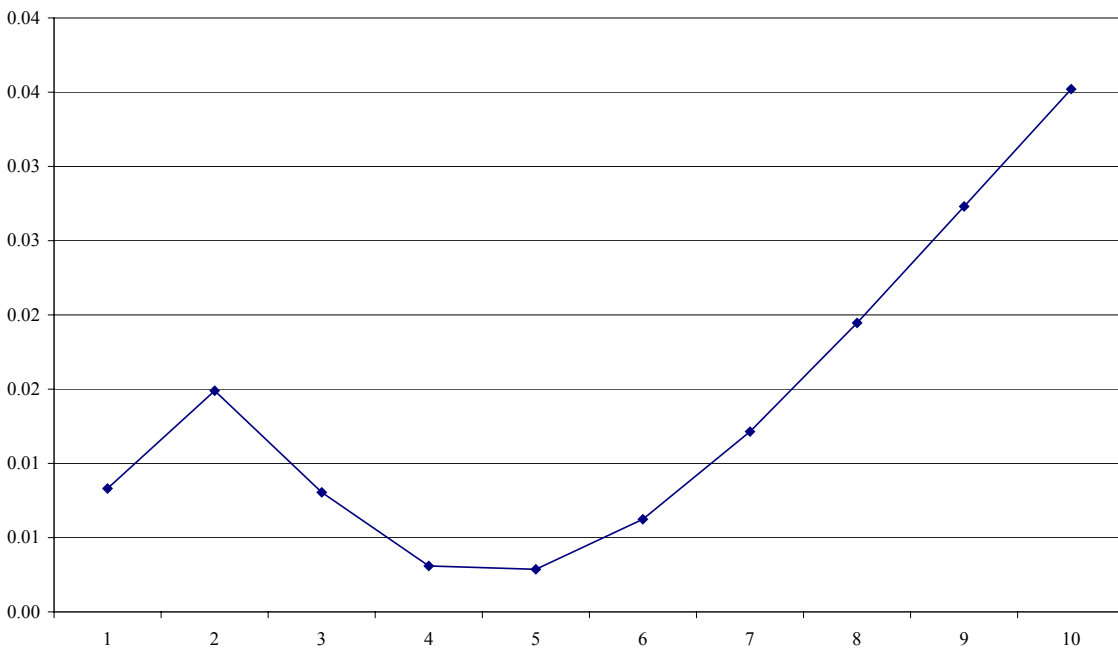
$$W_{SP} = (1 - v)\Omega_S + \frac{vPJ_1 m_S}{(1 + IL)(1 + \text{paytax}_S)}$$

which shows that the product wage is a weighted average of the reservation wage, Ω_S , and the marginal product of labor adjusted for the cost of borrowing and payroll taxes. An increase in the cost of borrowing, or in the payroll tax rate, lowers the equilibrium wage.

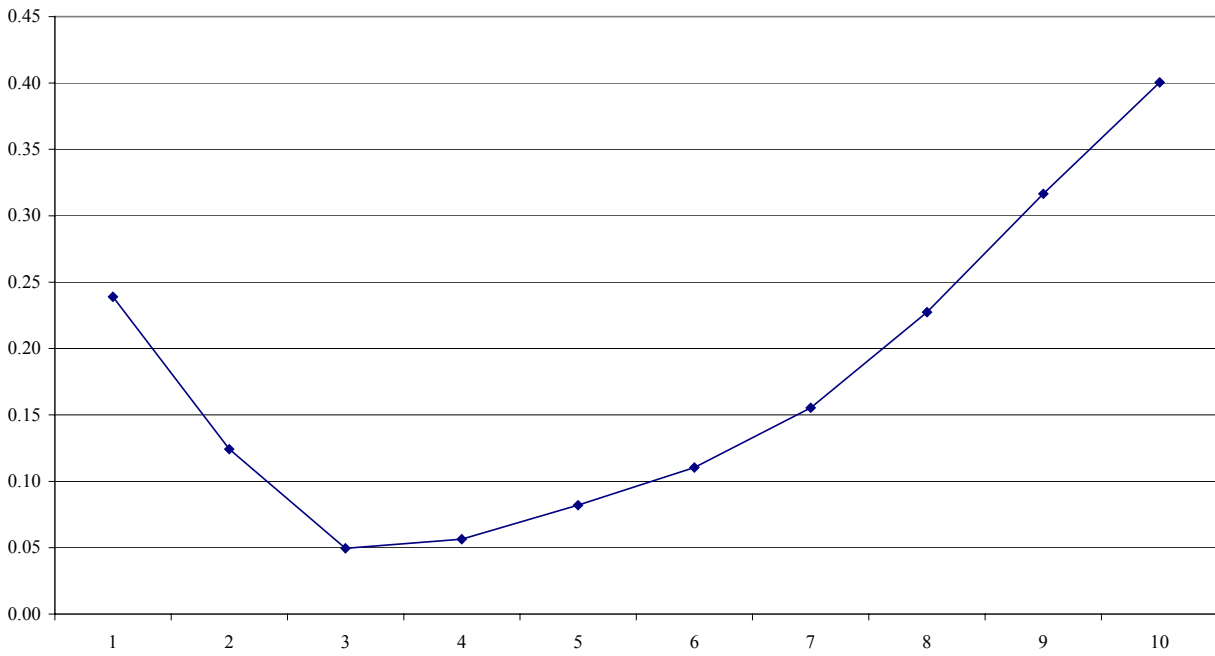
Given this structure, a reduction in the unions' bargaining power should lead to an increase in the demand for urban formal labor and gross output will tend to increase. The parametric reduction of this variable further calls for a substitution of the skilled labor against unskilled employment. Overall rate of unemployment falls for the skilled labor category and rises for the unskilled workers. As urban employment increases, it calls for increased migration from the rural sector as well. Hence we witness a rise in rural-urban migration.

The gross domestic product is increased slightly. Although the effect of the experiment on GDP is small, its qualitative direction is on the expected side. The accelerationist impact of the GDP is felt as an increase of the private investment demand.

Gross Domestic Product under Decrease in the Unions' Bargaining Strength

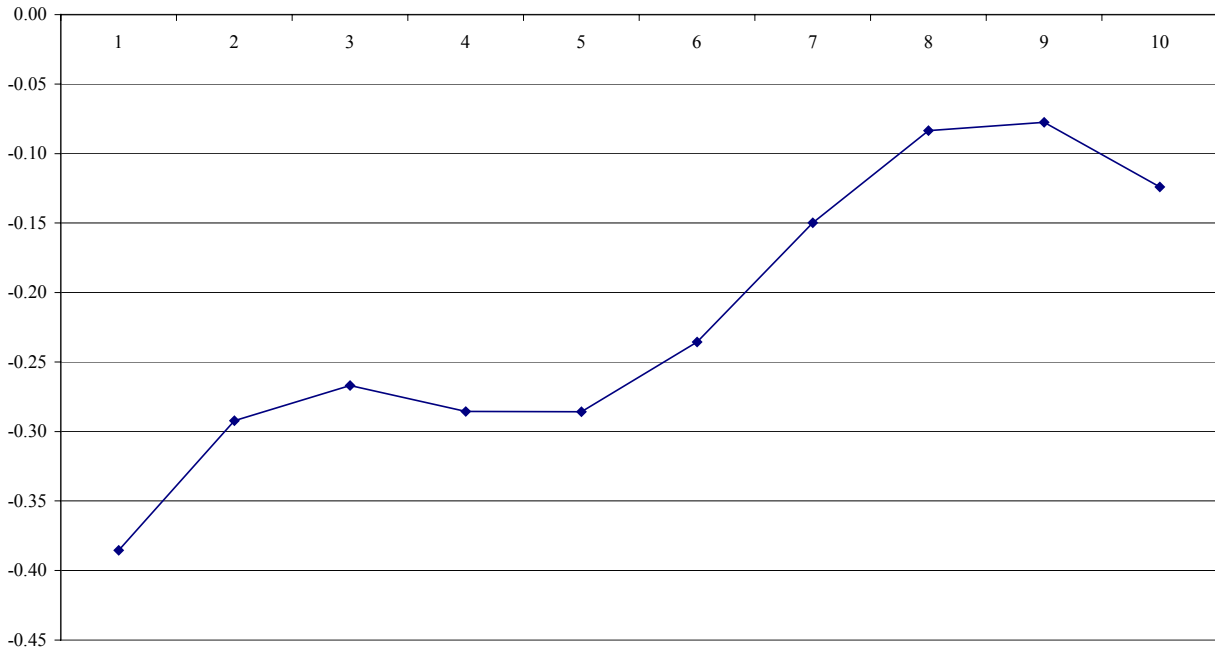


E5: Investment under Decrease in the Unions' Bargaining Strength



Lowering of the unions' bargaining power acts as a movement towards a second best environment. Thus the rate of inflation tends to fall as well.

E5: Inflation under Decrease in the Unions' Bargaining Strength



The experiment has little effect, if any, on the fiscal variables. The government's revenues improve slightly due to the expansion in the GDP. Given our fiscal closure rule, the increased revenues are channeled to the households as increased transfers. Yet the effects of such magnitudes on bond rate of interest and credibility are negligible.

Table 9
Turkey: Simulation Results
5 Percentage point decrease in union's bargaining power
(Percentage deviations from baseline, unless otherwise indicated)

	Periods									
	1	2	3	4	5	6	7	8	9	10
Real Sector										
Total resources	-0.27	-0.56	-0.80	-1.02	-1.23	-1.39	-1.50	-1.56	-1.61	-1.68
Gross domestic product	-0.29	-0.57	-0.81	-1.02	-1.23	-1.39	-1.49	-1.55	-1.59	-1.66
Imports of goods and NFS	-0.20	-0.53	-0.78	-1.00	-1.22	-1.41	-1.54	-1.61	-1.66	-1.73
Total expenditure	-0.27	-0.56	-0.80	-1.02	-1.23	-1.39	-1.50	-1.56	-1.61	-1.68
Total consumption	-0.38	-0.63	-0.83	-1.03	-1.23	-1.38	-1.48	-1.54	-1.59	-1.68
Private consumption	-0.38	-0.63	-0.83	-1.03	-1.22	-1.38	-1.48	-1.54	-1.59	-1.68
Public consumption	-0.38	-0.62	-0.83	-1.05	-1.25	-1.40	-1.49	-1.54	-1.59	-1.67
Total investment	-0.06	-0.46	-0.76	-1.00	-1.23	-1.42	-1.54	-1.59	-1.61	-1.66
Private investment	0.01	-0.41	-0.74	-0.98	-1.20	-1.39	-1.51	-1.54	-1.52	-1.53
Public investment	-0.28	-0.57	-0.81	-1.04	-1.27	-1.46	-1.60	-1.68	-1.74	-1.83
Exports of goods and NFS	-0.16	-0.46	-0.74	-0.99	-1.22	-1.42	-1.55	-1.62	-1.65	-1.70
External Sector (% of GDP)¹										
Current account	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.02	0.03	0.04
Exports of goods and NFS	0.04	0.03	0.02	0.01	0.00	-0.01	-0.02	-0.02	-0.02	-0.01
Imports of goods and NFS	0.03	0.01	0.01	0.01	0.00	-0.01	-0.01	-0.02	-0.02	-0.02
Labor Remittances	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.03	-0.03
Factor services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Capital account	-0.01	-0.02	-0.01	0.00	0.00	0.01	0.01	0.02	0.02	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	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.00	0.01
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	0.01	0.02	0.01	0.01	0.01	0.00	0.00	-0.01	-0.01	-0.01
Government Sector (% of GDP)¹										
Total revenue	0.09	0.17	0.23	0.30	0.36	0.41	0.45	0.47	0.49	0.53
Direct taxes	0.10	0.19	0.26	0.32	0.39	0.45	0.49	0.52	0.55	0.58
Indirect taxes	-0.01	-0.02	-0.02	-0.02	-0.03	-0.04	-0.05	-0.05	-0.05	-0.05
Total expenditure	0.08	0.12	0.12	0.11	0.12	0.14	0.17	0.20	0.21	0.21
Consumption	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Investment	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.02
Transfers to households	0.08	0.11	0.08	0.03	0.01	0.01	0.03	0.06	0.08	0.07
Domestic interest payments	0.01	0.02	0.05	0.08	0.12	0.14	0.15	0.15	0.16	0.16
Foreign interest payments	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01
Total financing	0.03	0.07	0.12	0.16	0.20	0.22	0.23	0.23	0.24	0.25
Foreign borrowing	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Bond financing	0.03	0.07	0.12	0.16	0.20	0.22	0.23	0.24	0.24	0.25
Labor Market										
Nominal wages										
Agricultural sector	-0.38	-0.61	-0.80	-0.99	-1.16	-1.29	-1.36	-1.40	-1.44	-1.52
Informal sector	-0.62	-0.76	-0.93	-1.14	-1.32	-1.41	-1.43	-1.42	-1.44	-1.54
Private formal sector										
Unskilled	1.09	0.94	0.85	0.68	0.45	0.22	0.03	-0.12	-0.27	-0.45
Skilled	-3.64	-4.27	-4.91	-5.63	-6.39	-7.09	-7.65	-8.05	-8.33	-8.55
Public sector										
Unskilled	-0.34	-0.60	-0.82	-1.04	-1.26	-1.43	-1.53	-1.59	-1.65	-1.74
Skilled	-0.34	-0.60	-0.82	-1.04	-1.26	-1.43	-1.53	-1.59	-1.65	-1.74
Employment										
Agricultural sector	0.00	-0.01	-0.02	-0.03	-0.05	-0.06	-0.07	-0.07	-0.08	-0.08
Informal sector	0.00	0.01	0.03	0.05	0.09	0.12	0.16	0.19	0.23	0.27
Private formal sector										
Unskilled	-1.46	-1.68	-1.90	-1.99	-2.01	-2.01	-1.98	-1.90	-1.79	-1.65
Skilled	1.63	1.77	1.95	2.19	2.44	2.68	2.88	3.04	3.15	3.24
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	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.02
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	1.21	1.34	1.44	1.45	1.42	1.38	1.33	1.25	1.15	1.05
Skilled	-0.88	-0.91	-0.94	-0.99	-1.04	-1.08	-1.09	-1.08	-1.06	-1.02
Real wage ratios ¹										
Expected urban-rural	0.00	0.70	0.61	0.58	0.53	0.43	0.29	0.15	0.03	-0.04
Expected formal-informal	0.00	0.78	-0.01	-0.32	-0.40	-0.52	-0.76	-1.03	-1.24	-1.29
Expected international-urban	0.00	-0.44	-0.62	-0.85	-0.98	-1.02	-1.02	-1.00	-0.96	-0.91
Migration ¹										
Rural-urban (% of urban unskilled labor supply)	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00
Formal-informal (% of urban formal unskilled labor supply)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01
International-Urban (% of urban unskilled labor supply)	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lending rate	0.00	-0.01	-0.01	-0.02	-0.03	-0.04	-0.05	-0.06	-0.07	-0.07
Lending rate (Foreign Currency)	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	-0.01	-0.02
Bond rate	0.07	0.21	0.37	0.54	0.69	0.83	0.93	1.00	1.06	1.14
Credibility	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Domestic premium	0.00	0.00	-0.01	-0.01	-0.02	-0.02	-0.03	-0.04	-0.04	-0.05

Table 10
Turkey: Simulation Results
5 Percentage point decrease in union's bargaining power
(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	-0.38	-0.62	-0.83	-1.05	-1.25	-1.40	-1.49	-1.54	-1.59	-1.68
Urban CPI	-0.34	-0.60	-0.82	-1.04	-1.26	-1.43	-1.53	-1.59	-1.65	-1.74
Real Exchange Rate	0.05	0.05	0.03	0.00	-0.01	-0.03	-0.04	-0.05	-0.04	-0.02
Value Added Prices ¹										
Rural agriculture	-0.38	-0.62	-0.81	-1.01	-1.19	-1.32	-1.40	-1.44	-1.49	-1.57
Urban private informal	-0.62	-0.75	-0.91	-1.10	-1.25	-1.32	-1.31	-1.27	-1.27	-1.33
Urban private formal	-0.17	-0.50	-0.77	-1.03	-1.30	-1.54	-1.72	-1.84	-1.91	-2.00
Urban public	-0.34	-0.60	-0.82	-1.04	-1.26	-1.43	-1.53	-1.59	-1.65	-1.74
Real Disposable Income ¹										
Rural households	0.03	0.02	0.04	0.06	0.08	0.08	0.08	0.08	0.07	0.07
Urban households	-0.07	-0.04	-0.02	0.00	0.01	0.03	0.04	0.05	0.06	0.06
Informal	-0.18	-0.08	-0.03	0.00	0.05	0.12	0.22	0.31	0.37	0.39
Formal	-0.15	-0.16	-0.28	-0.46	-0.60	-0.67	-0.66	-0.63	-0.62	-0.64
Capitalists and rentiers	0.24	0.16	0.25	0.39	0.49	0.51	0.46	0.39	0.36	0.39
Real Private Consumption ¹										
Rural households	0.03	0.05	0.07	0.09	0.11	0.11	0.10	0.09	0.08	0.08
Urban households	-0.05	-0.02	0.00	0.03	0.05	0.06	0.06	0.05	0.05	0.05
Informal	-0.18	-0.07	-0.02	0.01	0.05	0.13	0.23	0.31	0.37	0.39
Formal	-0.15	-0.15	-0.27	-0.44	-0.59	-0.65	-0.65	-0.63	-0.62	-0.64
Capitalists and rentiers	0.24	0.19	0.27	0.41	0.52	0.54	0.48	0.40	0.36	0.40
Production Structure										
Size of Informal Sector (% of total output)	-0.01	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Size of Agricultural Sector (% of total output)	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.02	-0.02	-0.02	-0.03
Composition of Employment										
Employment in rural sector (% of total employment)	0.00	0.00	0.00	-0.01	-0.03	-0.04	-0.06	-0.07	-0.08	-0.09
Employment in informal sector (% of total employment)	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03
Employment in informal sector (% of urban employment)	0.00	0.02	0.02	0.02	0.01	0.00	-0.01	-0.01	-0.01	-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	0.00	0.00	-0.01	-0.01
Private Expenditures										
Consumption (% of GDP)	-0.06	-0.04	-0.02	-0.01	0.00	0.01	0.01	0.01	0.00	-0.01
Consumption (% of total consumption)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Investment (% of GDP)	0.06	0.03	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.02
Investment (% of total investment)	0.06	0.03	0.01	0.01	0.02	0.02	0.02	0.03	0.05	0.07
Public Expenditures										
Consumption (% of GDP)	-0.01	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Investment (% of GDP)	0.00	0.00	0.00	0.00	0.00	-0.01	-0.01	-0.01	-0.01	-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)	-0.07	-0.11	-0.12	-0.12	-0.11	-0.12	-0.15	-0.17	-0.18	-0.19
External Sector										
Agricultural exports (% of total exports)	0.01	0.00	0.00	0.00	-0.01	-0.02	-0.02	-0.03	-0.04	-0.04
Imports of non-agricultural goods (% of total imports)	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
External debt (% of GDP)	-0.01	-0.03	-0.04	-0.05	-0.05	-0.04	-0.03	-0.02	-0.01	0.00
Degree of openness (total trade in % of GDP)	0.07	0.05	0.03	0.02	0.00	-0.01	-0.03	-0.04	-0.04	-0.03

¹ Percentage deviations from the base line

Concluding Comments

In this note, I tried to provide an overview of the issues that can be studied within the context of the Turkish IMMPA that is implemented in 2004. The model suggests important trade offs and offers guidelines in studying the relative merits of the policy alternatives in the Turkish economy today.

Further important issues that can be addressed using the IMMPA framework can be numerated as follows:

1. Labor market reforms, e.g. cut in payroll taxes on unskilled labor, increased incentives for skills acquisition, unemployment benefits, or reduction in firing costs.
2. Investigation of wage and employment effects of a reduction in firing costs: workers' reservation wages could be made a function of severance payments.
3. Investigation of Taylor-type monetary policy rules in the context of inflation targeting; e.g. how much weight should be attached to the nominal exchange rate?
4. External shocks, e.g. impact of financial contagion on capital outflows and exchange rate volatility.
5. Changes in the composition of public investment (infrastructure/education mix) to increase growth and employment.
6. Link with a household income and expenditure survey for poverty analysis.