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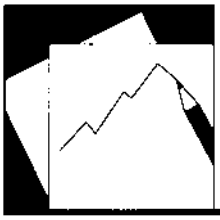

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Fiscal Consolidation in Israel: A Global Fiscal Model Perspective

Selim Elekdag, Natan Epstein, and
Marialuz Moreno-Badía

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Fiscal Consolidation in Israel: A Global Fiscal Model Perspective

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Abstract

Fiscal consolidation has become an important policy prescription for many emerging market countries (EMCs), particularly for the highly indebted ones. Although prudent fiscal policies tend to reduce vulnerabilities, their implementation is usually postponed. This paper represents, to the best of our knowledge, one of the first attempts in the literature to quantify the costs of delaying fiscal consolidation in an EMC. In particular, using the IMF's Global Fiscal Model (GFM), we find that early consolidation through expenditure cuts would result in a substantial increase in Israel's long-term output growth relative to the case with delayed fiscal adjustment. Using an alternative fiscal instrument, we find that delaying tax cuts would result in cumulative real GDP that is much larger than otherwise.

JEL Classification Numbers: E62, F41, F42, H20, H30, H63

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I. INTRODUCTION

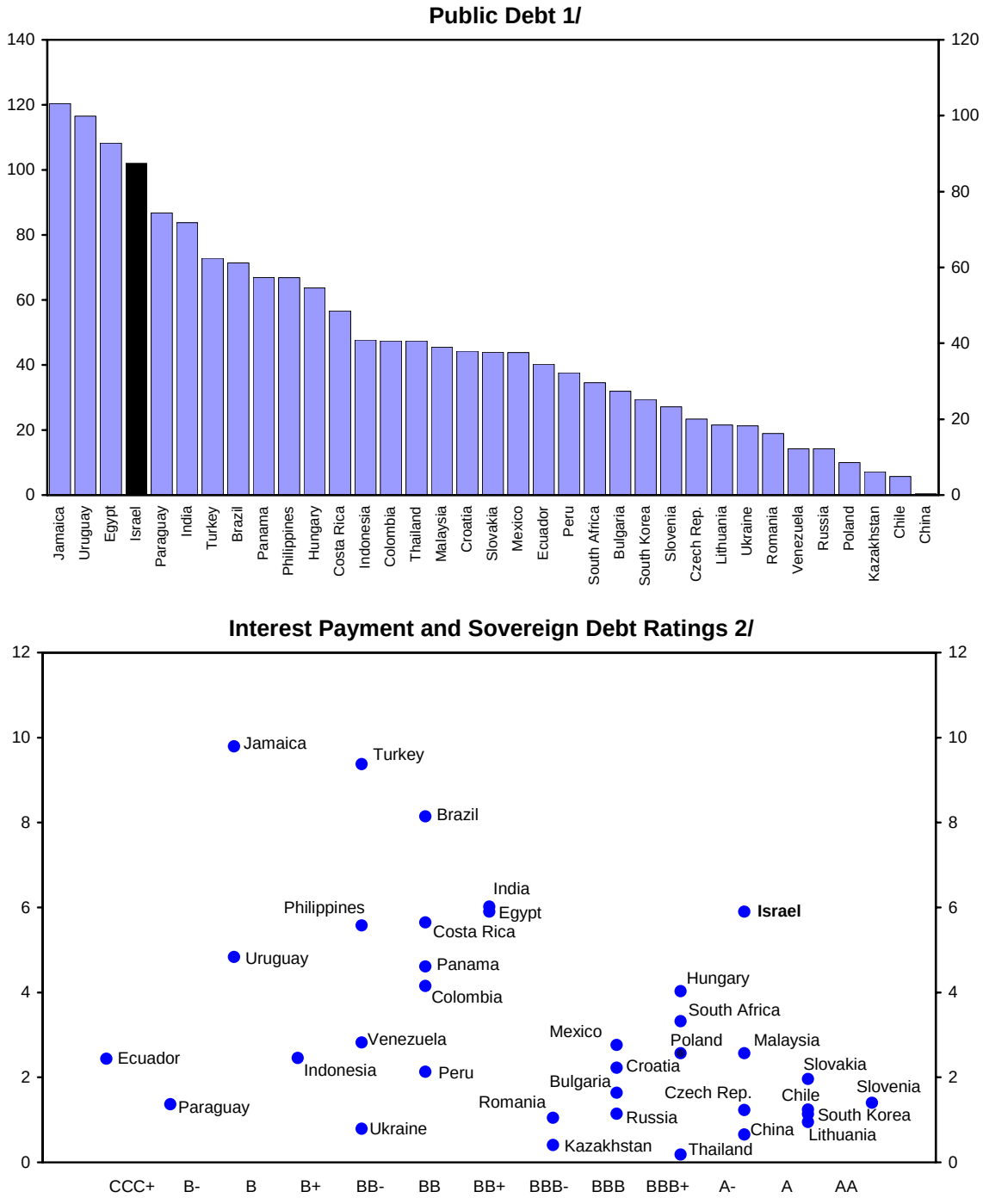
Fiscal consolidation has become an important policy prescription for many emerging market countries (EMCs), particularly for the highly indebted ones. With large stocks of liabilities, many EMCs face solvency risk, while the burden of debt servicing makes it difficult for them to conduct countercyclical fiscal policy, thus limiting their ability to cope with external shocks. Although prudent fiscal policies tend to reduce vulnerabilities, and therefore lower risk premia, their implementation is not without difficulties. In fact, Alesina and Drazen (1991) argue that in cases where stabilization through fiscal consolidation would have significant distributional implications, different socioeconomic groups engage in a "war of attrition" in an attempt to shift the burden of reform onto each other, resulting in a delayed stabilization.

Postponing fiscal consolidation is particularly inefficient in the presence of macroeconomic instability and when the cost of adjustment increases with the delay. This is particularly relevant when fiscal imbalances are associated with high and variable inflation (see, for example, Sargent and Wallace (1985)). To the best of our knowledge, however, the literature has not quantified the cost of delaying consolidation and has instead focused on the political economy of reform (see, for example, Perotti (1998)). Against this backdrop, this paper explores the macroeconomic consequences of the timing of fiscal consolidation.

For our analysis we focus on the case of Israel, which, over the last decade, has taken important steps to strengthen fiscal discipline. However, despite a gradual decline in the size of the public sector since the mid-1980s, successive governments have failed to achieve long-lasting fiscal consolidation and public debt stands at around 100 percent of GDP. Israel is of particular interest because although it is one of the few EMCs with debt ratings in the range of A- to AA, it nonetheless pays interest equivalent to about 6 percent of GDP, which is higher than most EMCs, including several with below-investment-grade ratings, as is shown in Figure 1.

In order to illustrate the trade-off between early and delayed fiscal consolidation, we calibrate the IMF's Global Fiscal Model (GFM) to Israel. The novelty of the GFM is that it builds upon the New Open Economy Macroeconomics (NOEM) paradigm popularized by Obstfeld

Figure 1. Selected Emerging Markets: Public Debt and Interest Payment, 2005
(In percent of GDP)



Source: World Economic Outlook (IMF); CEIC and EMED; Bloomberg.

1/ Central government only for Jamaica and Russia. Venezuela as of 2004.
2/ Standard & Poor's ratings on long-term foreign currency debt.

and Rogoff (1996) by breaking Ricardian equivalence.[1] There are three reasons why Ricardian equivalence is not expected to hold in GFM. First, there are overlapping generations of optimizing agents that have finite planning horizons and are not initially endowed with financial wealth. Since current generations are disconnected from future generations—who help finance the interest burden associated with higher levels of public debt—agents perceive themselves to be wealthier when debt increases. Therefore changes in fiscal deficits and the stock of debt will affect private savings. Second, there are distortionary labor and corporate income taxes, driving a wedge between relative prices. Third, a fraction of the agents do not have access to financial markets. Since they cannot save or borrow, their consumption is directly determined by their after-tax labor income.

Using cumulative real GDP to measure the implications of various policies, our results suggest that there are substantial longer-term benefits to earlier fiscal consolidation. Whether the government decides to reduce expenditures or change the tax and transfer structure, using early primary surpluses to reduce the public debt stock yields large increases in GDP in the long run. One of the main channels at play is that the reduction in public debt reduces the real interest rate and thereby promotes investment and growth.

The rest of the paper is organized as follows. Section II reviews Israel's fiscal performance over the past twenty years and discusses its fiscal policy stance in the context of assessment of EMCs. Section III introduces the GFM model by describing the model's key analytical features and calibration techniques. Section IV describes the results illustrating the trade-off between early and delayed consolidation, while Section V examines the long-term benefits of reducing public debt by delaying tax cuts. Section VI concludes.

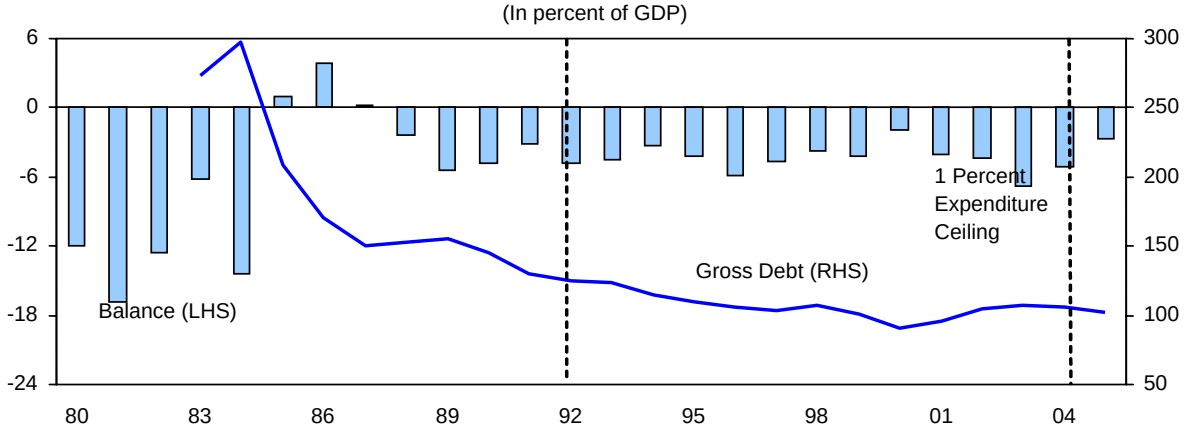
II. Fiscal Performance in Israel

Israel has a history of attempting—with limited success—to set up a mechanism to control fiscal outcomes on a multiyear basis. Fiscal discipline improved substantially after the stabilization program of 1985, following a long period in which both budget deficits and public debt were very high. Since the mid-1980s, public expenditure has been reduced by more than 16 percent of GDP. This has enabled the general government deficit to be reduced

[1] The Ricardian equivalence hypothesis suggests that government budget deficits do not affect the total level of demand in an economy. Consider an intuitive example whereby the government engages in deficit-financed spending. Even though taxpayers would perceive themselves to be wealthier now, they would realize that they would have to pay higher taxes in the future and would therefore increase savings. The extra saving by consumers would exactly offset the extra spending by government, so overall demand would remain unchanged.

from about 14 percent of GDP in 1984 to about 3 percent in 2005.[2] The improvement in the deficit has also made possible a reduction in the tax burden of about 5 percent of GDP. However, the reduction of public deficits has proved insufficient to achieve durable fiscal consolidation, and public debt has remained high as result (Figure 2).

Figure 2. General Government Balance and Gross Debt
(In percent of GDP)



The initial improvement in public finances was due to the Law of No-Printing of 1985 and the Budget Deficit Reduction Law (DRL) of 1991. The first law passed in September 1985 as part of the stabilization program. It prohibited the Bank of Israel from lending money to the government to finance its deficit and put lower bounds on the government's accounts in the Bank. The 1991 enactment of the DRL called for the incorporation of medium-term fiscal targets, which were intended to compensate for the lack of a fiscal policy anchor. The targets were intended to bind future governments, thereby making fiscal policy more transparent and credible. However, successive governments found it difficult to meet the deficit targets set by the DRL, particularly during periods of weak economic activity (Figure 3). The DRL targets were not adjusted for the cycle, and, therefore, the law had to be amended continuously (Table 1).

[2] The fiscal ratios presented in this paper do not reflect the revisions made to Israel's national accounts in July 2006, as a result of which the GDP series was revised upward by a cumulative 5 percent through end of 2005.

Table 1. Israel: Central Government, DRL Ceiling Versus Actual Deficits

Deficit Targets by year announced	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1991	6.2	3.2	2.2	0														
1994 1/			3	2.8	2.5													
1997						2.8	2.4	2	1.75	1.5								
2000 2/									2.5	1.75		1.5						
February, 2002											3	2	1.5	1				
June, 2002												3-3.5	2.5-3	2-2.5	1.5-2	1-1.5		
2004 3/ 4/													2.5-4	3.4	up to 3			
2006 5/																up to 2	up to 1.5	up to 1
Actual Deficits	3.8	2.4	2.3	4.1	3.7	2.6	2.3	2.4	0.7	4.4	3.8	5.6	3.8	1.9				

Sources: Ministry of Finance, and Bank of Israel.

1/ No specific deficit targets were given for the years 1995−97. The only requirement was that the deficit, as percent of GDP, would decrease compared to its level in the previous year. Numbers underlined represent the deficit targets that the government decided on whent it presented the budget for this year.

2/ No specific deficit targets were given for the years 2001−02. The only requirement was that the deficit, as percent of GDP, would decrease by 0.25 percentage points compared to the previous year, and that the deficit in 2003 would be up to 1.5 percent of GDP. Numbers underlined represent the deficit targets that the government decided on when it presented the budget for this year.

3/ In 2004, the DRL was amended to include ceilings on expenditures growth between 2005−10. Accordingly, budget expenditure, indexed to the CPI, would not increase by more than 1 percent each year and the budget deficit would not exceed 3 percent of GDP.

4/ In the 2005 budget, the original deficit target was 3 percent of GDP, but it was later revised upward to account for the estimated cost of Gaza disengagement of 0.4 percent of GDP.

5/ In 2006, the DRL was further modified, with the 1 percent cap on the growth in real expenditure rising to 1.7 percent, starting in 2007, while the deficit ceiling falling gradually to 1 percent by 2009.

In addition, because the DRL prescribed the ex ante deficit path, it appears to have created a bias for overly optimistic revenue and growth projections at times of slow economic growth. In fact, an analysis of Israel's fiscal forecast errors shows that the under-performance on fiscal balance since the mid-1990s has been mainly driven by lower-than-expected revenue (Figure 4).[3] A significant part of the forecast error on the revenue side came from deviations in the projections of value-added tax (VAT) and nontax revenue. Optimistic revenue projections permitted the annual budget law's expenditure allocation to be higher than it realistically could be, given the deficit target. As a result the budget's effectiveness as an expenditure planning tool may have been lessened.

Figure 3. Growth and Fiscal Deficits

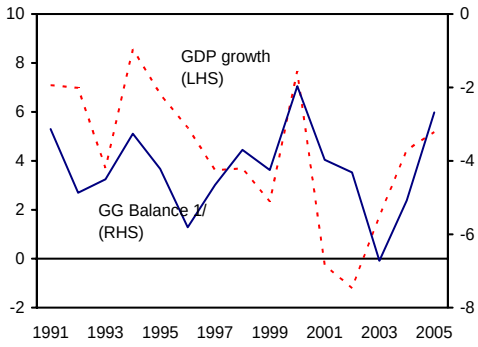
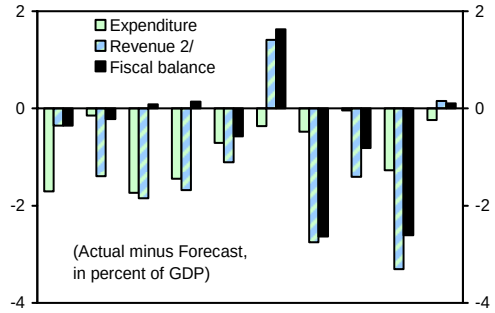


Figure 4. Forecast Error



1/ In percent of GDP.
2/ Revenue excluding foreign grants.

A key reason for the failure to consistently implement the DRL is the lack of more formal, less ad hoc medium-term fiscal framework—one that incorporates multiyear budgets and binding expenditure ceilings in a detailed and transparent manner. In 2004, the DRL was amended to include ceilings on expenditure growth between 2005 and 2010. Under this amendment, real expenditure would rise by no more than 1 percent each year, and the budget deficit would not exceed 3 percent of GDP.[4] However, following the 2006 Parliamentary elections, the DRL was further modified. The 1 percent cap on the growth in real expenditure is expected to increase to 1.7 percent starting in 2007, largely reflecting the growth rate of Israel's population, while the deficit ceiling is expected to fall gradually to 1 percent of GDP by 2009. This modification ultimately could strengthen the overall fiscal consolidation framework in Israel, because it explicitly targets a declining path in the fiscal deficit.

A. Recent Trends

The remarkable improvement in the public finances from the mid-1980s through the 1990s has given way to a noticeable deterioration in more recent years. To better understand the dynamics of fiscal policy in Israel, we identify three broad phases. During the first phase spanning 1985−90, the general government balance improved by 11 percent of GDP on average, and the primary balance moved sharply into a surplus, reaching 4.3 percent of GDP

[3] Forecast errors are defined as the difference between the reported actual and budget projections. A negative (positive) value implies the outcome underperformed (exceeded) budget expectations.

[4] The 1 percent rule refers to growth in real expenditure from budget to budget.

by 1990 (Table 2). This improvement was achieved largely through cuts in public expenditure, principally defense and subsidies.[5]

Table 2. Israel. Trends in Public Finances

(Average during subperiods, in percent of GDP)

	1980–84	1985–90	1991–2000	2001–05
Revenues	60.2	59.7	49.8	47.5
Domestic receipts	48.5	47.5	44.1	43.3
Tax	40.4	41.6	38.0	38.0
External receipts	11.7	12.2	5.7	4.2
Intergovernmental transfers	8.0	9.7	3.9	2.6
Total expenditures	72.6	60.9	53.8	52.0
Of which:				
Current expenditures	66.6	56.3	48.0	47.9
Public consumption 1/	30.9	26.3	26.2	27.1
Defense 2/	6.7	4.8	2.1	1.9
Interest	11.4	10.8	6.7	5.8
Transfers and subsidies	17.6	14.5	13.0	13.2
Capital outlays	6.0	4.6	5.8	4.1
Gross fixed investment	2.4	2.4	3.1	2.6
Primary spending	61.2	50.2	47.1	46.2
Primary current spending	55.2	45.6	41.3	42.1
Overall balance	-12.4	-1.3	-4.0	-4.6
Primary balance	-1.0	9.5	2.7	1.2
Real GDP growth	2.7	4.1	5.6	2.0
Debt-GDP ratio (end-period)	297.8	145.1	91.1	101.9

Source: Bank of Israel.

1/ Excluding defense imports.

2/ Direct defense imports including advance payments, excluding taxes.

Throughout the second phase (1991−2000), the pace of fiscal consolidation slowed markedly as the overall general government balance weakened by about three percent of GDP and the primary balance declined by about seven percentage points.[6] During this period, expenditure cuts in defense continued and Israel started enjoying the first fruits of its stabilization effort, as reflected in the substantial decline in interest payments. However, revenue fell as a result of tax cuts and a reduction of aid from the United States.[7]

The third phase, beginning in 2001, saw a deterioration in public finances, particularly in the early part of this phase which coincided with a recession. Over the period 2001−2004, the overall budget deficit worsened from two percent of GDP in 2000 to about five percent in 2004, after which the general government deficit went down to 2.7 percent in 2005. The

[5] Subsidies to the business sector decreased significantly as part of the stabilization program.

[6] It is important to note that during the 1990's Israel absorbed a very large number of immigrants (about 20 percent of its original population at the time), which resulted in higher government spending and contributed to the weakening of the fiscal balance.

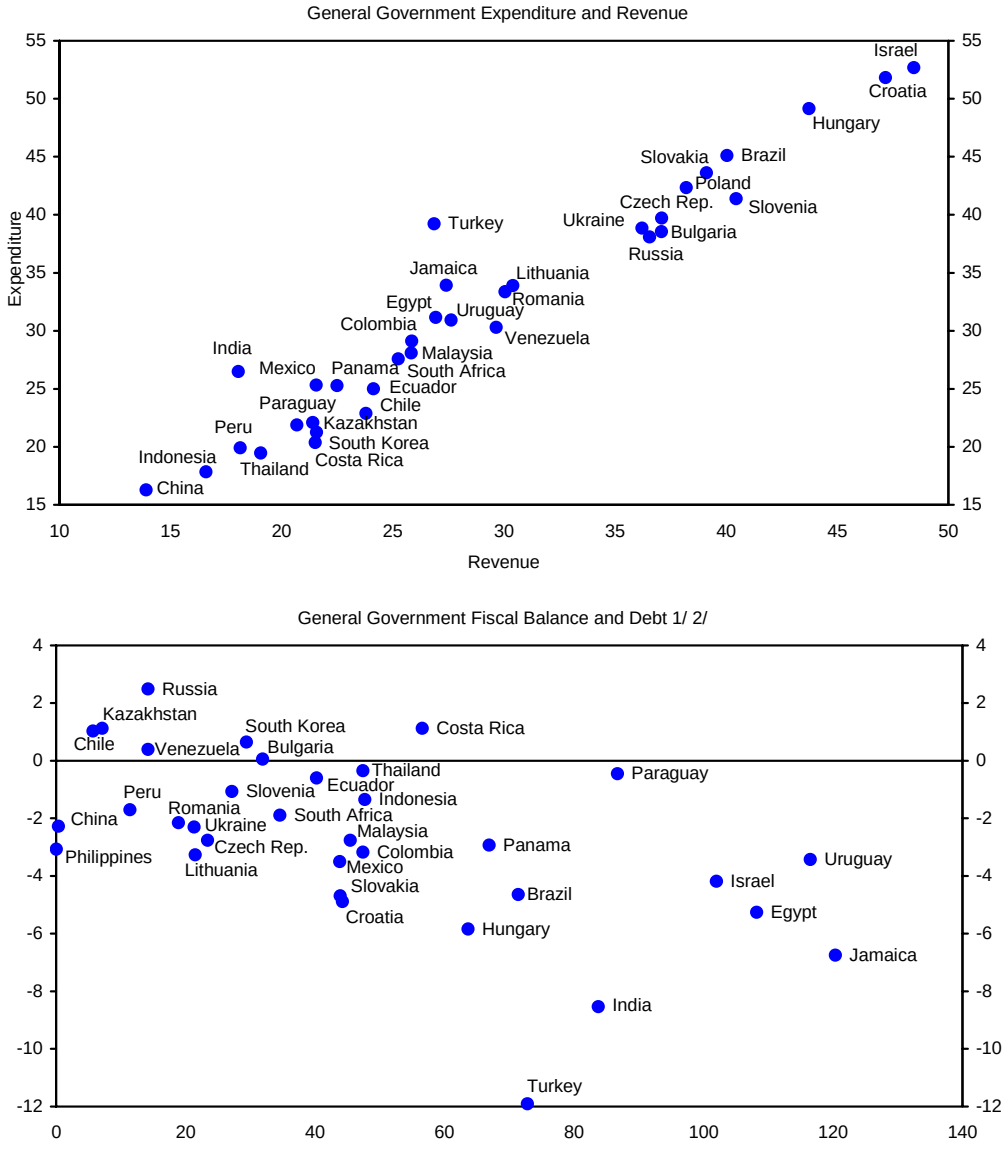
[7] Because U.S. aid has remained at US$3 billion dollars since 1985, its real value has declined since then, and its size relative to GDP fell dramatically to about 2 percent in 2004. In recent years, U.S. aid to Israel has been reduced annually. In 2006 it will amount to roughly US$2.5 billion.

primary balance also declined by about 1.5 percentage points over the same period. In contrast to the previous phases, current expenditures outpaced revenues leading to higher deficits and a larger stock of public debt.

B. How Does Israel Compare with Other EMCs?

The fiscal consolidation from the mid-1980s through 1990s brought Israel more in line with other EMCs. In 1985, the relative size of the Israeli public sector, at around 70 percent of GDP, was one of the highest in the world. Although the subsequent fiscal adjustment placed Israel closer to other EMCs, public spending, at about 50 percent of GDP in 2005, is still about 20 percentage points higher than the average for EMCs (Figure 5).

Figure 5. Selected Emerging Markets: Government Finance, Average of 1995–2005
(In percent of GDP)

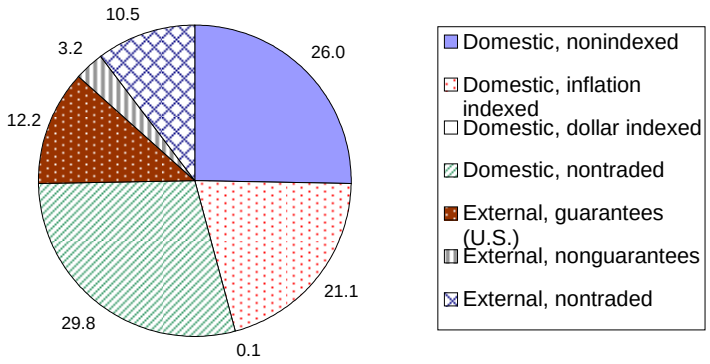


Sources: World Economic Outlook (IMF); CEIC and EMED; and Bloomberg.
1/ Central government only for Jamaica and Russia.
2/ Debt stock as of 2005 only. Venezuela as of 2004.

The main difference in spending levels appears to comes from defense, which is 5 percentage points of GDP higher than in the United States, the country with the highest defense spending among countries of the Organization for Economic Cooperation and Development (OECD). On the revenue side, the Israel tax yield as a share of GDP is slightly higher than EMCs' average. The composition of tax revenue has changed over time in favor of indirect taxation.

Overall, the fiscal deficit in Israel has been above the average of EMCs and, as a result, Israel has one of the highest public debt-to-GDP ratios. However, Israel's rollover risks of its public debt are somewhat mitigated by the fact that 75 percent of the debt is held domestically (Figure 6). Moreover, most of the 25 percent that is issued externally is either held by the Jewish diaspora, which demands very low interest rates and is non-traded, or backed by U.S. government guarantees.[8]

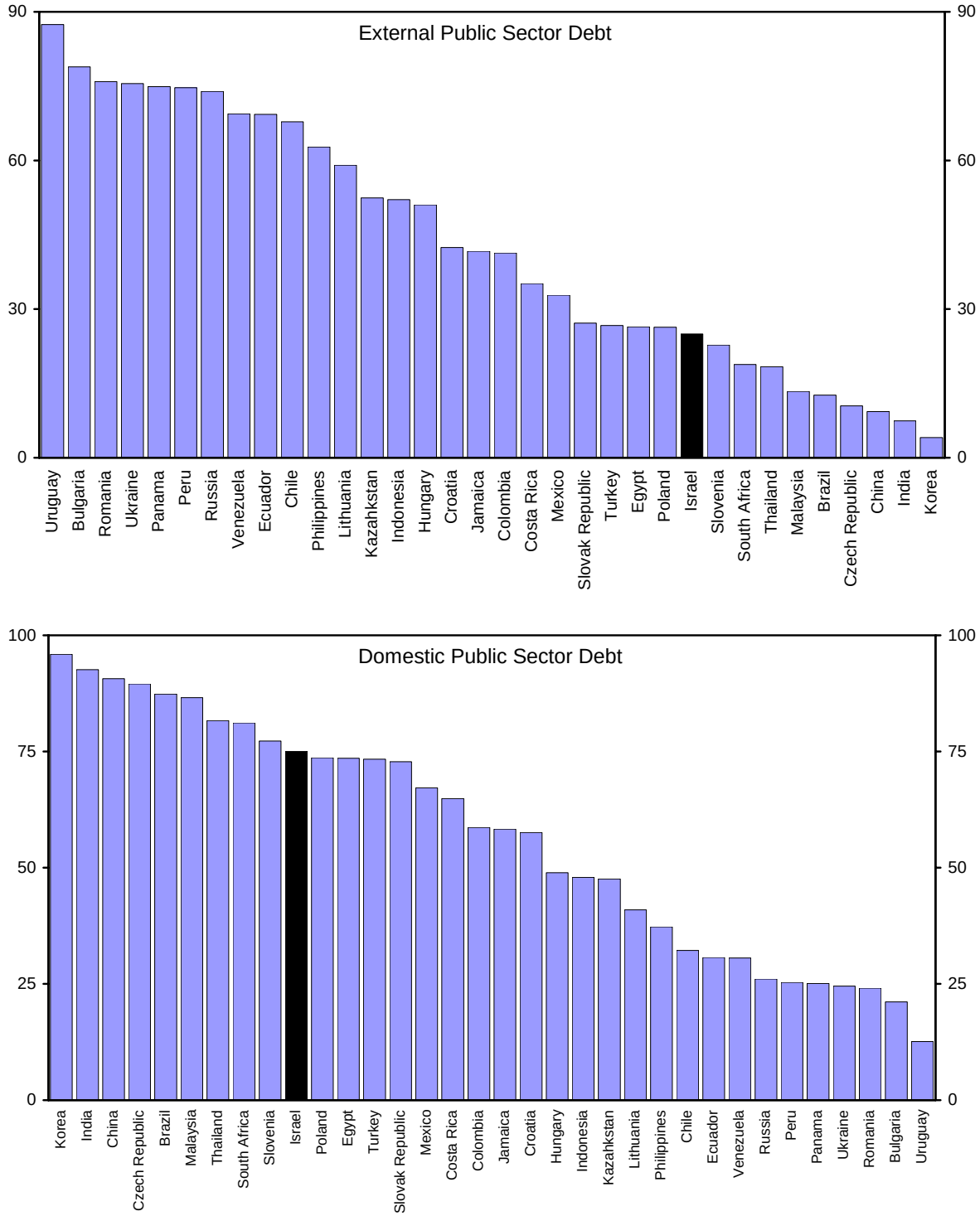
Figure 6. Public Debt, 2004 (In percent of GDP)



In comparison, the public debt of most emerging markets is distributed less favorably (Figure 7). Indeed, close to half of these countries issue more of their public debt to external creditors than to domestic creditors. Nonetheless, although much of Israel's public debt is held domestically and half of the external debt portion is guaranteed by the U.S. government, the overall debt ratio is very high, and the economy stands to benefit from bringing the ratio down. For example, a lower debt ratio would help reduce interest payments, thereby freeing up government resources for other, more productive economic uses.

[8] Under the 2003 U.S. government's guarantees program, Israel was eligible to issue US$9 billion of sovereign guaranteed debt spread between 2003 and 2007. As of the end of 2005, the remaining balance was US$4.6 billion, of which US$2.6 billion was available immediately.

Figure 7. Emerging Markets: Public Sector Debt by Type, 2005
(In percent of total public debt)



Source: IMF.

III. THE MODEL

A. An Outline of the Global Fiscal Model

In this section we provide an outline of the Global Fiscal Model (GFM), which is a large-scale multicountry model derived completely from optimizing foundations.[9] The key feature of GFM is that each country is populated with overlapping generations of optimizing agents assumed to have finite planning horizons that are initially not endowed with any financial wealth as in Blanchard (1985) and Weil (1989). As compared to more standard NOEM models, this breaks Ricardian equivalence in that changes in fiscal deficits and the public stock of debt will affect private savings.

In this version of GFM, the model world consists of two blocks, Israel (home or domestic) and the rest of the world (foreign). Assuming that all consumers in both regions face identical survival probabilities, the relative size of the populations remain constant and this essentially fixes the relative size of the home economy.

Households

In each period *t*, *n* individuals are born in the home country, where the world population is normalized to unity. Each agent has a planning horizon of *1/(1-q)* derived from the constant probability of survival *q*. A representative agent born in period *a* derives utility from consumption, *C*, leisure, *(1-L)*, where *L* denotes labor effort, and real money balances, *(M/P)*, which are described by the following utility function:

$$E_0 \sum_{t=0}^{\infty} (q\beta)^t \left[\frac{\left(C_{a,t}^{\eta} \left(1 - L_{a,t} \right)^{1-\eta} \right)^{1-\rho}}{1-\rho} + \frac{\chi}{1-\rho} \left(\frac{M_{a,t}}{P_t} \right)^{1-\rho} \right],$$

where E_t denotes the mathematical expectation conditional on information available at time *t*, β is the subjective discount factor, ρ>0 is the inverse of the intertemporal elasticity of substitution, and we restrict the remaining parameters such that 0<η<1 and χ>0. Notice that with a constant probability of death, the agent discounts the future by an additional factor *q*.

As in Blanchard (1985) we assume the existence of insurance companies which charge a premium *(1-q)/q* to each agent that survives in a period and also confiscates the wealth of deceased agents. Denoting government debt with $B_{a,t}$, Π after tax dividends by the

[9] For further details, refer to Botman, Laxton, Muir, and Romanov (2006).

firms, τ_L labor income tax, Φ any relevant rebates, P the aggregate price index, W the nominal wage, S the nominal exchange rate, $A_{a,t} = F_{a,t} + S_{t-1}F^*_{a,t}$ net foreign assets (NFA), V^i the value claim to all future profits of firm i, where $i \in [0,n]$, and, finally, $x^i_{a,t}$ the share of firm i owned by the representative agent born in period a in the beginning of period t, we have the agent's nominal budget constraint:

$$\begin{aligned} & P_t C_{a,t} + M_{a,t} + F_{a,t+1} + S_t F^*_{a,t+1} + \int V^i_t x^i_{a,t+1} di \\ & = \frac{1}{q}\Big[M_{a,t-1} + (1+i_t)(B_{a,t} + F_{a,t}) + (1+i^*_t) S_t F^*_{a,t} \Big] \\ & + \frac{1}{q}\Big[(1-\tau_{L,t}) W_t L_{a,t} + \int V^i_t x^i_{a,t} di + \int \Pi^i_t x^i_{a,t} di + \Phi_t \Big], \end{aligned}$$

Maximizing the utility function subject to the budget constraint yields optimality conditions that dictate the agents behavior. Among them is an Euler equation (stating the preference to smooth consumption), and a labor supply schedule. It is important to underscore that because agents choose the amount of labor effort optimally, the labor income tax will have distortionary effects on the consumption and leisure choices. Furthermore, since NFA is composed of a home and a foreign asset, a standard uncovered interest parity (UIP) follows from the households' optimization problem, which underpins the main financial linkage between countries. It is worth reiterating that the combination of a finite planning horizon and that newly born agents are *not* endowed with any wealth implies that a fraction of government debt will by perceived as wealth, and therefore, government deficits will influence aggregate savings.

Botman, Laxton, Muir, and Romanov (2006) show that using the budget constraint along with the first order conditions, the decision rule of the optimizing agents, denoted $C^{opt}_{a,t}$, can be written as the sum of human wealth, $H_{a,t}$, and financial holdings:

$$\begin{aligned} & P_t C^{opt}_{a,t} = \frac{1}{D_t}\left\{ H_{a,t} + \frac{1}{q}\Big[M_{a,t-1} + (1+i_{t-1})(A_{a,t-1} + B_{a,t-1}) \Big] \right\}, \\ & H_{a,t} = \sum_{s=t}^{\infty} R_{t,s} q^{s-t} (1-\Psi)\Big[(1-\tau_{L,s}) W_s L_s + \Theta_s \Big], \\ & D_t = 1 + \left(\frac{1-\eta}{\eta} \right) + \left(\frac{\chi}{\eta} \right) + q\beta D_{t+1}, \end{aligned}$$

where, for simplicity, we have assumed logarithmic preferences (ρ=1) and that period profits (captured by the term Θ) are distributed equally across agents. Also, Ψ denotes the share of

rule-of-thumb consumers and D is the marginal propensity to consume out of total wealth, which, in turn, reduces to $(1-q\beta)/(1+(1-\eta)/\eta+\chi/\eta)$.

The final consumption good in the home economy comprises traded, C_T, and nontraded, C_N, goods, and takes the form:

$$C=\left[\gamma^{\frac{1}{\varepsilon}}C_T^{\frac{\varepsilon-1}{\varepsilon}}+(1-\gamma)^{\frac{1}{\varepsilon}}C_N^{\frac{\varepsilon-1}{\varepsilon}}\right]^{\frac{\varepsilon}{\varepsilon-1}}.$$

In turn, C_T is composed of home, C_H, and foreign, C_F, goods, which is also aggregated using a similar CES function. Both the traded and nontraded goods are themselves baskets of individual goods. For example, the nontraded goods is composed of varieties, $C_N(i)$, produced by an arbitrary firm in the nontraded goods sector, index with $i\in[0,n]$. More formally:

$$C_N=\left[\left(\frac{1}{n}\right)^{\theta}\int\left(C_N(i)\right)^{\frac{\theta-1}{\theta}}di\right]^{\frac{\theta}{\theta-1}},$$

It is understood that the domestic traded good, C_H, is a similar basket of differentiated varieties. With the standard restrictions on the parameters, we can obtain a optimization-based price indexes for each consumption aggregate.

Firms

A typical firm, in either sector, maximizes the discounted value of current and future dividends, subject to a CES production technology, and a law of motion for capital. Denoting output with Y, capital with K (which is costly to adjust), investment with I, productivity with Z, and the corporate income tax rate with τ_{Π}, we have:

$$\max\sum_{s=t}^{\infty}R_{t,s}P_s\left[\Pi_{i,s}-\tau_{\Pi,s}P_s(MPK_s-\delta)K_s\right]$$

$$\Pi_{i,s}=\left(1-\tau_{\Pi,s}\right)\left[\frac{\left(P_s(i)\right)^{1-\theta}}{\left(P_{H,s}\right)^{\theta}}Y_s-W_sL_{i,s}-P_s\left(I_{i,s}+\frac{\psi}{2}\frac{I_{i,s}^2}{K_{i,s}}\right)\right]$$

$$Y=\left[\mu^{\frac{1}{\xi}}K^{\frac{\xi-1}{\xi}}+(1-\mu)^{\frac{1}{\xi}}\left(ZL\right)^{\frac{\xi-1}{\xi}}\right]^{\frac{\xi}{\xi-1}}$$

$$K_{i,s+1}=(1-\delta)K_{i.s}+I_{i,s}$$

where δ, ξ, μ, θ, and *MPK* denote the rate of capital depreciation, the elasticity of substitution between the factors of production, the bias towards the use of capital in the production function, the elasticity of substitution between the goods produced by the firm, and the marginal product of capital, respectively. Firms choose the optimal levels of capital and labor for production, but, exploiting their monopoly power, they also optimally set the price of their individual good.

Government and Fiscal Policy

In this version of GFM, we assume that all government consumption, *G*, is on nontraded goods. Expenditures are partially financed by collecting taxes, *T*, which, in the experiments below will primarily consists of labor income taxes (instead of corporate income taxes). Other sources of financing include the issuance of debt and seignorage revenues. The nominal government budget constraint is therefore:

$$P_{N,t}G_t + (1+i_t)B_t = T_t + (M_t - M_{t-1}) + B_{t+1}$$

Fiscal closure is achieved by specifying a target path for the desired level of government debt as a ratio of GDP, denoted with *b**. In the standard version of GFM, the aggregate tax rate, τ, adjusts until the actual debt-to-GDP ratio coincides with the target. The tax rate is determined by the following set of equations:

$$\tau_t = \varphi_t\left(\tau_t + debtgap_t\right) + \left(1-\varphi_t\right)\bar{\tau}_t,$$
$$debtgap_t = \left(\frac{B_t}{GDP_t} - \nu_1 b_t^* - (1-\nu_1)\frac{B_{t-1}}{GDP_{t-1}}\right) + \nu_2\left(\frac{\Delta B_t}{GDP_t} - \Delta b_t^*\right),$$

where φ is an exogenous variable that can temporary fix the tax rate at a certain level $\bar{\tau}$. As shown in Botman, Laxton, Muir, and Romanov (2006), in the case when φ =1, this rule reduces to a simple error-correction formulation whereby the gap between actual and desired government debt-to-GDP ratio gradually disappears. More specifically:

$$\frac{B_t}{GDP_t} = \nu_1 b_t^* + (1-\nu_1)\frac{B_{t-1}}{GDP_{t-1}} - \nu_2\left(\frac{\Delta B_t}{GDP_t} - \Delta b_t^*\right)$$

where term, $\nu_2 > 0$, prevents excessive cycling in the tax rate and the real economy.

B. Calibrating GFM to the Israeli Economy

For a model intended to inform policy analysis, it is important that its calibration and properties reflect the stylized facts. In this section we provide and overview of how we have tuned the model to the Israeli data. Table A.1 in the Appendix shows all the calibrated parameters, whereas Table A.2 displays the implied steady-state values of the model. Although the parameterization of the regions may seem similar, because of differences in, for example, country size, openness, and the public debt stock, the steady state values for each economy is quite different. Below we highlight a few of these distinct features and relegate the details to the tables.

In the context of openness, although slightly below recent macroeconomic trends, we fix the imports-to-GDP ratio at 30 percent. Using national accounts data on the composition of imports, we split the imports-to-GDP ratio such that 24.8 percent is allocated towards consumption goods and 5.2 percent on investment goods.

The relative size of the Israeli economy has been set at 2.22 percent, implying that the size of the rest of the world is 97.78 percent, therefore supporting the notion that Israel is a small-open economy. The non-traded goods sector is scaled to 67 percent of GDP, and we also realistically posit that this sector is more labor intensive than the tradable-goods sector.

Based on the actual level of 102 percent recorded in 2004, we simply set the debt-to-GDP ratio at 100 percent. The deficit ratio is calibrated to be 5.7 percent, which was the prevailing average during 2003 and 2004.

As is customary in these types of models, we set the households' planning horizon to ten years. In addition, keeping with many studies, the percent of rule-of-thumb consumers is 50 percent. We later discuss the sensitivity of alternative calibrations of the planning horizon and the proportion of rule-of-thumb agents below. Finally, the remaining structural parameters—including those governing preferences—are the same for both regions and based on common values used in the literature.[10]

IV. Fiscal Consolidation: Now Versus Later

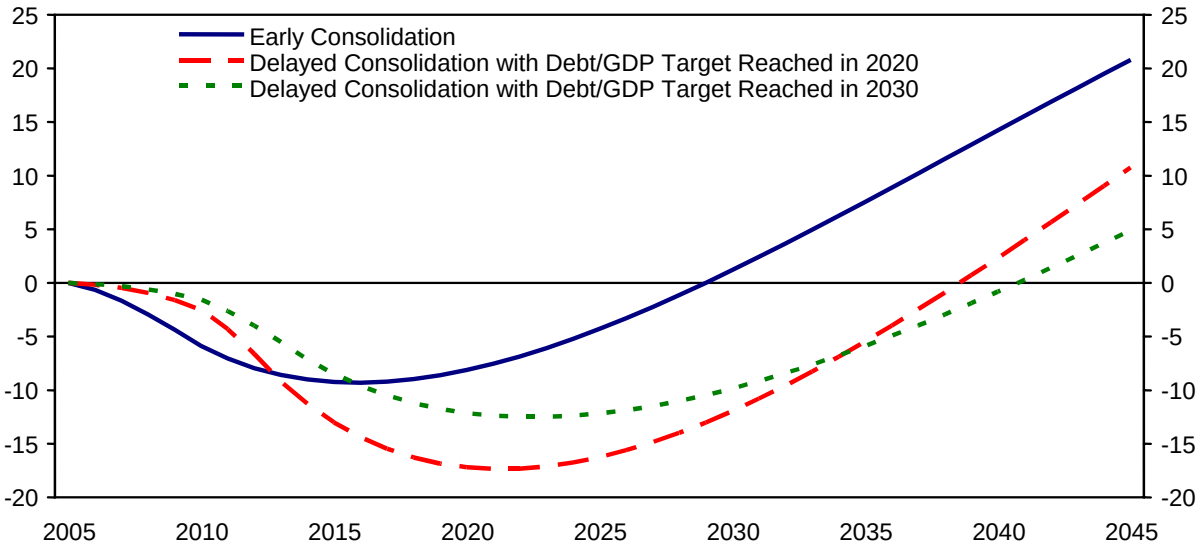
To evaluate the long-term benefits of early fiscal consolidation, we use GFM to compare early and delayed fiscal consolidation achieved through expenditure cuts. Fiscal

[10] See Botman, Laxton, Muir, and Romanov (2006) for further details.

consolidation is defined as reaching a debt-to-GDP ratio of 60 percent by 2020.[11] In July 2005, the Knesset approved a multiyear tax cut, which will be phased out in five years. Therefore, to make our simulations more realistic, we assume that fiscal adjustment occurs through expenditure cuts. In the baseline scenario, early fiscal consolidation implies adjusting the fiscal deficit by 1 percent of GDP every year until 2010 and gradually increasing the deficit thereafter. Delayed consolidation implies starting the fiscal adjustment only in 2015, necessitating a much sharper reduction in subsequent deficits in order to achieve the debt-to-GDP ratio of 60 percent by 2020.

The simulations show that there are significant long-term benefits to early consolidation. We cumulate the deviation of real GDP from steady state to gauge the consequences of various fiscal policies over the medium- and long-term, which is shown in Figure 8. In addition, Table 3 highlights the short-, medium-, and long-run affects of fiscal consolidation on key macroeconomic variables. Early fiscal consolidation results in an initial fall in real GDP as the expenditure cuts dampen demand. This initial loss of output is larger than in the delayed scenario, since in that case, government expenditure does not change for the first five years. However, early consolidation leads to long term increases in output that are twice as large as in the case with delayed adjustment.

Figure 8. Effects of Fiscal Consolidation on Real GDP
(Percent deviation from baseline, cumulative)



There are two fundamental reasons behind this short-run output contraction. First, a decline in government spending decreases the demand for non-traded goods, causing a recession in

[11] According to Hercowitz and Strawczynski (2000) "The Maastricht guidelines of public- debt/output ratio of 60 percent is mentioned in the budget publications for the years 1997-2000 as important to achieve, and policymakers often refer to the Maastricht guideline as a model to imitate." Ultimately, however, a lower debt ratio may be a more prudent objective for an EMC, given vulnerabilities to shocks.

the largest sector of the economy. Furthermore, this contraction depresses the price of non-traded goods, supporting a real exchange rate depreciation, which makes domestic traded goods more competitive internationally.[12] As a result, a trade surplus will emerge, net foreign assets will increase, generating twin fiscal and current account surpluses. However, the traded goods sector will absorb a higher proportion of the labor force to meet higher foreign demand, thus exacerbating the recession in the nontraded goods sector.

Second, the decline in the public debt stock, will be perceived by agents as a reduction in their wealth. This will decrease consumption, which the real exchange rate depreciation will aggravate by suppressing import demand. Furthermore, private savings will fall because agents that can engage in financial transactions will draw down assets to help smooth the consumption decline.

Overtime however, the government will be able to return to a policy of maintaining a balanced budget. The emergence of lower real interest rates as a result of lower government debt will increase fiscal space—owing to lower debt servicing costs—necessary to resume a more neutral policy stance. Another benefit of the lower real interest rates is that it will crowd in investment and will therefore support the growth in output over the longer term.

In contrast, delayed consolidation obstructs the virtuous cycle discussed above. Although the short-term recession is milder, the delayed consolidation effort implies a higher stock of debt and debt servicing costs as well as higher real interest rates over the medium term. Notice from the middle panel of Table 3 that even after ten years investment has not recovered or is anemic at best. Therefore output in the longer run is about half as much as it could have been under the more ambitious policy initiative supporting early fiscal consolidation.

To further assess the benefits of early consolidation, we compare these results with an alternative form of delayed consolidation. The alternative delayed consolidation involves starting the fiscal adjustment in 2015 but not reaching the debt-to-GDP ratio of 60 percent until 2030. These results are shown in the bottom panel of Table 3. The main difference between this delayed scenario and the one considered above is that, although this fiscal adjustment is less pronounced, it has to be maintained for a longer period. As expected, the initial loss of output is much smaller than in the early consolidation case. However, in the long term, early fiscal consolidation generates output increases that are four times higher then this case.

[12] This link between the relative price of nontraded goods and the real exchange rate would be slightly lower if government consumption was not exclusively allocated toward nontraded goods.

Table 3. Israel: Immediate Versus Delayed Consolidation

	First Year	5-Year Average	10-Year Average	Long Run
		Early Consolidation		
		Deviation from control in percent		
Cumulative Real GDP	-0.66	-3.10	-5.73	20.80
Consumption	-1.22	-1.23	-1.19	0.76
Investment	-2.18	2.22	3.21	0.77
Net Investment	-2.18	1.92	2.94	0.80
Real Interest Rate	0.25	-0.01	-0.33	-0.09
Real Exchange Rate	3.88	4.24	3.38	-1.53
Price of Nontraded Goods	-2.27	-2.45	-1.94	0.89
		As a share of nominal GDP		
Government Revenues	-0.01	0.01	0.03	0.03
Government Spending	-1.01	-2.50	-2.41	1.91
Interest Payments	-0.01	-0.47	-1.35	-3.14
Government Deficit	-1.00	-3.00	-3.81	-1.25
Government Debt	-1.06	-5.43	-14.66	-40.00
Net Foreign Assets	1.63	6.13	12.16	36.13
Current Account	1.63	2.41	2.83	1.27
Trade Balance	1.63	2.08	2.03	-1.47
		Delayed Consolidation: Debt/GDP Target Reached in 2020		
		Deviation from control in percent		
Cumulative Real GDP	-0.18	-1.14	-5.01	10.73
Consumption	-1.07	-1.07	-1.10	0.81
Investment	-2.19	-5.70	-0.30	1.40
Net Investment	-2.05	-5.34	-0.45	1.42
Real Interest Rate	-0.11	0.36	0.15	-0.17
Real Exchange Rate	1.43	1.34	2.71	-1.97
Price of Nontraded Goods	-0.84	-0.77	-1.56	1.17
		As a share of nominal GDP		
Government Revenues	-0.01	-0.04	-0.02	0.04
Government Spending	0.07	-0.15	-2.13	2.40
Interest Payments	-0.11	0.08	-0.28	-4.78
Government Deficit	0.00	0.00	-2.40	-2.41
Government Debt	-1.22	-1.17	-5.09	-40.00
Net Foreign Assets	0.82	3.35	9.13	35.68
Current Account	0.82	1.43	2.44	2.32
Trade Balance	0.82	1.25	1.85	-1.75

Source: Authors' estimates.

Table 3. Israel: Immediate Versus Delayed Consolidation (Concluded)

	First Year	5-Year Average	10-Year Average	Long Run
		Delayed Consolidation: Debt/GDP Target Reached in 2030		
		Deviation from control in percent		
Cumulative Real GDP	-0.12	-0.71	-3.13	4.90
Consumption	-0.71	-0.69	-0.74	0.49
Investment	-1.30	-3.39	-0.62	1.19
Net Investment	-1.21	-3.15	-0.66	1.20
Real Interest Rate	-0.07	0.18	0.14	-0.15
Real Exchange Rate	0.91	0.85	1.70	-1.33
Price of Nontraded Goods	-0.53	-0.49	-0.98	0.79
		As a share of nominal GDP		
Government Revenues	-0.01	-0.02	-0.02	0.03
Government Spending	0.05	-0.10	-1.29	1.63
Interest Payments	-0.08	0.05	-0.12	-3.83
Government Deficit	0.00	0.00	-1.40	-2.23
Government Debt	-0.82	-0.81	-2.87	-40.00
Net Foreign Assets	0.52	2.10	5.73	35.79
Current Account	0.52	0.89	1.56	2.11
Trade Balance	0.52	0.78	1.18	-1.16

Source: Authors' estimates.

Sensitivity Analysis

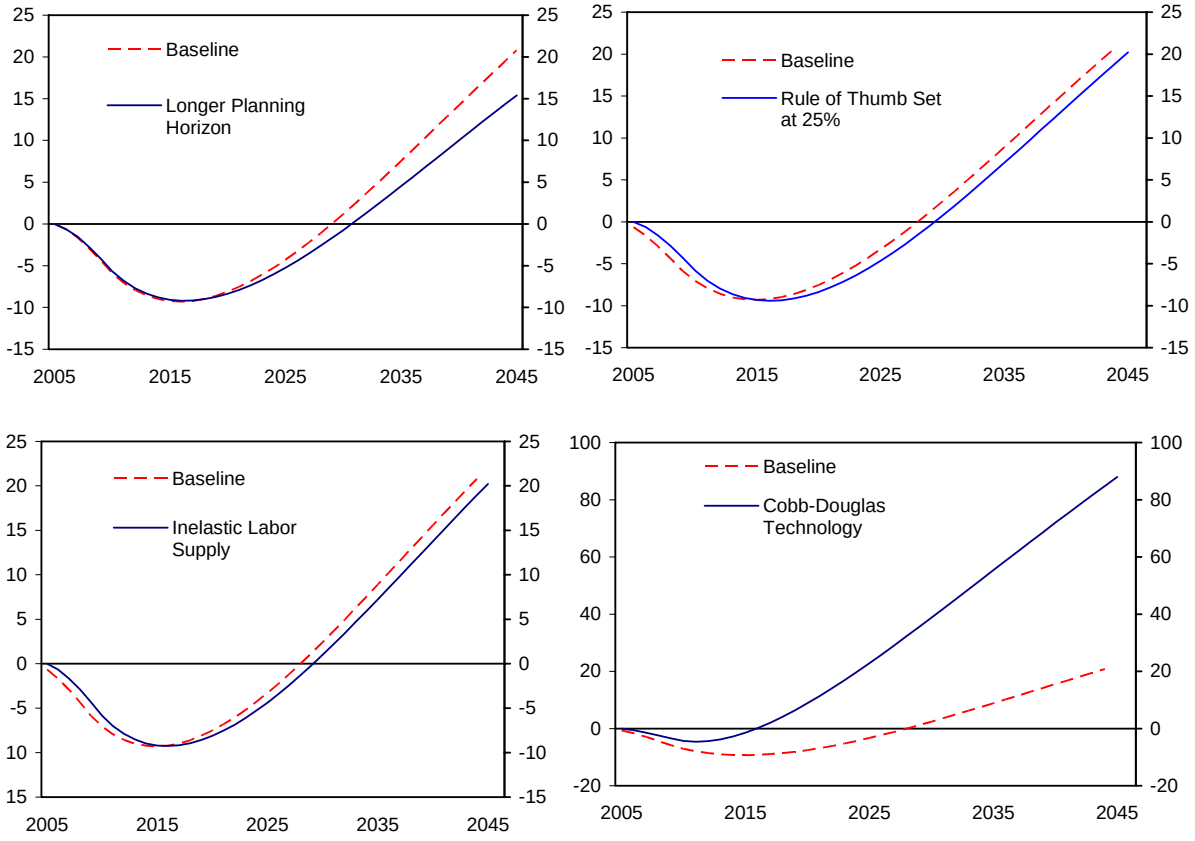
Before proceeding to the next policy experiment, it will be useful to gauge the robustness of the results discussed above. In this section we investigate the sensitivity of the benefits of early consolidation to alternative calibrations.[13] To this end, we change four key structural parameters. First, we lengthen the planning horizon of agents by increasing q from 0.9 to 0.95. This change makes the aggregate savings rate more sensitive to fiscal policy. Second, we decrease the share of rule-of-thumb agents in the economy, Ψ, from 0.5 to 0.25. Therefore, by raising the share of forward-looking agents, this modification also increases the effective planning horizon. Third, we make labor supply more inelastic thereby reducing the supply-side effects of fiscal policy (especially to changes in labor income taxes when relevant). We achieve this by changing the utility share of leisure, η, from 0.04 to 0.01. Fourth, and finally, we increase the substitutability between factor of production by imposing Cobb-Douglas production functions, instead of using the baseline elasticity set at ξ=0.5.

[13] The sensitivity analysis will, however, also affect the alternative policy scenarios analogously.

The sensitivity analysis suggests that our results are broadly robust to these alternative parameter specifications as shown in Figure 9. With a longer planning horizon and fewer rule-of-thumb consumers shown in the top two panels, respectively, agents in the economy behave more Ricardian, making the impact of fiscal consolidation slightly less pronounced. When the utility share of leisure is decreased, agents are willing to increase their labor effort, which softens the decline in output slightly which is depicted in the bottom left panel of the figure.

The most dramatic change in the parameterizations we consider is the doubling of the elasticity of substitution between the labor and capital from 0.5 to unity (implying a Cobb-Douglas production function). As shown in the bottom right panel of Figure 9, when firms are able to more freely substitute factors of production, they can substantially reduce the consequences of the short-term recession, both in terms of severity and length. In addition, the more flexible production structure implies much larger longer-term output gains. This last experiment highlights that the impact of fiscal consolidation may not be as harsh as in the baseline and reinforces our previous finding emphasizing the benefits of early fiscal consolidation.

Figure 9. Sensitivity Analysis



Source: Authors' estimates.

V. TAX CUTS

Recently introduced tax cuts have opened the question of the appropriate pace of debt reduction. On July 25, 2005, the Knesset approved a tax plan that outlines Israel's tax policy for the next five years, including several tax cuts.[14] By cutting taxes, the authorities have slowed the pace of debt reduction. This section evaluates the long-term benefits from reducing government debt by delaying tax cuts using GFM. The simulations examine the consequences of postponing tax cuts in response to reductions in government spending so that the resulting fiscal surpluses can be used to reduce public debt, thereby allowing larger tax cuts in the future owing to lower interest payments.

The impact of tax cuts on real activity depends on the responses of aggregate supply and demand. The supply-side effects of the tax cut come from an increased incentive to work due to higher after-tax wages.[15] The increase in aggregate demand, in turn, depends on the extent to which individuals view a larger fiscal deficit as an increase in their permanent income, which also depends on the degree of agents' impatience and their planning horizons.

This section compares the impact of matching a cut in transfers with an immediate tax cut versus a larger delayed tax cut. The simulations assume that scope for tax cuts is provided by a permanent cut in lump-sum transfer payments of one percentage point of GDP.[16] The results compare the following two policy responses: (i) immediately implementing a permanent cut in tax rates so as to reduce tax revenues by the same amount as the cut in transfer payments (thus not affecting the fiscal balance); and (ii) leaving tax rates unchanged for 10 years, followed by a larger permanent cut in tax rates made possible by the lower level of interest costs due to the intervening fall in the government debt ratio. In other words, delaying the tax cut for 10 years allows the government to run a fiscal surplus, which is then used to reduce public debt. The second scenario emphasizes an important trade-off: the

[14] The plan expands on some of the measures introduced in the 2003 tax reform. The key measures are (1) lowering the top marginal income tax rate from 49 percent to 44 percent by 2010; (2) cutting the corporate tax rate from 34 percent to 25 percent by 2010; (3) reducing the VAT rate from 17 percent to 16 percent; (4) establishing a uniform 20 percent capital gains tax rate; and (5) widening the tax base and strengthening enforcement through a proposal for taxing trusts.

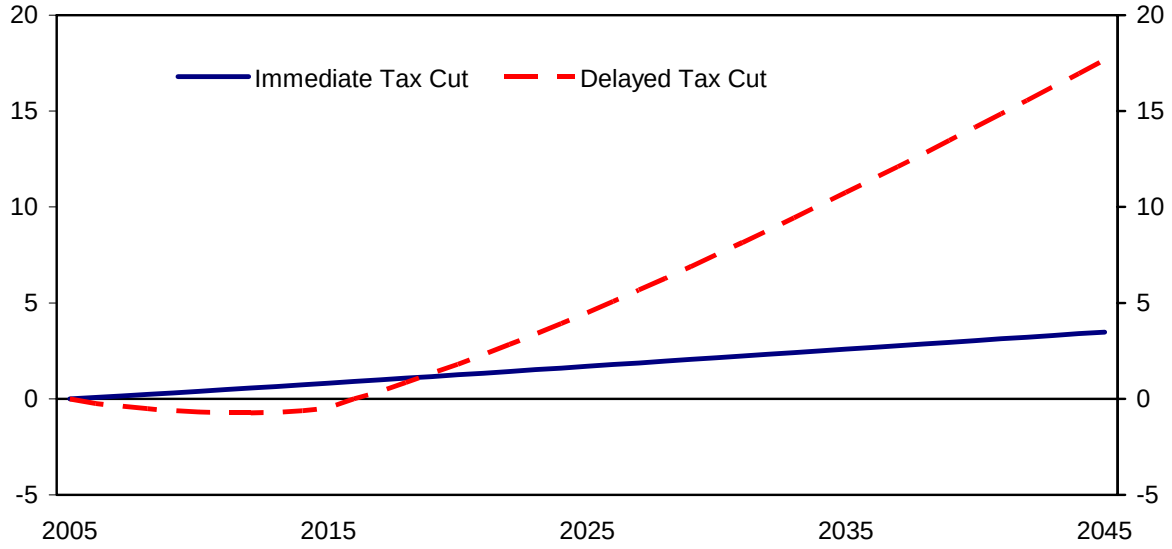
[15] These simulations consider only cuts in labor income taxes since cuts in corporate taxes yield similar results. See Bayoumi and Botman (2005) for a similar analysis of Canada.

[16] Lump-sum transfers have no impact on incentives and allow us to focus on tax rate-related distortions. It is also important to highlight that, since the GFM is a perfect foresight model, the government knows the exact amount it needs to decrease taxes to offset the decline in transfers in order to keep the fiscal balance unchanged—including any endogenous effects whereby a decline in tax rates may actually increase the revenue intake of the government.

government ends up with a permanently lower tax rate and level of government debt, but at the cost of not offsetting the negative short-term impact of the cut in transfers on output.[17]

Simulation results suggest that there are significant long-term benefits to delaying a cut in taxes, but there are also some costs to not offsetting the fall in transfers in the short term. Figure 10 shows that immediately replacing a one percentage point of GDP reduction in lump-sum transfers with a cut in wage taxes leads to a cumulative increase in real GDP of about 3.5 percent over the long run. Conversely, delaying the cut in labor income taxes by 10 years results in a small fall in real GDP over the short term as the impact on aggregate demand of the reduction in transfer payments is not offset. However, the 10-year delay leads to an eventual tax reduction that is twice as large as in the case of immediate tax cuts. As Figure 10 highlights, once implemented, the larger tax cut promotes real GDP gains that are substantially larger. In fact, the cumulative long-run impact on real GDP is five times larger when tax cuts are delayed.

Figure 10. Cumulative Effects on Real GDP of Reducing Transfers and Cutting Taxes
(Percent deviation from baseline)



There are three main reasons behind the beneficial long-run gains associated with the delayed tax cut. First, as mentioned above, since the savings from the cut in transfers is used to reduce government debt, this will suppress the real interest rates throughout the medium term, thereby crowding in investment and promoting growth (Table 4). Second, although the

[17] Although such scenarios are clearly stylized, they help illustrate the effects of choosing to cut taxes or reduce debt in an intuitive manner. One reason to reduce government debt would be to prepare for the future pressures on government spending from an aging population.

Table 4. Israel: Immediate Versus Delayed Tax Cuts

	First Year	5-Year Average	10-Year Average	Long Run
		Immediate Tax Cut		
		Deviation from control in percent		
Cumulative Real GDP	0.08	0.23	0.44	3.49
Consumption	0.07	0.08	0.08	0.10
Investment	0.25	0.18	0.15	0.10
Real Interest Rate	0.00	0.00	0.00	0.00
Real Exchange Rate	0.04	0.04	0.04	0.03
Price of Nontraded Goods	-0.06	-0.07	-0.07	-0.07
		As a share of nominal GDP		
Government Revenues	-0.02	-0.01	-0.01	-0.01
Government Spending	0.00	0.00	0.00	0.00
Interest Payments	-0.01	0.00	0.00	0.00
Government Deficit	0.01	0.00	0.00	0.00
Government Debt	-0.04	-0.04	-0.03	-0.01
Net Foreign Assets	0.00	0.00	0.00	0.01
Current Account	0.00	0.00	0.00	0.00
Trade Balance	0.00	0.00	0.00	0.00
		Delayed Tax Cut		
		Deviation from control in percent		
Cumulative Real GDP	-0.23	-0.49	-0.57	17.67
Consumption	-1.25	-1.06	-0.98	0.86
Investment	2.25	1.95	2.53	2.29
Net Investment	2.06	1.80	2.36	2.28
Real Interest Rate	-0.20	-0.18	-0.27	-0.37
Real Exchange Rate	0.94	0.61	0.44	-0.24
Price of Nontraded Goods	-1.18	-0.83	-0.63	0.47
		As a share of nominal GDP		
Government Revenues	0.99	0.99	0.99	-0.77
Government Spending	-0.08	-0.06	-0.04	0.03
Interest Payments	0.01	-0.44	-0.83	-1.68
Government Deficit	-1.06	-1.49	-1.88	-0.91
Government Debt	-0.98	-3.66	-7.33	-15.72
Net Foreign Assets	0.41	1.30	2.44	7.14
Current Account	0.67	0.73	0.82	0.63
Trade Balance	0.67	0.60	0.56	-0.26

Source: Authors' estimates.

lower stock of debt is perceived by agents as a decline in wealth, this negative income effect will be dominated by the higher stock of net foreign assets accumulated through the current account surpluses and the long-run appreciation of the real exchange rate, thus leading to higher level of consumption. Finally, the larger reduction in labor income taxes, made possible under the delayed tax cut scenario, will imply a much greater reduction in labor market distortions.

To summarize, with immediate tax cuts, the long-run benefits accrue solely because of reduced labor market distortions. In this case there is no fiscal stimulus (since the tax cuts are offset with a decline in lump-sum transfers) and therefore the impact on other variables such as consumption and investment are negligible as shown in Table 4. In contrast, with a delayed tax cut, the government can direct the fiscal savings towards the reduction of the public debt stock. The decline in the stock of government liabilities has two reinforcing effects. First, it reduces real interest rates thereby stimulating capital accumulation. Second, with a lower stock of outstanding debt, the government saves on interest payments, which allows it to decrease labor income taxes by more in the medium run. More importantly, these two effects bring about a higher capital stock and a larger supply of labor, which in turn, bring about much larger output gains in the long run in contrast with the policy that cuts taxes immediately.

VI. CONCLUSION

Despite the benefits of fiscal consolidation for highly indebted emerging market countries, oftentimes fiscal adjustment is postponed because of implementation difficulties. This paper represents one of the first attempts in the literature to quantify the cost of delaying fiscal consolidation in the context of EMCs. In particular, we focus on Israel, which has one of the highest public debt ratios among EMCs and has yet to realize long-lasting fiscal consolidation.

Simulations using the IMF's Global Fiscal Model (GFM) show that there are significant long-term benefits to early consolidation in Israel. In particular, although early fiscal consolidation could imply near-term output costs, it would also double output growth in the long term. Consolidation would lower real interest rates, boosting investment, and also reduce interest payments and public debt, thereby freeing up government resources for other, more productive economic uses. In a related policy scenario investigating an alternative policy instrument, we find that the cumulative long-run impact on real GDP is five times larger when tax cuts are delayed rather than immediately implemented. In this context, although Israel's current fiscal framework is consistent with fiscal retrenchment, it may not portend a significant improvement in the public debt profile over the medium term, and thus will likely delay the benefits from a faster debt-reduction path.

The use of a model such as the GFM offers a structural approach to investigating fiscal issues, with the advantage of being able to disentangle the sources and channels through

which various policies affect the economy. Even though GFM is a large-scale model, it is nonetheless stylized and could be further developed. One such extension could be the incorporation of richer nominal and real rigidities allowing the joint investigation of fiscal and monetary policies. This is particularly important in the context of assessing how fiscal dominance constrains monetary policy. Such work is currently under development—see, for example, Kumhof, Laxton, and Muir (2006). Another possible extension could be to differentiate the nature of government debt. As it stands, in the current version of the GFM, the government can borrow only from domestic households in local currency. Allowing the government to access international capital markets would better highlight the linkages between fiscal policy and external vulnerabilities, which are particularly relevant for many EMCs. One key challenge regarding these extensions is that they would introduce portfolio choice into the model, which is not easily incorporated in a modeling framework suitable for policy analysis.

APPENDIX. CALIBRATION OF GFM

Table A.1. Parameterization of GFM

	Israel	Rest of the World
Subjective discount factor, β	0.99	0.99
Elasticity of substitution		
inverse intertemporal, ρ	2.5	2.5
between consumption and leisure, η	0.96	0.96
for the production of the final good		
between tradables and nontradables, ε	0.5	0.5
between domestic tradables and imports, ω	2.5	2.5
between imports from differing countries, ς	1.5	1.5
Bias		
in utiltiy towards real money balances, χ	0.02	0.02
in the production of		
tradables over nontradables, γ	0.42	0.42
domestically produced tradables over imports, α	0.2	0.2
Production functions		
Tradables		
Elasticity of substitution, ξ_T	0.50	0.50
Bias towards capital over labor, μ_T	0.73	0.60
Nontradables		
Elasticity of substitution, ξ_N	0.50	0.50
Bias towards capital over labor, μ_N	0.70	0.55
Real rigidities		
investment, ψ	2.0	2.0
Capital depreciaton, δ	0.1	0.1
Probability of survival, q	0.9	0.9
Share of Rule-of-Thumb consumers, Ψ	0.25	0.50
Markups over marginal cost (in percent), $\theta/(\theta-1)$		
for tradables	26.0	18.0
for nontradables	29.1	23.0

Source: Authors' estimates.

Table A.2. Steady-State Parameterization

	Israel	Rest of the World
Country size	2.22	97.78
Share of real world income	5.03	94.97
National expenditure accounts at market prices		
Consumption	69.83	72.78
rule-of-thumb	19.35	12.06
forward-looking	50.48	60.72
domestic	45.01	71.39
imported	24.82	1.39
Investment	14.59	10.68
for tradables	5.52	4.03
for nontradables	9.07	6.65
domestic	9.40	10.48
imported	5.18	0.20
Government expenditures	15.58	16.54
Exports	30.00	1.59
of consumption goods	26.16	1.32
of investment goods	3.84	0.27
Imports	30.00	1.59
of consumption goods	24.82	1.39
of investment goods	5.18	0.20
Sectoral decomposition		
Tradables	35.43	33.47
domestic	5.86	31.90
consumption	4.40	27.54
investment	1.46	4.36
imported	29.57	1.58
consumption	24.46	1.37
investment	5.11	0.20
net exports	0.00	0.00
Nontradables	64.57	66.53
consumption	39.97	43.25
investment	9.24	6.87
government expenditures	15.36	16.40
Factor incomes		
Capital	32.18	25.20
Labor	67.82	75.80
Tradables	35.43	33.47
Capital	12.03	8.98
Labor	23.40	24.49
Nontradables	64.57	66.53
Capital	20.15	15.22
Labor	44.42	51.31

Source: Authors' estimates.

Table A.2. Steady-State Parameterization (concluded)

	Israel	Rest of the World
Assets		
Consumers		
Labor income	53.76	62.99
Human wealth	153.32	286.64
Firms		
Dividends	31.65	26.33
Equity	219.11	182.26
Government		
Deficit	5.66	1.34
Debt	100.00	55.00
Net Foreign Assets		
Current account balance	0.00	0.00
interest payments	0.00	0.00
trade balance	0.00	0.00
Real Exchange Rates (Levels, positive is a depreciation)		
Bilateral	0.90	1.11
Relative Prices		
nontradables	1.13	1.07
tradables	0.84	0.91
domestic	1.01	0.90
imports	0.81	1.12
CPI inflation	6.00	2.50
Tax rates (Levels in percent)		
On total income (effective)	16.38	17.02
gross rate	20.14	23.32
transfer rate	3.76	6.30
On labor income (effective)	28.01	23.43
as a percent of income	15.06	14.76
gross rate	35.01	33.43
transfer rate	7.00	10.00
On capital income (corporate)	10.00	20.00
as a percent of income	1.31	2.26

Source: Authors' estimates.

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