The Government Budget Constraint: What It Is; Why It Matters

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New Zealand Treasury Guest Lecture, 21 August 2007
FISCAL SCHIZOPHRENIA

- Two camps
  - Gloom & doom: impending fiscal disaster
    - take current policies as holding forever
    - extrapolate and find debt explodes
    - begs the question: why are people willing to lend to the government?
  - Don’t worry, be happy: it just doesn’t matter
    - past fiscal crises have been averted without disaster
    - this one will be also
    - begs the questions: how were they averted? why no disaster?
  - Two sad facts:
    - fiscal policy is poorly understood
    - research-wise it plays second fiddle to monetary policy
Simple Accounting

- Nothing mysterious about the government’s budget constraint
- Things have to add up: uses = sources
  \[ \text{Expenditures} + \text{Debt Service} = \text{Receipts} + \text{Change in Debt} \]

- Net-of-interest surplus an important concept
  \[ \text{Net Surplus} = \text{Spending} + \text{Transfers} - \text{Receipts} \]

- Debt service rises with level of debt
  \[ \text{Change in Debt} = \text{Debt Service} - \text{Net Surplus} \]
Rational investors impose limits on policy
  - do not want to over-accumulate assets
  - Implies that government debt cannot grow “too fast”
  - Produces the intertemporal condition

  Market Value of Debt =
  Expected Present Value of Future Net Surpluses

The essence of “sustainability”
  - A policy is sustainable if and only if it satisfies this intertemporal condition
  - Longer postpone adjustment, larger adjustment must be (due to discounting of future)
Market Value of Debt = 
Expected Present Value of Future Net Surpluses

- Always holds in equilibrium
- Equilibrium condition $\neq$ constraint
- Tells us nothing *causal*
- Captures bidirectional nature of the condition
  - high current debt $\implies$ high debt service $\implies$ requires high future surpluses
  - high expected surpluses $\implies$ can support high debt service $\implies$ allows high current debt
What Is Fiscal Policy?

- Policy choices that determine the timing and the composition of net surpluses
- Determine the level and maturity structure of debt
- A complete specification of fiscal policy:
  1. Current values of all the objects in the constraint
  2. A clear picture of expected values of net surpluses
- Could come from announcements of policy paths or policy objectives
  - no government does this
- Why is a complete specification of policy important?
Dynamic Decision Making

- Economic agents live in dynamic, uncertain environments
- The holy grail for consumers and firms:
  - smooth consumption paths
  - smooth production plans
- Achieved through intertemporal substitution
  - work hard & save in good times
  - maintain consumption in lean times
- Decision are made by reacting to prices
  - interest rates & asset prices
  - price level & relative prices
- These *intertemporal* prices depend on expectations
Among other things, agents need to form views about future fiscal policy:
- paths of tax rates directly affect returns on savings & work
- paths of expenditures affect demand for goods; indirectly affect returns
- expected rates of return affect incentives & behavior

Gyrating fiscal policies:
- jerk around incentives
- create additional uncertainty
- produce sub-optimal private decisions
Forecast Impacts of Tax Change

- Consider permanent cut in tax rate on labor or capital
- Predict effect on path of GDP (multipliers)
- Predict effect on total tax receipts
  - what are the revenue consequences of tax changes?
  - will tax cuts pay for themselves?
  - dynamic scoring under alternative financing schemes
- Predictions hinge on how people expect future policies will adjust
- Use standard neo-classical growth model to forecast
  - following 1% permanent cuts in rates
  - under alternative financing schemes
- This assumes people know how the budget will clear
  - reality is fuzzier
Economic Mechanisms

- Consider variety of ways budget can clear
  - lump-sum taxes/transfers ("usual" assumption)
  - government spending (e.g., consumption)
  - other taxes
- Each financing scheme affects incentives differently
- Transfers: pure wealth effect
- Spending: changes resources available
- Taxes: affect wealth, incentives to work & save
- Impacts of tax change depend on financing scheme
Transfers clear the budget
Introduction

Budget Constraints

It Matters How the Budget Clears
Monetary vs. Fiscal Policy
Wrap Up

Theoretical Background

Growth Model Example

How the U.S. Budget Has Cleared
Present-Value Funding
Countercyclical vs. Sustainable Policies

Permanent 1% Labor Tax Rate Cut

Transfers or spending clear the budget

The Government Budget Constraint: What It Is; Why It Matters

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Permanent 1% Labor Tax Rate Cut

Transfers, spending, or capital taxes clear the budget

Output (Tax Base)

Transfers
Spending
Capital Taxes

0 10 20 30 40 50 60 70 80 90 100
−1.2 −1 −0.8 −0.6 −0.4 −0.2 0 0.2 0.4

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The Government Budget Constraint: What It Is; Why It Matters How the Budget Clears Monetary vs. Fiscal Policy Budget Constraints Introduction
Transfers clear the budget

![Graph showing the effect of transfers on tax revenues. The graph indicates that as transfers increase, tax revenues decrease, clearing the budget.]

**Permanent 1% Labor Tax Rate Cut**

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**The Government Budget Constraint: What It Is; Why It Matters How the Budget Clears**

**Budget Constraints**

**Growth Model Example**

**How the U.S. Budget Has Cleared**

**Present-Value Funding**

**Countercyclical vs. Sustainable Policies**
Permanent 1% Labor Tax Rate Cut

Transfers or spending clear the budget

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Transfers, spending, or capital taxes clear the budget

Tax Revenues

-0.2
-0.3
-0.4
-0.5
-0.6
-0.7
-0.8
-0.9
0 10 20 30 40 50 60 70 80 90 100

Transfers
Capital Taxes
Spending

Permanent 1% Labor Tax Rate Cut
Transfers clear the budget
Transfers or spending clear the budget
Permanent 1% Capital Tax Rate Cut

Transfers, spending, or labor taxes clear the budget

Output (Tax Base)

0 10 20 30 40 50 60 70 80 90 100
−0.5 −0.4 −0.3 −0.2 −0.1 0 0.1 0.2 0.3

Labor Taxes
Transfers
Spending
Transfers clear the budget

Tax Revenues

Transfers clear the budget.
Transfers or spending clear the budget

Tax Revenues

Transfers

Spending

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Monetary vs. Fiscal Policy
How the U.S. Budget Has Cleared Present-Value Funding Countercyclical vs. Sustainable Policies
Permanent 1% Capital Tax Rate Cut
Transfers, spending, or labor taxes clear the budget

![Graph showing how different factors clear the budget](image)

**Permanent 1% Capital Tax Rate Cut**

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Predictions vary wildly with how budget clears

Should be taken as an example

General points are robust to model specification

Messages:

- forecasts of tax effects sensitive to precise nature of fiscal experiment
- tax cuts may raise or lower output and revenues
- economic agents’ beliefs about future policy adjustments critical

Fiscal experiments must be fully specified

How the budget clears matters
Some U.S. Empirical Evidence

- Three kinds of fiscal “shocks”
  - spending (consumption & investment)
  - transfers
  - taxes

- Shocks identified by setting elasticities wrt/ output, inflation

- Ask the questions
  - how do fiscal variables interact dynamically?
  - how is the intertemporal condition satisfied?
  - over what time horizon does financing occur?
Some U.S. Empirical Evidence

- Need a further decomposition of intertemporal condition (after linearizing)
  
  Market Value of Debt =
  
  Expected PV(Discount Rates) + PV(Net Surpluses)

- Higher discount rates $\iff$ lower debt
- In U.S. data, movements in discount rates important
- Surpluses may move with or against debt
- Present value financing depends on fiscal shock
- Each of these runs counter to conventional wisdom & to usual modeling practices
**What Finances Fiscal Policy Shocks: Surplus v. Discount Rate?**

<table>
<thead>
<tr>
<th>Shock to</th>
<th>Std Dev</th>
<th>$\Delta B$</th>
<th>$S$</th>
<th>$R$</th>
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<td>Transfers</td>
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<td>.0035</td>
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</table>

**Table:** Present-Value Funding Decomposition.
## Decomposing the Present-Value of Surpluses

<table>
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<th>Shock to</th>
<th>$\Delta B$</th>
<th>$T$</th>
<th>$G$</th>
<th>$Z$</th>
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<tbody>
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<tr>
<td>Transfers</td>
<td>.0035</td>
<td>-.1976</td>
<td>.1891</td>
<td>.1114</td>
</tr>
</tbody>
</table>

**Table: Present-Value Funding Decomposition.**
Present-Value Funding Horizons

- We are studying long-run phenomena
- Theoretically, intertemporal condition is an *infinite*-horizon condition
- Hard to get data on infinite horizons
- Here we are saying: if U.S. fiscal policies over the past 60 years were to continue indefinitely...
- Then ask
  - How long will it take to see the intertemporal condition satisfied?
- In graphs that follow, condition satisfied when lines converge to $\pm 1$
PRESENT-VALUE FUNDING HORIZONS

Changes in debt due to taxes

![Graph showing changes in debt due to taxes over quarters.](image-url)
PRESENT-VALUE FUNDING HORIZONS

Changes in debt due to taxes or spending

![Chart showing changes in debt due to taxes or spending over time. The chart includes two graphs: one for spending and one for taxes. The x-axis represents quarters, and the y-axis represents the change in debt.]
Changes in debt due to taxes, spending, or transfers

- **Taxes**
- **Transfers**
- **Spending**

**Present-Value Funding Horizons**

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*The Government Budget Constraint: What It Is; Why It Matters How the Budget Clears*  
*Monetary vs. Fiscal Policy*  
*Present-Value Funding*  
*Countercyclical vs. Sustainable Policies*
Implications of Long Horizons

- Fiscal policies operate over extended time periods
- It can take 50 years or more to see evidence that the intertemporal condition is satisfied
- Presents challenges to all of us
  - To economists: how to estimate & understand long-run phenomena
  - To economic agents: how to form beliefs about future policies
  - To policy makers: how to reduce uncertainty about future policies
- Very little discussion of these issues
Is Countercyclical Fiscal Policy Counterproductive?

- Inflation-targeting & monetary union countries assign to FP
  - countercyclical role (short run)
  - sustainability role (long run)
- Do these conflict?
- Reasoning from the intertemporal condition suggests they can
Is Countercyclical Fiscal Policy Counterproductive?

- Consider an economic downturn
  - tax rates fall
  - government spending share of GDP rises
  - increases fiscal deficit
  - raises debt carried into the future
  - some future policies must adjust
  - suppose people expect higher future taxes
  - lowers return to savings
  - investment falls so future output lower
  - prolongs & exacerbates downturn

- This mechanism appears to be present in U.S. data
- But there is little evidence one way or the other
Central bank mantra

Monetary policy is about managing expectations

Mystical because no direct evidence is offered

A sea change in central bank thinking

from “monetary mystique” to “culture of clarity”

RBNZ a leader in this

3 progressive central banks now announce paths or predictive densities for the policy interest rate

Why? To manage expectations
Why Isn’t This Done in Fiscal Policy?

- There is actual evidence that expected FP matters
- There is compelling economic theory that the intertemporal condition *must* be satisfied
- A possible reason: The policy makers are different
  - MP appointed: to be accountable need to be transparent
  - FP elected: already a mechanism for accountability
- Unpersuasive
  - FP faces time consistency problems in spades
  - Intertemporal condition is weak
    - can always postpone
    - force *future* elected officials to deal with it
Fiscal Policy and Expectations

- Expectations of first-order importance for FP
- Even for those who believe taxes are neutral
  - a “Ricardian” fiscal experiment
  - cut in lump-sum taxes today
  - higher future lump-sum taxes equal in PV to initial cut
  - higher expected taxes eliminate wealth effect of initial cut
  - expectations are the whole story
- Same logic carries over to all fiscal exercises
- A new mantra:
  
  Macro policy is about managing expectations
SUMMARY

- Fiscal policy analysis is hard
  - many different instruments
  - institutional detail important
  - intertemporal dimension critical
  - expectations formation central

- Government budget constraint, through debt, links current & future policies

- How people expect constraint will be satisfied determines impacts of changes in fiscal policy
SUMMARY

- Many institutions developing empirical models of MP
  - some—BoE, EC, ECB, FRB—include fiscal details
  - all trivialize fiscal policy
  - typically no debt in models
  - fictitious lump-sum taxes/transfers clear budget

- First step: align models of FP more closely with reality

- Next big push: serious integration of monetary & fiscal policy

- We cannot start too soon: major fiscal issues loom on the horizon