

Economics 302
Intermediate Macroeconomic
Theory and Policy
(Spring 2010)

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Lecture 5

Wednesday, February 3, 2010

Outline

- Sources of analysis
- Current events: Stimulus package (ARRA)
- Budget implications of fiscal policy
- Full employment budget balance

Non-partisan and Partisan Analyses

- The CBO is the Congress's nonpartisan economic/budget analytical arm
- Other agencies include General Accountability Office (GAO) and Congressional Research Service (CRS)
- Mirrors the Executive Branch's Office of Management and Budget (OMB) and Council of Economic Advisers (CEA) in White House
- Always think about who's writing what you read

Did the Stimulus “Work”

- What does “work” mean?
- We’ll interpret “work” to mean increase aggregate demand, output, employment
- One has to be careful about over what period one talks about “working”
- Uncertainty pervades all these analyses (real world vs. textbook)

Estimates of the Impact of ARRA

Table 7. Estimates of the Effects of the ARRA on GDP Growth

	2009:Q2	2009:Q3	2009:Q4
	Percentage Points, Annual Rate		
CEA: Projection Approach	+2.6	+2.8	+2.7
CEA: Model Approach	+2.8	+3.9	+1.8
CBO: Low	+2.4 ^a	+2.4 ^a	+1.2
CBO: High	+6.5 ^a	+6.5 ^a	+3.1
Goldman Sachs	+2.2	+3.3	+2.0
IHS/Global Insight	+2.1	+2.5	+2.2
James Glassman, J.P.Morgan Chase	+4.5	+2.2	+3.1
Macroeconomic Advisers	+2.1	+2.0	+1.5
Mark Zandi, Moody's Economy.com	+2.8	+3.2	+2.0

Sources: See text for details.

Note: a. Second- and third-quarter effects show the average for these quarters.

How Did They Estimate This Effect?

- Use the multiplier model we have learned
- Figure out how much tax payments have been reduced, how much transfers have increased
- Figure out how much government spending on goods and services
- Apply multipliers, then add up effects, compare to GDP
- Annualize to get growth rates
- Caveat: Have to account for time dimension (impact takes time)

Quantities (Cumulative)

Table 2. Fiscal Stimulus by Functional Category

	Through the end of			
	Q1 (March ^a)	Q2 (June ^b)	Q3 (September ^c)	Q4 (December ^d)
	Billions of Dollars			
Individual Tax Cuts	2.3	28.7	42.8	56.3
AMT Relief	0.0	7.2	12.7	15.9
Business Tax Incentives	0.1	13.1	24.0	33.3
State Fiscal Relief	8.5	28.2	43.8	59.3
Aid to Directly Impacted Individuals	0.0	9.8	32.1	57.5
Government Investment Outlays	0.0	6.1	23.6	41.1
Total^e	11.0	93.1	178.9	263.3
Change in Total (from the End of the Previous Quarter)	11.0	82.1	85.8	84.4

Sources: Agency Financial and Activity Reports to the Office of Management and Budget; simulations from the Department of the Treasury (Office of Tax Analysis) based on the FY2011 budget.

Apply Multipliers

IMPACT MULTIPLIERS (within the quarter)

- Tax cuts: \$28.7 bn × 0
 - AMT relief: \$7.2 bn × 0
 - Bus. Tax incentives: \$13.1 bn × 0
 - State fiscal relief: \$28.2 bn × 0.5
 - Aid to directly impacted: \$9.8 bn × 1
 - Govt. investment outlays: \$6.1 bn × 1
- = (28.7 × 0) + (7.2 × 0) + (13.1 × 0) + (28.2 × 0.5) + (9.8 × 1) + (6.1 × 1)
- = \$30.0 bn**

Deflate, calculate q/q impact

- GDP deflator in 2009Q2: $109.671 \approx \underline{110}$
- $\$30.0 \text{ bn}/1.10 = \underline{27.35} \text{ Ch.2005\$}$
- 2009Q2 real GDP SAAR: 12905.08 Ch.2005\$
- 2009Q2 real GDP: $12905.08/4 = \underline{3226.3}$
- Impact 2009Q2: $27.35/3226.3 = \underline{0.00848}$
- Annualize impact: $(1.00848)^4 = \underline{1.034}$
- Impact on growth: $(1.034-1) \times 100\% = \underline{3.4 \text{ ppts}}$

Comparisons, Complications

- Impact of 3.4 ppts vs. CEA 2.8 ppts.
- Impact vs. dynamic multipliers
- In our math, we assume everything happens with “a period”
- In reality, impact is different from cumulative long run
- In 2009Q3, some of the tax cuts in 2009Q2 will have an impact: how much?

Budget Implications of Fiscal Policy

- What happens if (lump sum) taxes are increased?
- Does the budget surplus increase dollar-for-dollar with tax increases?
- Can the budget balance improve with tax cuts?

A (Lump Sum) Tax Increase

$$BuS \equiv T - G$$

$$T = TA_0 + tY$$

$$BuS = (TA_0 + tY) - GO_0$$

$$\Delta BuS = \Delta TA + t\Delta Y - \Delta GO$$

$$Y_0 = \bar{\alpha}A_0$$

$$\Delta Y = \bar{\alpha}\Delta A$$

Tax Increase (cont'd)

$$A_0 \equiv (a_0 - bTA_0 + IN_0 + GO_0 + g_0)$$

$$\Delta A = (\Delta a - b\Delta TA + \Delta IN + \Delta GO + \Delta g)$$

here

$$\Delta A = -b\Delta TA \Rightarrow \Delta Y = \bar{\alpha}(-b\Delta TA)$$

$$\Delta BuS = \Delta TA + t\Delta Y - \Delta GO$$

$$\Delta BuS = \Delta TA + t(-\bar{\alpha}b\Delta TA)$$

$$\Delta BuS = \Delta TA(1 - \bar{\alpha}bt) \Rightarrow \frac{\Delta BuS}{\Delta TA} = (1 - \bar{\alpha}bt) < 1$$

Balanced Budget Multiplier

- Suppose one needs to keep budget balanced.
- Assume $t=0$

$$Y_0 = \alpha[a_0 - b(TA_0) + IN_0 + GO_0 + g_0]$$

$$\Delta Y = \alpha[\Delta a_0 - b\Delta TA + \Delta IN + \Delta GO + \Delta g]$$

$$\Delta Y = \alpha[-b\Delta TA + \Delta GO] \quad \Delta TA = \Delta GO$$

$$\implies \Delta Y = \alpha[-b\Delta GO + \Delta GO]$$

$$\Delta Y = \alpha[1 - b]\Delta GO$$

$$\Delta Y / \Delta GO = \alpha[1 - b] = 1 \quad \text{for balanced budget multiplier}$$

Full Employment Budget Balance

Budget Balance

$$BuS \equiv T - G$$

$$T = TA_0 + tY$$

$$BuS = (TA_0 + tY) - GO_0$$

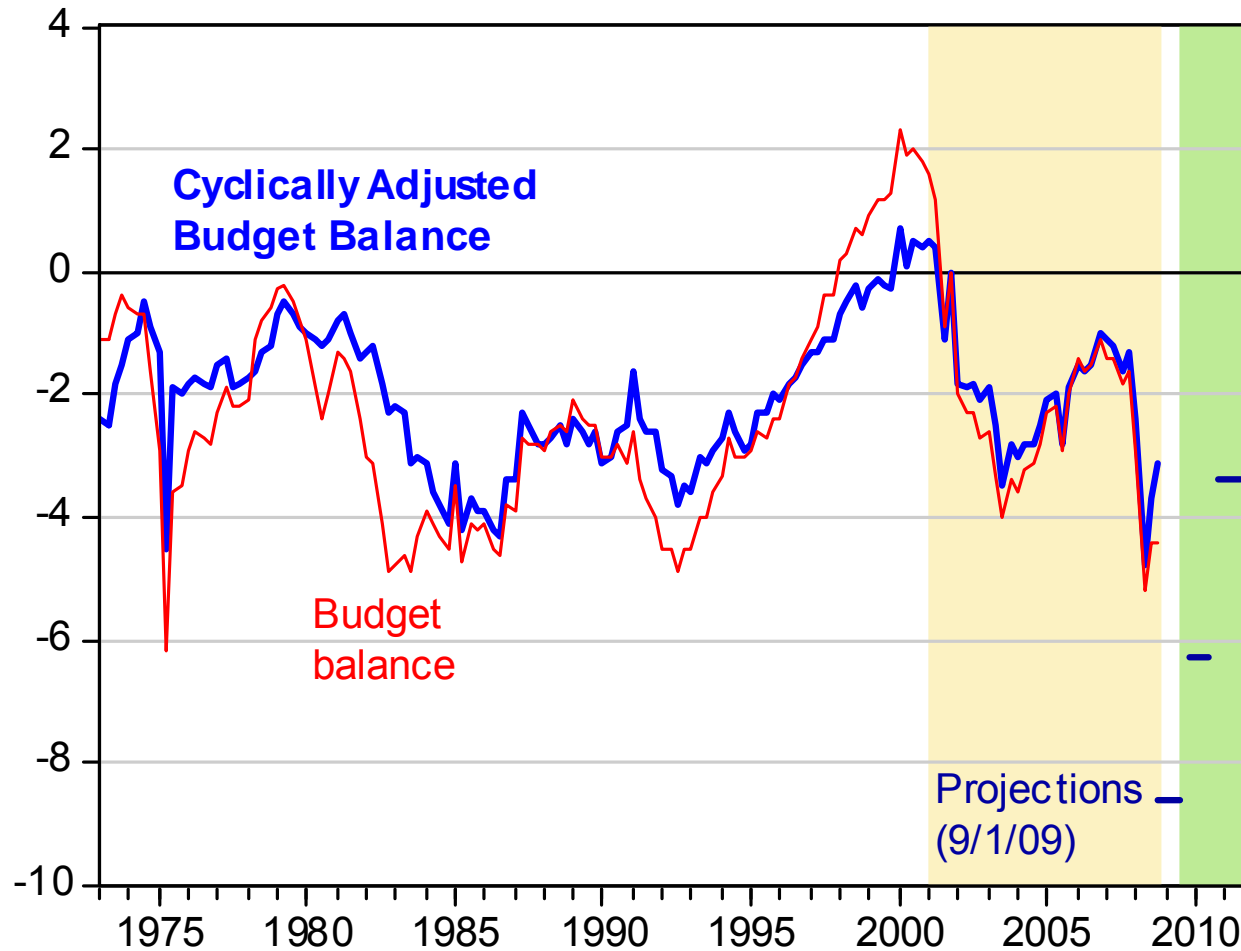
Full-Employment Budget Balance

$$BuS^* \equiv T^* - G$$

$$T^* = TA_0 + tY^*$$

$$BuS = (TA_0 + tY^*) - GO_0$$

Full Employment and Actual BuS



Source: CBO, *Measuring the Effects of the Business Cycle on the Federal Budget: An Update*, September 1, 2009.