
Government and Fiscal Policy

Outline

- Government and Fiscal Policy
- Government deficit and debt
- Should we worry about deficit?
- Ricardian Equivalence
- Social Security
- Taxes and Incentives

Government Outlays

- Major Government outlays:
 1. **Government Purchases (G)** = government expenditures on currently produced goods and services and capital goods. (Government Investment are around 1/6 of G in the US)
 2. **Transfer Payments (TR)** = Payments made to individuals for which the government does not receive current goods or services in exchange (Social Security, military and civil service pensions, unemployment insurance, Medicare,...)
- Minor Government outlay:
 3. **Net Interest Payment** = Interest Paid to the holders of government bonds less the interest received by the government

Government Outlays

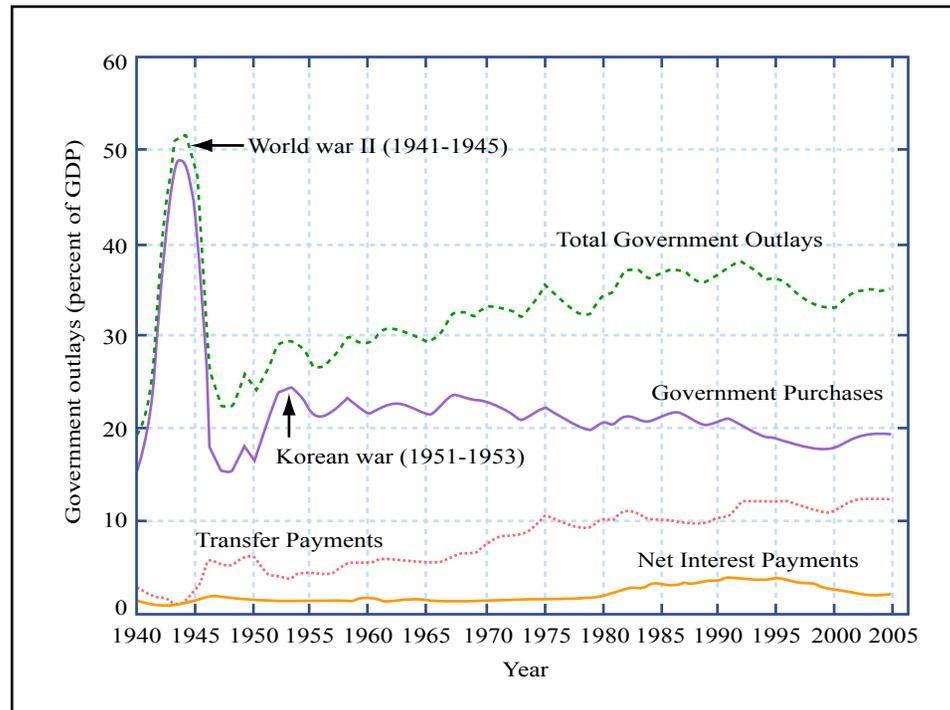


Figure by MIT OpenCourseWare.

Government Revenues

The Government revenues come from **TAXES**:

1. Personal taxes on personal income and property taxes

Tax increases: Biggest jump during World War II, Clinton in deficit-reconstruction effort

Tax cuts: Kennedy Johnson 1964, Reagan 1981, Bush early 2000s

2. Contributions for Social Insurance

Social insurance contributions usually are levied as fixed percentage of a worker's salary up to a ceiling (increases both in the contribution rate and in the ceiling)

3. Taxes on production and imports

Sales taxes declined in WWII and then stable

4. Corporate taxes (on profits)

High during WWII and Korean war

Government Revenues

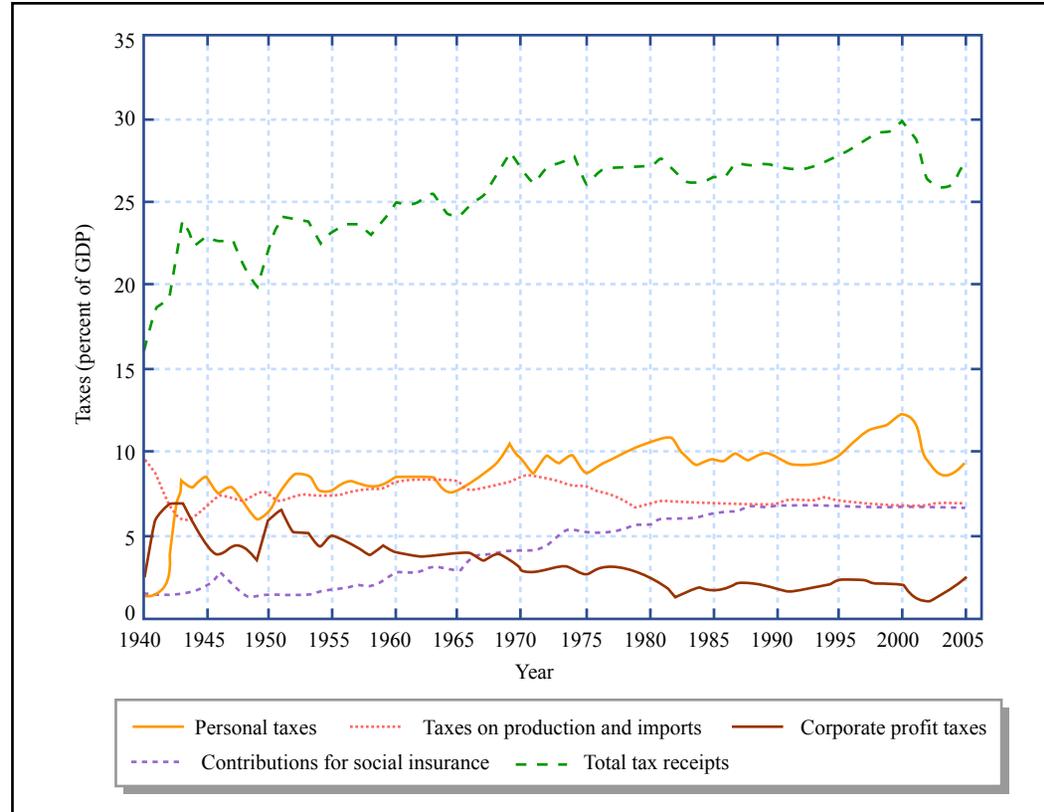


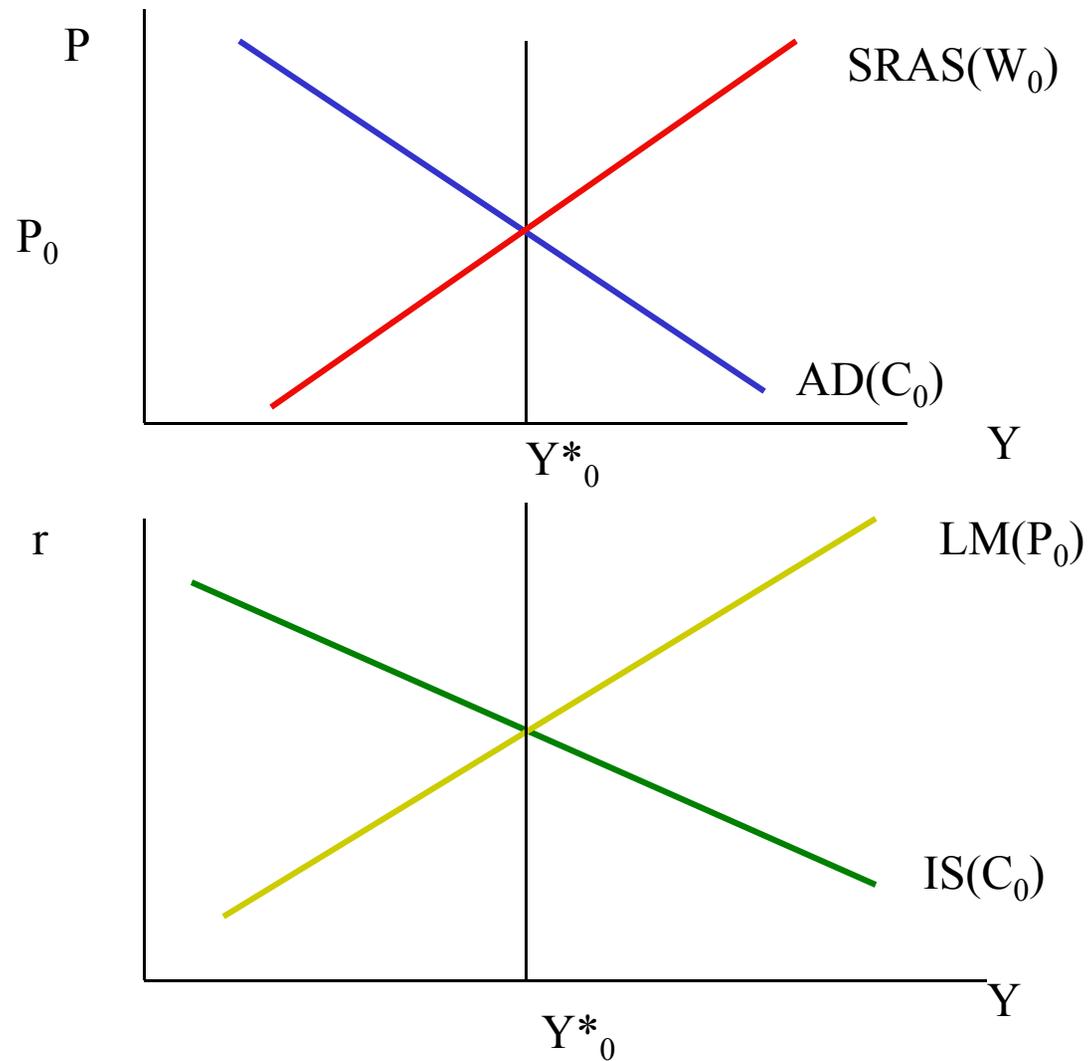
Figure by MIT OpenCourseWare.

Fiscal Policy

- **Fiscal policy is the use of government spending G and taxes T**
- **Objective: stabilize the economy**
- Governments can have:
 - **Output targets**
 - **Price targets**
 - **Unemployment targets**
- Stabilizing the economy means moving the economy towards its targets. We will ignore price targets for now (we have no prices in our model yet).
- Suppose the government has an output target and **suppose that target is Y^*** (we will also explain why Y^* is a good target later in the course).
- Fiscal policy then would be the manipulation of G and T to move the economy towards Y^* . (**Assumes government knows where Y^* is** - we will discuss other drawbacks to fiscal policy later in the course).

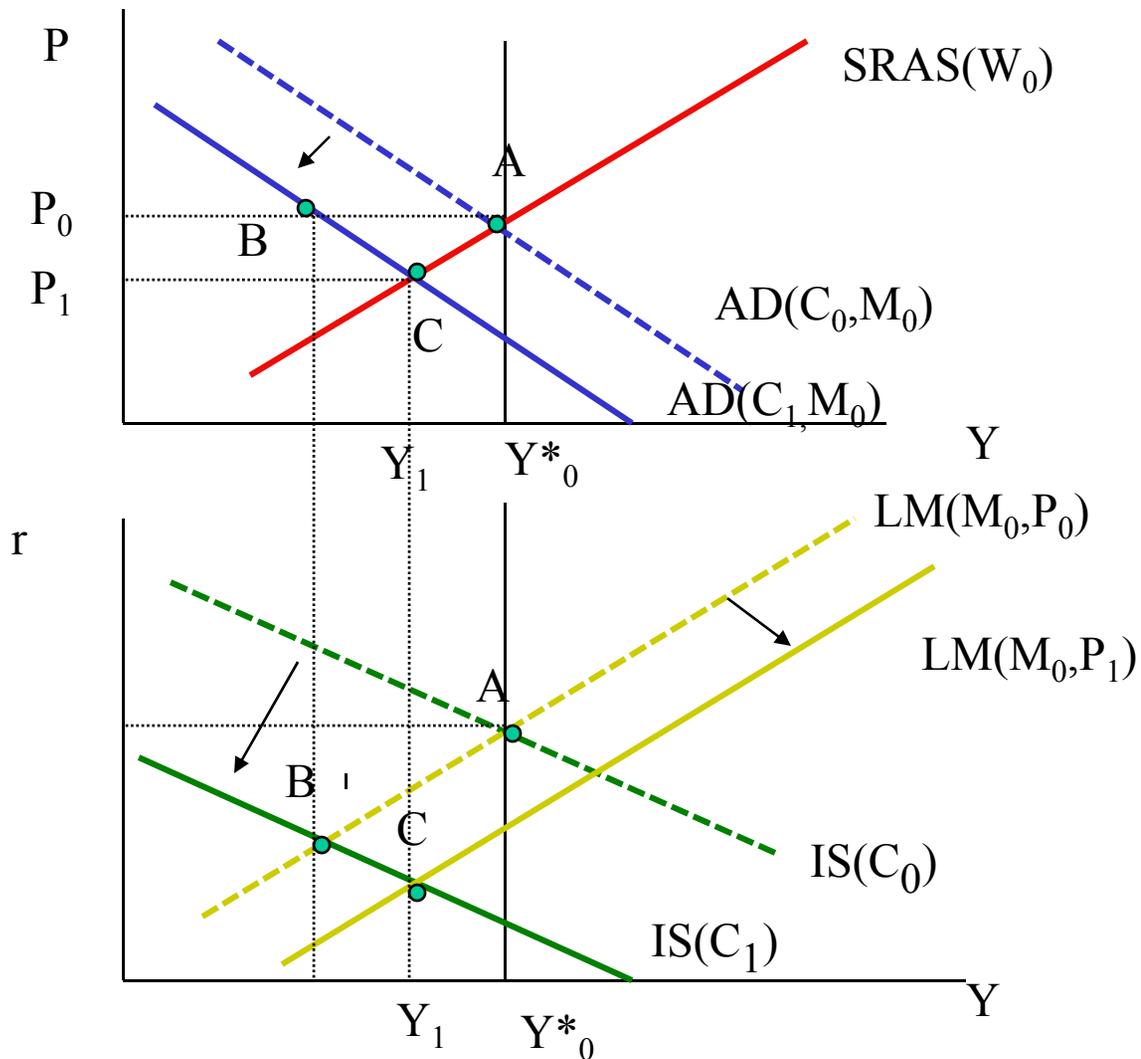
Example: Loss in Consumer Confidence

- Assume we start at Y^*



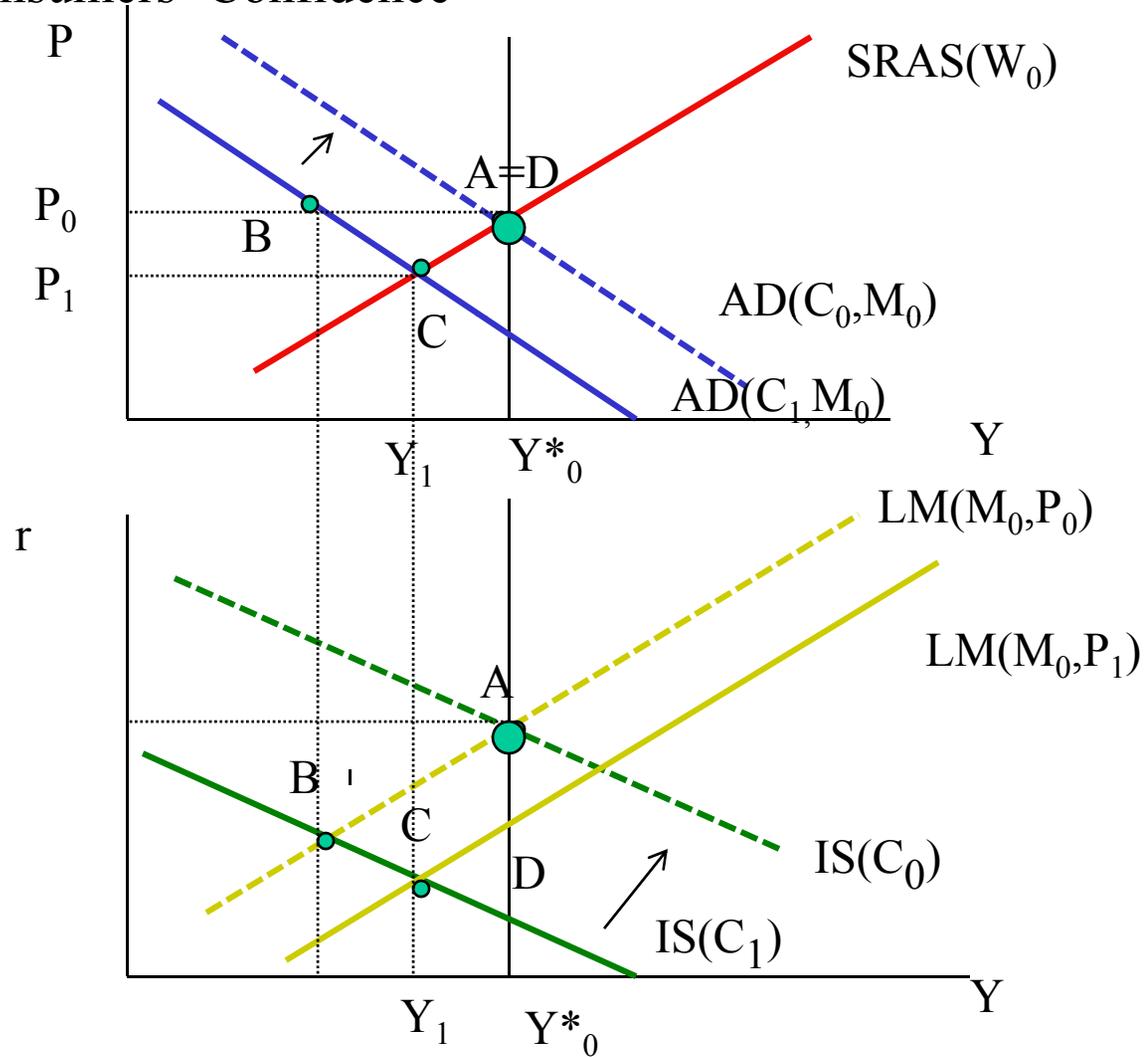
Example: Loss in Consumer Confidence

- Loss of Consumers' Confidence



Fiscal Policy

•Loss of Consumers' Confidence



Government Deficit

Government Budget Deficits is the actual budget deficit in the current period

$$\text{Deficit} = \text{outlays} - \text{tax revenues} = \mathbf{G + Tr + Interest - T}$$

Primary Government Budget Deficits excludes net interests from gov outlays

$$\text{Primary Deficit} = (\text{outlays} - \text{interest}) - \text{tax revenues} = \mathbf{G + Tr - T}$$

2 concepts for 2 questions:

1. How much does the government has to borrow to pay for its total outlays?
2. Can the government afford its current programs?

(Net interests payments represent costs of past expenditures financed by government borrowing)

US Deficit

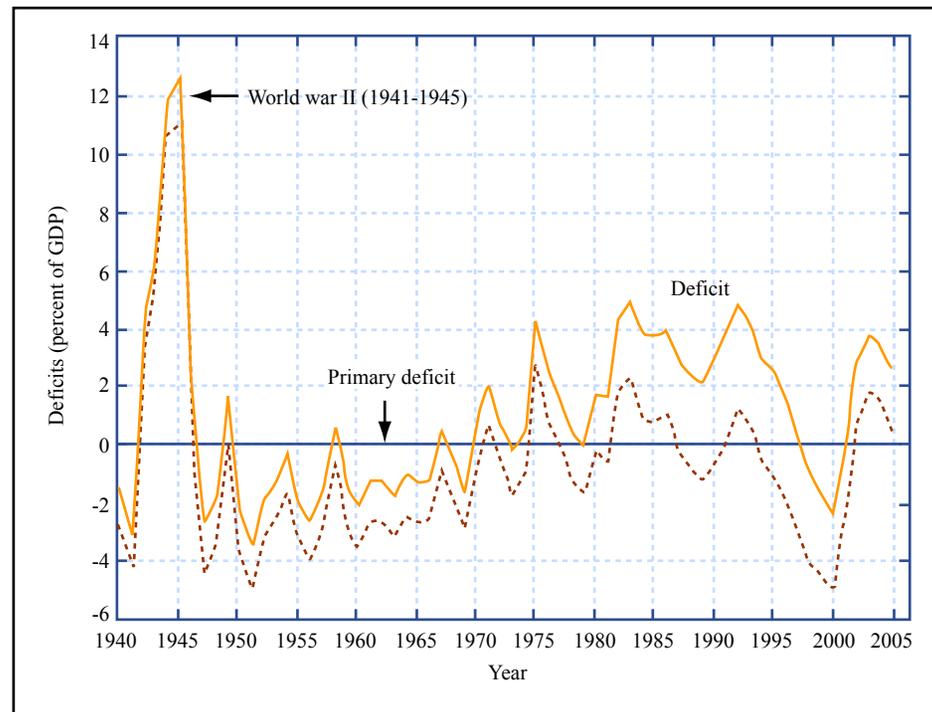


Figure by MIT OpenCourseWare.

Government Deficit (some approximations)

Let us make the following linear approximations:

$$1. \text{ Tax Revenues} = T^0 + t_n Y$$

$$1. \text{ Transfers} = Tr^0 - g Y$$

When Y increases, Taxes increase (more earnings in economy)

When Y increases, Transfers fall (less people on welfare)

$$\begin{aligned} \text{Actual Government Deficits} &= G + Tr + \text{Interest} - T \\ &= G + (Tr^0 - g Y) + \text{Interest} - (T^0 + t_n Y) \\ &= G + Tr^0 + \text{Interest} - T^0 - (t_n + g) Y \end{aligned}$$

Automatic stabilizers

For now, assume $T^0 = Tr^0 = \text{Interest} = 0$

$$\text{Actual Deficit} = G - (t_n + g) Y$$

Automatic stabilizers: budget systems that cause G to rise or T to fall automatically when Y fall!

Side effect: government budget deficits tend to increase in recessions!

Structural Budget Deficits (or full-employment deficit) is the deficit that would exist in the economy if the economy was at Y^* , given the current policies. It eliminates the effect of stabilizers!

$$\text{Structural Budget Deficits} = G - (t_n + g) Y^*$$

Cyclical Deficits: Actual Deficits - Structural Deficits

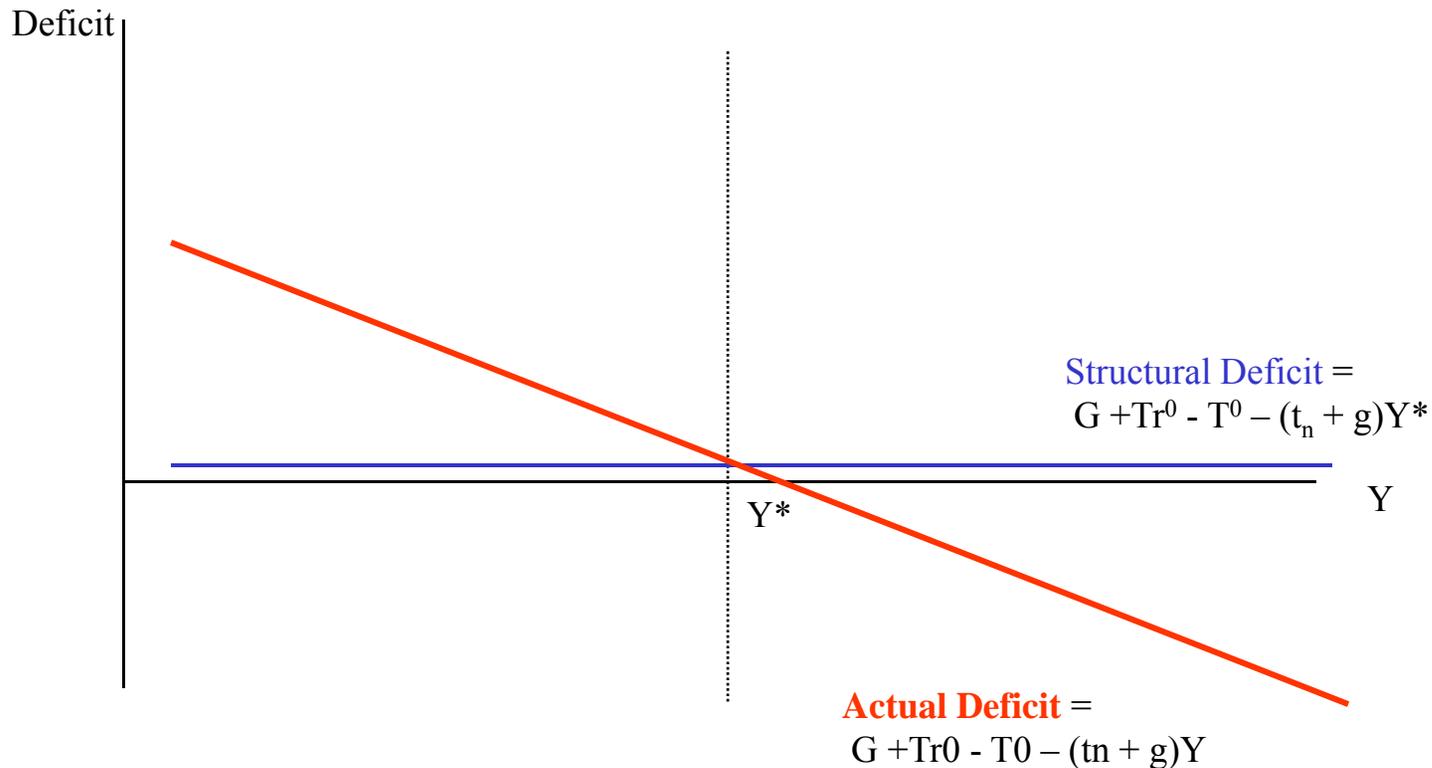
Types of Deficits

- In general: **Deficits are countercyclical!** (They rise when Y falls and fall when Y rises)
- Even if the government has a policy (combination of G and T) that would lead to no deficits at Y^* , deficits still occur (Y does not always equal Y^* !).
- Welfare Payments, Unemployment Insurance, and Tax System dampen the effects of consumption over the business cycle.
 - T goes up when times are good (like in the late 1990s).
 - G/Tr goes up when times are bad (welfare payments).
- Given Automatic Stabilizers (and potentially proactive governmental fiscal policies), cyclical deficits seem to be an inherent part of our economy.

Graphing Deficits When Policy Is Constant

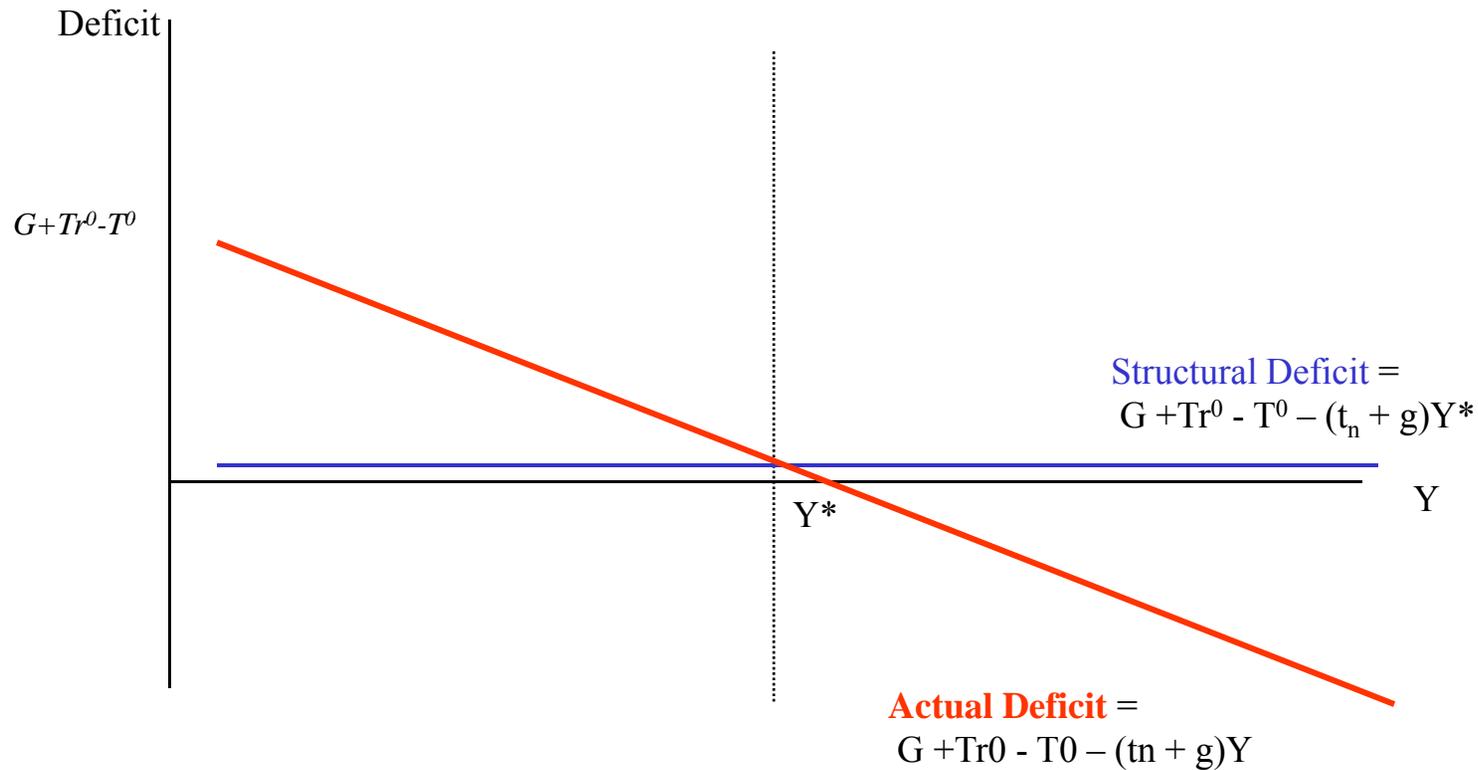
Assume the fiscal policy is constant = G, T^0, Tr^0, g, t_n are fixed.

Even when the structural deficit is close to zero, actual deficits can be large when $Y < Y^*$!



Graphing Deficits When Policy Changes

What happens to actual and structural deficits when **G increases to G'**?



Governments Debt

- The **Government Debt (B)** is the total value of government bonds outstanding at any particular time.
- Important distinction: government deficit is a **flow variable**, government debt a **stock variable**!
- A given year deficit = new borrowing that the government must do = change in the debt that year

ΔB = change in the nominal value of gov bonds outstanding = nominal budget deficit

- **Debt/GDP** is useful measure of indebtedness, given that a country with high GDP has more resources to pay interests on gov bonds!

$$\Delta(\text{Debt/GDP}) = \text{deficit/GDP} - \text{Debt/GDP} * (\Delta\text{GDP})/\text{GDP}$$

US Debt/GDP

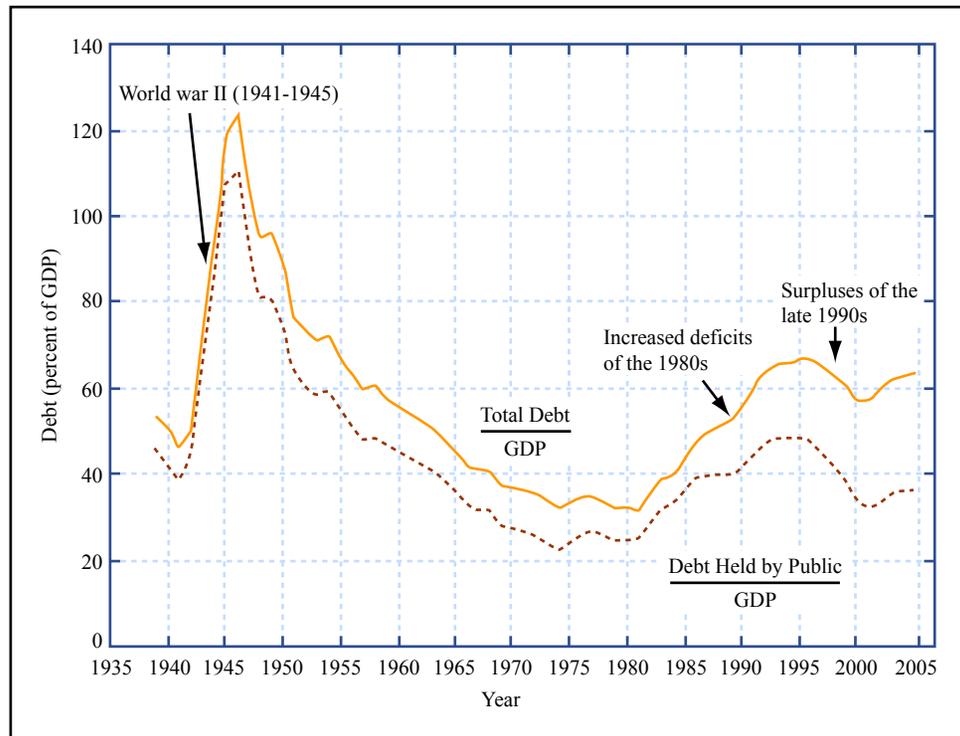


Figure by MIT OpenCourseWare.

Should Governments Try To Prevent Deficits?

- Examples: U.S. Balanced Budget Amendment. Criteria for entry to EMU that deficit/GDP be 3% or less and that debt/GDP be 60% or less.
 - **Benefits:** limit spending. If spend today, government must:
 - 1) Raise Taxes Now
 - 2) Raise Taxes in Future
 - 3) Print Money In Future (will lead to Inflation)Solutions (2) and (3) may be more costly from an economic point of view but are politically more appealing!
 - **Costs:** balanced budget amendments can make recessions worse. Think at the current recession. As **Y falls, tax revenues fall**. As tax revenues fall, **(cyclical) deficit increases**. If the government has to balance the budget, it would either have to cut G/T_r or increase T - both would cause the IS curve to shift further to the left.
- Conclusion :** it may be bad to have policies requiring governments to eliminate all deficits, but there may be some benefits from eliminating structural deficits.

Costs and Benefits of Government Spending

Consumption G

Governments can provide services that may be inefficiently provided in private sector (i.e., police protection, parks, post office, etc).

Investment G: Physical Capital

Governments can provide investment that is used as an input into other production (i.e., highway and transportation infrastructure, bridges, enforce property rights).

Investment G: Training and Education

Governments can train the work force (i.e., student loan programs, public education, state colleges, etc).

Cost to Government Spending? ---- Diverts resources from private sector!

Benefits of Government Spending? --- Helps increase A in a country (roads, property rights, skilled labor). Provides goods not provided in market place.

Must compare the benefits to the costs of government spending!

Example 1: Higher Investment (Infrastructure)

Infrastructure G is government purchases of capital goods whose benefits arrive after the year of purchase.

It amounts to about **2% of GWP** (gross world product).

Examples: Roads, bridges, airports, ports, public transit.

LR Costs: Some N and K *diverted* from production for C and I.

LR Benefits: Higher future A. Less pollution, congestion.

Impact on Y?

SR: Positive.

LR: Ambiguous.

(1) could affect Y positively - higher A.

(2) could affect Y negatively - lower K.

Example 2: Higher Education/Training

Education G includes public schools and public grants to students at private schools.

It amounts to about **3% of GWP**.

Costs: Students diverted from N.

N (teachers) and K *diverted* from C and I production.

LR Benefits: Higher future A. Possibly less crime.

Impact on Y?

SR: Ambiguous (take people out of the labor force today - an immediate supply response).

LR: Ambiguous.

(1) could affect Y positively - higher A and N (adjusting for skills).

(2) could affect Y negatively - lower K.

Public Debt: A Burden on Future Generations ?

Case for Yes:

Higher deficits mean **higher consumption G** and/or **(through lower T) higher C**. **Thus higher deficits potentially mean lower national saving S**. Lower S results in lower I ($S=I$). Lower I today results in **lower K** for the next generation. All else equal, higher government deficits today could reduce the earnings potential (Y) of future generations.

Case for No:

Higher deficits can come from **higher investment G** (infrastructure, education) that create **higher future A**. Higher future A could make future generations better off even if future K is lower.

Does the Debt Payback Hurt Future Generations ?

- **If we run deficits today, future generations will have to pay for our spending.**
Policy makers often say that our spending today will decrease the consumption of our children by X%
- When government borrows to finance a deficit, **they borrow from the current generation** (give bonds to me and you). Eventually, these bonds will end up in the hands of the future generation (we will leave them to future generation - directly or indirectly). When government repays the debt - it will take taxes from the future generation and pay off the same future generation - they own the debt! (**caveat - some debt is held by foreign citizens and distributional issues**).
- **Summary:** when we leave a deficit to our children, we leave them both the assets and the liabilities associated with the debt. The paying back of debt is a **zero sum game** (just a reshuffling in the economy)!
- Are Deficits bad for future generations? Could be (see previous slide) - but, it has nothing to do with the fact that the deficit has to be repaid , **unless a large proportion is held by foreigners**.

Ricardian Equivalence

Ricardian Equivalence: Theory that states that consumers behavior is equivalent regardless if the government finances G through **increased taxes or through increased debt**.

- If the government floats debt to finance spending today, consumers realize that, at some time in the future, it will have to raise taxes to pay back the debt.
- As a result, a reduction in taxes today (an increase in G today) will be seen as being accompanied by **higher taxes in the future**. Households will save today to fund the future tax increases. **National Saving would remain unchanged.**
- **Does this theory hold empirically? NO!** Private Savings was falling during the large deficits of the 80s. People, when asked, tend not to think this way.

Ricardian Equivalence (Continued)

Why Doesn't it hold ?

Liquidity Constraints

Myopia

High Levels of **Impatience**

Do not care about **bequests/future generations** (or expect children to be richer)

Non lump-sum Taxes

If Ricardian Equivalence did hold, running a deficit would not affect national savings for the economy. In this case (with a closed economy), $I = S$, so Investment would not change!

If Ricardian Equivalence did not hold, **increasing G could cause I to fall** (as S falls).

Evidence 1: 2001 Tax Cut

| Ricardian Equivalence and the Tax Cut of May 2001 | | | |
|---|---------|---------|--------|
| | 2001:Q1 | 2001:Q3 | Change |
| Private Saving | 1354.1 | 1533.8 | 179.7 |
| Personal | 138.6 | 261.6 | 123.0 |
| Business | 1215.5 | 1272.2 | 56.7 |
| Government Saving | 391.2 | 114.1 | -277.1 |
| Federal | 244.5 | -0.2 | -244.7 |
| State and local | 146.7 | 114.3 | -32.4 |
| National Saving | 1745.3 | 1647.9 | -97.4 |

Note: Amounts in billions of dollars.
Source: BEA web site, www.bea.gov

Figure by MIT OpenCourseWare.

Evidence 2: 2008 Tax Rebate

Martin Feldstein claims that the tax rebate was a flop!

- His analysis is based on **macroeconomic aggregate indicators**: GDP and C
- Tax rebates of \$78 billion in the second quarter of 2008
- Consumption Expenditures rose only by extra \$12 billion
- Consumption rose only by 15% of the rebate!
- **PROBLEM WITH THIS APPROACH**: there is no counterfactual
- How much C would have increased/declined if there was no rebate?

Evidence 2: 2008 Tax Rebate

Christian Broda and Johnatan Parker claim that the tax rebate was successful!

- Their analysis is based on **microeconomic data**: weekly expenditures of 30,000 households who received rebate *at different points in time*
- The particular week in which a check was mailed or deposited depended on the second-to-last digit of the taxpayer's Social Security number, a number that is effectively randomly assigned.
- This randomization allows them to identify the causal effect of the rebate by comparing the spending of households that received the rebate earlier to that of households that received it later.
- They find a 3.5% increase in consumption due to the rebate.
- This corresponds approximately to 85% of the rebate!
- **PROBLEM**: data are only on a subset of non-durable. What happened to C_{30} of non durables?

Implement a Social Security Program

- Consider two PIH individuals who are similar in all respects (lifetime resources, life span, timing of income, etc) except the first is in **period 1** of his life and the second is in **period 3** of his life (suppose all individuals only live three periods: young worker, old worker and retired).
- $r = 0$, $\beta = 1$, $a = 0$ (assume log utility function from last lecture – i.e., perfectly smooth consumption).

| | | | |
|----------------|---|----|----|
| • Period: | 1 | 2 | 3 |
| • Income: | 8 | 16 | 0 |
| • Consumption: | 8 | 8 | 8 |
| • Saving: | 0 | 8 | -8 |

Implement a Social Security Program

- Suppose the government unexpectedly **taxes the young \$3** this period to give to the retired.
- What happens to the consumption of the young? Nothing: PVLR has not changed! What happens to saving of the young? **The young save less now than they otherwise would** (-3 now compared to 0 before).
- What happens to the consumption of the retired? They increase consumption by \$3. Saving does not change (they dissave \$8 in both cases)
- *Total Saving for society falls by \$3 and consumption increases by \$3 at the time the program is implemented!*
- Note: Expected Income Increases and Expected Transfers have no effect once they are implemented.

US Social Security Troubles

- US Social Security is largely **pay-as-you-go system** = most of the payroll taxes that workers and employers pay go directly to retirees and other beneficiaries
- When number of workers exceeds number of retirees the system has to finance, any excess of the Social Security tax revenues is added to the **Social Security Trust Fund** (with special government bonds)
- Ratio workers/retirees expected to decrease significantly because of baby-boomers, decline US birth rate and longer life expectancies
- For a while the system can use interest earnings and redeem bonds in the Social Security trust fund, but predictions that it will be exhausted by 2040 ...
- How to repay promised benefits?

Social Security: How to fix it?

Proposals:

1. **Increasing tax revenues** coming to the system

How? Could be either by raising payroll taxes or subjecting more income to the tax.
Problem? Distortionary taxes!

2. **Earning higher rate of return** on the Social Security trust fund

How? In the 90s was very popular to propose to allow the gov to invest in the Stock Market. Problem? Gov interference in the stock market + Now maybe was not a very good option!

3. **Reducing benefit payments**

How? By raising retirement age (to match increase in life expectancy) or by changing the formula relating benefits to the average increase in wages and prices

The sooner the better!!

Social Security: Projections

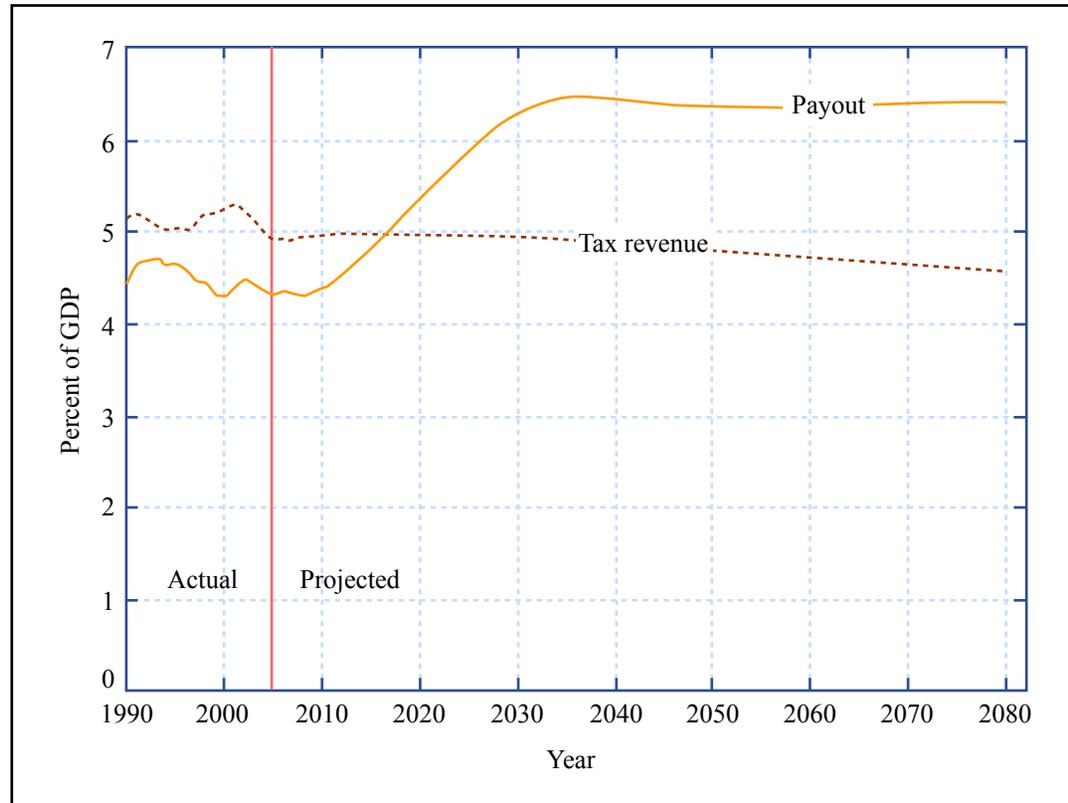


Figure by MIT OpenCourseWare.

Supply Side Economics: Incentives

- Fiscal policies affect the macroeconomics also through the supply side: **tax policies affect incentives!**
- **Average tax rate** = total amount of taxes paid by a person divided by the person's before-tax income
- **Marginal tax rate** = fraction of an additional dollar of income that must be paid in taxes
- Example: Tax of 25% levied on income above \$10,000. Person with income of \$18,000 pays \$2,000. Average tax rate = 11.1%. Marginal tax rate = 25%.
- Increase in average tax rate, with constant marginal, will increase labor supply. **Income effect!**
- Increase in marginal tax rate, with constant average, will reduce labor supply. **Substitution effect!**

Supply Side Economics

Emphasize *substitution effects* of marginal tax rates.

Common idea: people would work more if t_n were lower and would save more if t_s were lower.

Where it may be wrong: Tax cuts (lower t_n/t_s and lower T) have **income effects** which can potentially dominate. N falls (and S falls).

Where it may be right: Tax Reforms (lower t but $\Delta T=0$) do not have income effects, but only **substitution effects**: N and S rise.

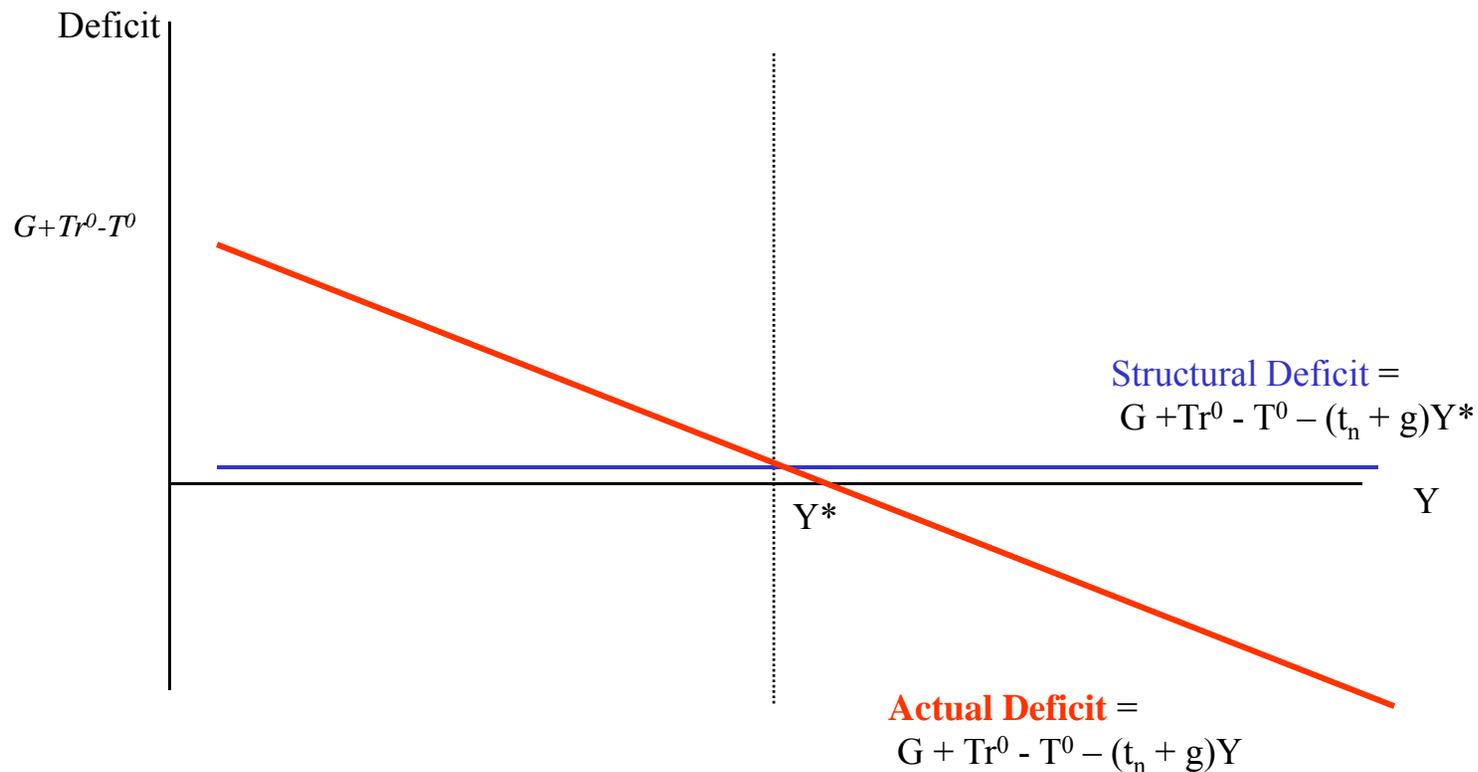
Another margin where it may be right: Positive effects on human capital investment? Becker and Lucas of the U of C think so.

Notes on Supply Side Economics

By Tax Reform economists mean *revenue-neutral* reform in the way taxes are collected. In some Flat Tax proposals this involves eliminating tax deductions (e.g. home mortgage interest) and lowering income tax rates. To see how this can be revenue-neutral, suppose $T = t_n * (Y - D)$ where D = tax deductions. One can lower t_n and D so that, for a given Y , T will be unchanged. Tax reforms that lower t_n 's have **substitution effects**, but no income effects since $\Delta T=0$. Such Tax Reforms have **positive effects on labor supply and on private saving** (with no negative effects on government saving).

Why is increasing N and S efficient? Because, relative to an efficient tax code, the existing tax code discourages N and S (household). The most efficient (but not necessarily the most fair or feasible) tax code would be a *lump sum* tax on all individuals: every individual would pay the same tax. Thus individuals would face zero marginal tax rates -- they could **keep 100% of marginal income**. The current tax code has positive marginal tax rates and lots of deductions. Moving from the current tax code to a lump sum tax would be a Tax Reform with positive substitution effects. Thus, compared to the efficiency ideal of a lump sum tax, the current tax code encourages people to substitute away from N and S (household).

Graphing Deficits When Income Tax decreases (pro-active)

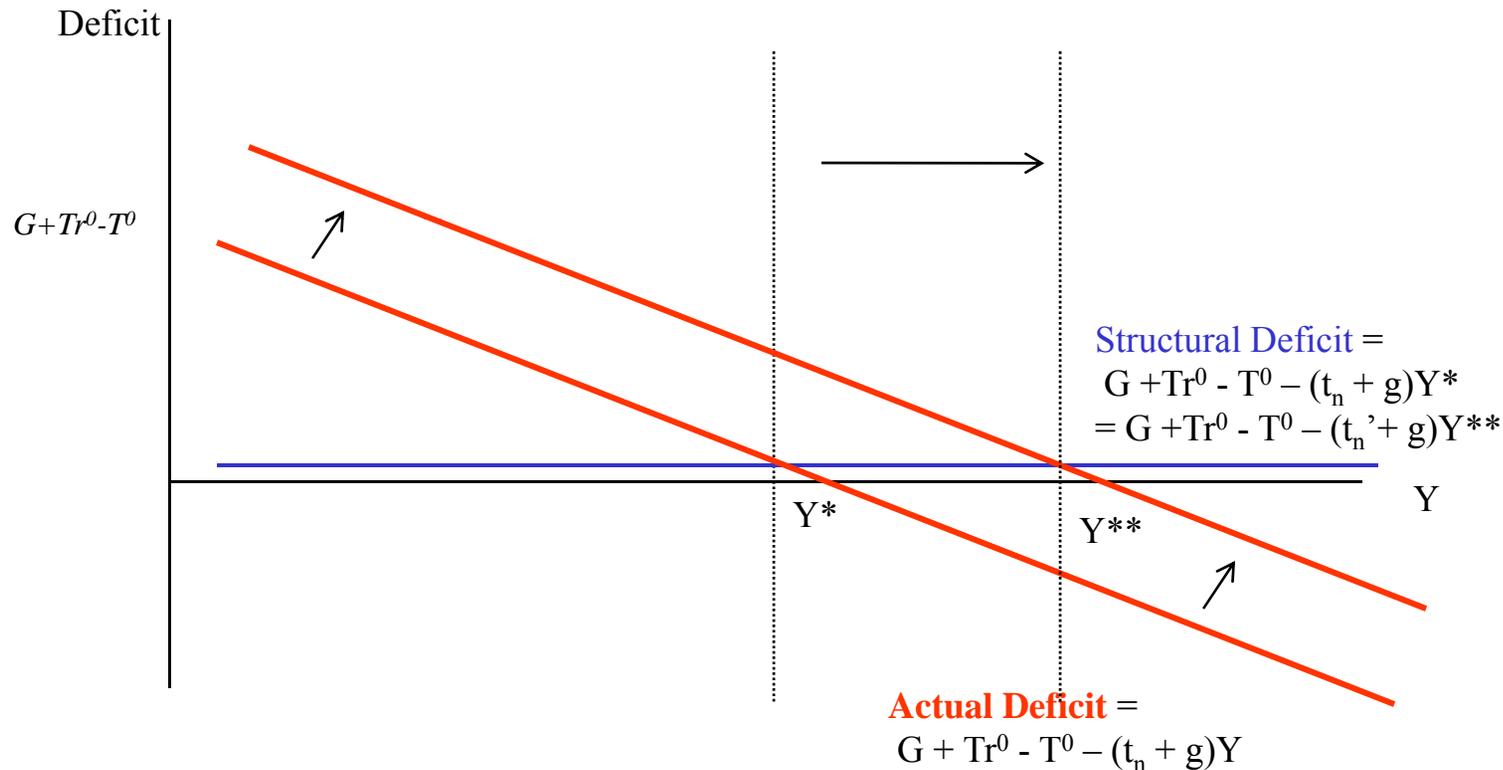


Supply siders believe that a change in income taxes will have large effects on N and therefore increase output in full employment so much that the deficit will go back to balance. 39

Graphing Deficits When Income Tax decreases (pro-active)

Assume $t'_n < t_n$

It could be that Y^{**} increase so much that
 $(t'_n + g)Y^{**} = (t_n + g)Y^*$



Supply siders believe that a change in income taxes will have large effects on N and therefore increase output in full employment so much that the deficit will go back to balance. 40

Summary

- Government Deficit = gov outlays – taxes
- Deficit is countercyclical!
- To stabilize cyclical deficit may be too costly, but to reduce structural deficit seems to be a good objective!
- How to finance G matters (Ricardian Equivalence does not hold!)
- US Social Security system in trouble

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