

# Crowding In or Crowding Out?

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Macroeconomics I

ECON 309

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# Budget Magic

## Clinton's 1994-97 Deficit Reduction Plan (in Billions)

<b>“Total” Spending Cuts</b>	<b>\$247</b>
<b>- Increases in spending &amp; new tax breaks</b>	<b>-109</b>
<b>Equals</b>	<b>\$138</b>
<b>Tax increase in Social Sec + fee increases</b>	<b>-36</b>
<b>Equals</b>	<b>102</b>
<b>Cuts mandated by Bush 1990 budget accord</b>	<b>-94</b>
<b>Equals actual budget cuts by Clinton</b>	<b>\$8</b>
<b>Tax Increases</b>	<b>\$246</b>
<b>- less new tax breaks</b>	<b>-60</b>
<b>Equals New Taxes (net)</b>	<b>\$186</b>
<b>New Soc. Sec. Taxes</b>	<b>+36</b>
<b>Actual New Taxes</b>	<b>\$222</b>
<b>Actual deficit Reduction = 102 + 222 =</b>	<b>\$325</b>

# Do Large Deficits...?

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- **Force monetary accommodation?**
- **Hence inflation,**
- **Higher interest rates,**
- **Reduced investment, and**
- **Slowed growth?**
- **(What if there is no accommodation?)**

# Benjamin Friedman argues:

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- **Even deficits that are not accommodated cause inflation.**
  - Reason: the “money” that is related to price levels includes short-term government debt (See Gurley & Shaw, 1960)
- **Debt-financed deficits “crowd out” interest-sensitive, private sector spending**

# Implications of B. Friedman

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- **Reduced potency of government policy!**
  - **Government spending replaces, not adds to, private investment**
- **What if government spending is not for investment?**

# Definitions: “Crowding Out”

- **If output and resources are fixed and fully employed, government can spend only at the expense of the private sector**
  - Real crowding out: non-market situation
  - Price crowding: market situation
- **If government spending stimulated investment in productive capacity, then prices may fall and investment increase:**
  - “Crowding in” (perhaps from scale economies)
  - Investment responds to demand (not interest): accelerator process

# More Crowding Out

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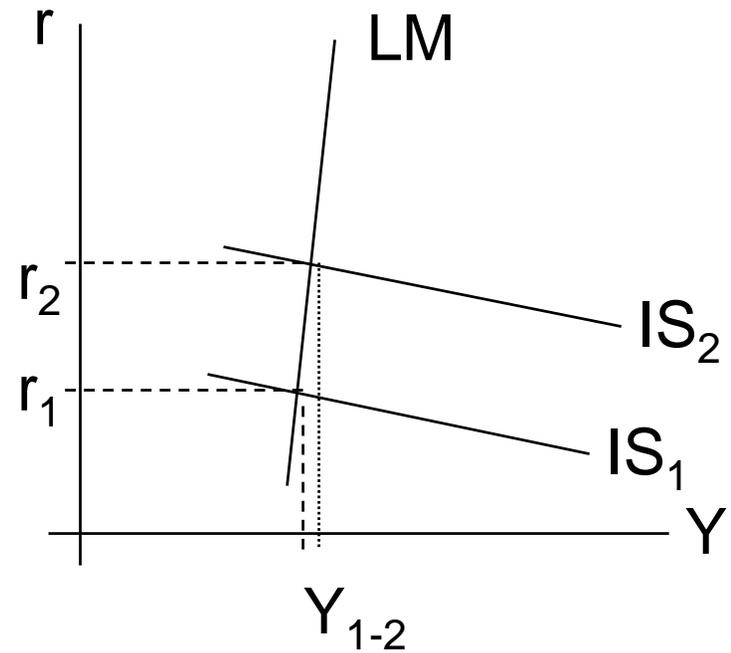
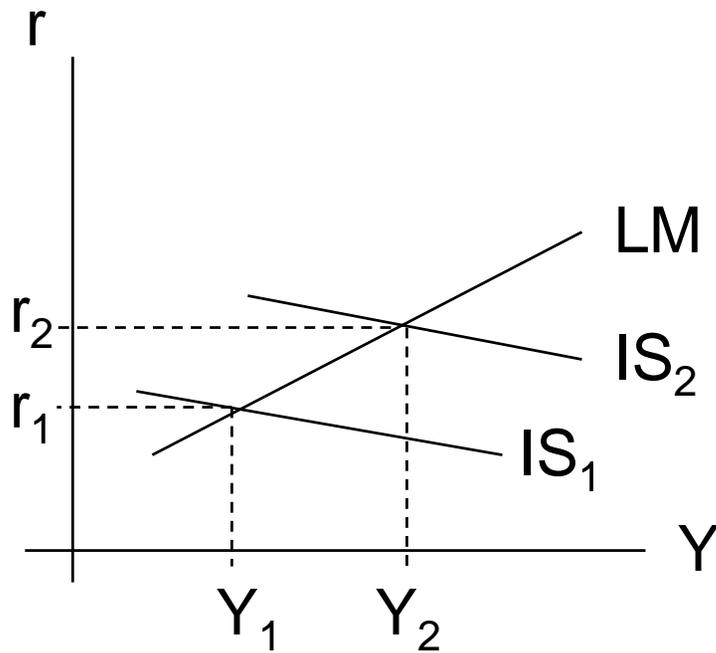
- **Financial crowding out**
  - Related to money demand and wealth effects on portfolios
  - Results from debt finance
- **Debt-financed deficits need not crowd out any private investment, indeed such deficits may “crowd in”**

# Transactions Crowding

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- **Government increases spending without a matching tax increase**
- **The multiplier effect increases AD, so IS shifts rightward**
- **The transactions demand for money increases**
- **The interest rate rises**
- **Aggregate expenditure declines (investment and durables demand falls)**

# Transactions Crowding



## B. Friedman's Model

$$C = C_0 + c_1(Y - T), \quad 0 < c_1 < 1$$

$$I = i_0 + i_1 r, \quad i_1 < 0$$

$$Y = C + I + G$$

$$M^d = m_0 + m_1 Y + m_2 r, \quad m_2 < 0 < m_1$$

$$M^d = M^s = M$$

and derives:

$$r = \frac{-[m_0(1 - c_1) + m_1(c_0 + i_0) - m_1 c_1 T + (1 - c_1)M - m_1 G]}{m_2(1 - c_1) + i_1 m_1}$$

# Result

Friedman finds via the total derivative that:

$$\frac{dr}{dG} = \frac{-m_1}{m_2(1-c_1) + i_1 m_1} > 0$$

This is positive, but how “important?”

	Short-run Value	Long-run Value
Goldfeld (M1)	0.930	0.657
Friedman (M2)	0.849	0.448
Hamburger (M3)	0.876	0.796

These are  $dY/dG$  after crowding!

# Portfolio Crowding

Focuses on portfolio effects associated with financing debt. First, he adds wealth effects to “IS”:

$$Y = y_0 + y_1 G + (1 - y_1)T + y_2 r + y_3 W,$$
$$y_3 > 0 > y_2, y_1 > 1$$

Here  $W$  is the total real wealth in the private sector.

- Assume that the balanced budget multiplier = 1.

$$W = M + B + K$$

Note: This implies that any asset demand is a linear combination of the other two. [There are only two independent asset demands.]

# Portfolio Crowding (2)

- Assume fixed prices, and fixed capital stock.
- Assume that the initial equilibrium of IS and LM is with a balanced budget ( $G=T$ ) and taxes remain unchanged.

Taking differentials:

$$dW = dM + dB$$

Note: The Christ-Silber arguments assume that government bonds represent net wealth.

# Portfolio Crowding (3)

The interest rate variable  $r$  in the extended IS curve reflects expected return; it is the expected yield on real capital. So now we have two  $r$ 's,  $r_K$  and  $r_B$ .

The extended model is now:

$$Y = y_0 + y_1 G + (1 - y_1) T + y_2 r_K + y_3 (M + K + B)$$

$$M = m_0 + m_2 r_B + m_3 r_K + m_4 Y + m_5 (M + K + B)$$

$$B = b_0 - (m_2 + b_3) r_B + b_3 r_K + b_4 Y + b_5 (M + K + B)$$

# Portfolio Crowding (4)

Friedman solves the extended model:

$$\frac{dY}{dG} = y_1 + y_3, \quad \text{note that } y_1 = \frac{1}{1 - c_1}.$$

This implies that the goods market reinforces the usual  $1/(1-c)$  multiplier effect.

Given  $m_4 > 0$ , increases in  $Y$  imply increases in the transactions demand for money. If the money supply is fixed, then either  $r_B$  or  $r_K$ , or both, must rise. (Note:  $m_2, m_3 < 0$ .)

# Portfolio Crowding (5)

RESULT: As long as assets are all gross substitutes, transactions crowding is out. But what about Portfolio Crowding?

As money demand rises,  $M + K + B$  increases. (Recall  $m_5 > 0$ .) Therefore the wealth effect reinforces the transactions effect, further increasing money demand.

But does  $r_B$  rise,  $r_K$  rise, or both?

# Portfolio Crowding (6)

Assume that  $0 < b_5 < 1$ . This amounts to saying that people don't want to hold all of their wealth in bonds. If the bond supply changes in the absence of yield changes, either  $r_B$  rises or  $r_K$  falls.

BUT, the effect of interest rates on the goods market depends on  $r_K$ . Since we cannot know whether this rate has changed, we cannot know if crowding is “out” or “in”.

# Portfolio Crowding (6)

More specifically, we can solve for the partial derivative:

$$\frac{\partial r_K}{\partial G} = \frac{m_2(1 - b_5) - m_2 m_5 - b_3 m_5}{m_2 m_3 + m_2 b_3 + m_3 b_3}$$

This implies that if all three assets are substitutes ( $m_3, m_2, b_3 < 0$ ), then the denominator is positive, and

$$\frac{\partial r_K}{\partial G} = \xi(m_2, b_3)$$

# Portfolio Crowding (7)

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RESULT:

Whether the crowding is “in” or “out” depends on whether bonds are closer portfolio substitutes for money or for capital.

If bonds are closer to capital,  
then LM shifts leftward and crowding is “out”.

If bonds are closer to money,  
then LM shifts rightward, reinforcing fiscal policy,  
and crowding is “in”.

# Deficits and Interest Rates: Empirical Evidence (1)

- Paul Evans. “Do Large Deficits Produce High Interest Rates?” AER 1985.
- RESULT: No Crowding
- Method & Assumptions:
  - G, Deficits, Money Supply: Exogenous
  - Data 1858-1984, 2SLS
- Problems:
  - 1858-69, capital inflows may have financed deficit
  - Post WWII - 1979, Fed pegged interest rates
  - prior to 1980s, deficits were typically small
  - the analysis denies the endogeneity of G, deficits,  $M^s$

# Deficits and Interest Rates: Empirical Evidence (2)

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- **Martin Feldstein & Otto Eckstein. “The Fundamental Determinants of the Interest Rate,” REStat 1970.**
- **RESULT: Minimal Crowding Out.**
- **10% increase in federal debt increased the interest rate on AAA bonds by 0.28%: 1954Q1 - 1969Q2.**
- **Problems**
  - **Period of analysis is during the Fed interest rate pegging period, and with fixed exchange rates**
  - **Data set is not very rich, and the result (as faithfully reported by the authors) is not very strong at all.**

# Deficits and Interest Rates: Empirical Evidence (3)

- **Girola (1984) Updates Feldstein & Epstein interest rate equation.**
  - **RESULT: No Crowding(?)**
  - **Debt has a positive, but significant effect on the interest rate, but the Durbin-Watson statistic is very low -- this implies autocorrelation in the residuals**
  - **After correction for autocorrelation, the coefficient estimate becomes negative and insignificant**
- **Plosser (1982, 1987)**
  - **RESULT: No Crowding**
  - **Changes in privately held gov't debt have no effect on yields of government securities**

# Deficits and Interest Rates: Empirical Evidence (4)

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- **Hoelscher (1983)**
  - **RESULT: No Crowding**
  - 3-month T-Bill vs. deficit, unemployment, expected inflation, and the monetary base
  - Positive but insignificant coefficient
- **Barth, Iden, Russek (1984-85) Replicate Hoelscher**
  - Decomposed the deficit into structural and cyclical components
  - Structural deficit has positive and significant coefficient
  - **RESULT: Crowding Out**

# Deficits and Interest Rates: Empirical Evidence (5)

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- **Carlson (1983)**
  - **RESULT: Crowding out**
  - **Aaa corporate bond rate vs. privately-held federal debt, expected inflation, GNP, and monetary base**
  - **1953:2 - 1983:2**
  - **Positive and significant coefficient for debt variable, but first order serial correlation**
- **Barth, Iden, Russek (1984-85) Replicate Carlson**
  - **Cannot repeat the Carlson result!**
  - **Positive coefficient, not significant!**
  - **RESULT: No Crowding**

# Deficits and Interest Rates: Empirical Evidence (6)

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- **Barth, Iden, Russek (1984-1985)**
  - **RESULT: Crowding Out**
  - **Positive significant relationship between the structural deficit and the interest rate**
- **Placone, Ulbrich, Wallace (JPKE)**
  - **RESULT: Depends entirely on debt management practices.**
  - **Just as easy to get the opposite result as Barth, et al.**
- **de Leeuw and Holloway**
  - **RESULT: Crowding Out**

# Deficits and Interest Rates: Empirical Evidence (7)

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- **CBO (1984)**
  - **Surveyed 24 studies of interest-rate/deficit relationship**
  - **Studies differed widely in terms of**
    - **time period**
    - **data frequency**
    - **statistical method**
    - **interest rate variable**
    - **deficit or debt variable**
  - **Result:**
    - **Debt is more significant than the Deficits,**
    - **Neither was significant or consistently positive**