

Topics for Today

- 1.) Finish Mundell-Fleming Model
- 2.) Sticky Wages vs. Sticky Prices
- 3.) A Small Open-Economy Model with Flexible Prices
 - An Endowment Economy
 - Determinants of the Current Account
 - Production, Investment & the Current Account
 - Comparative Statics
- 4.) The "Twin Deficits"
- 5.) The Feldstein-Horioka Puzzle
- 6.) "Large" Open Economies
- 7.) A Monetary Small-Open Economy Model with Flexible Exchange Rates

The Keynesian AS Curve

Wage vs. Price Stickiness

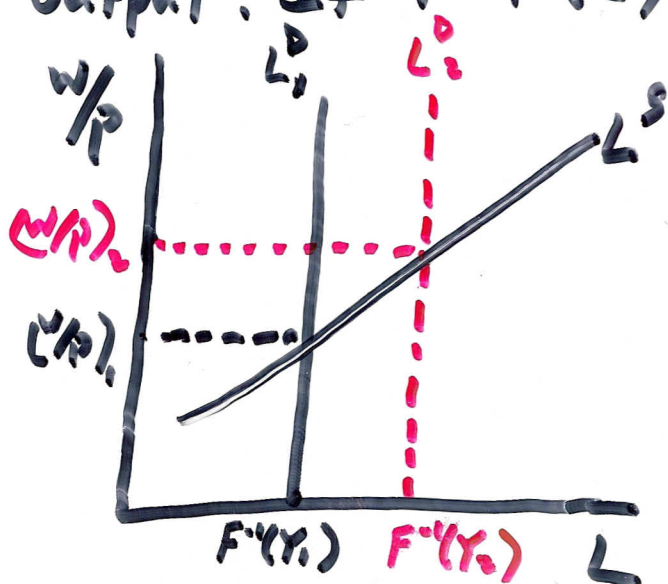
- The original Keynesian model generated an upward sloping AS curve by assuming wages were "sticky".

$P \uparrow \Rightarrow \frac{w}{p} \downarrow \Rightarrow$ Firms hire more labor, $L \uparrow \Rightarrow Y \uparrow$

- However, real wages are not countercyclical. If anything, they are procyclical. Procyclical real wages cast doubt on the sticky wage hypothesis. (Besides, not that many workers are covered by explicit long-term contracts, and when they are, many contracts include Cost-of-Living-Adjustments (COLAs).)

- Modern Keynesian models instead assume prices are sticky. Firms are assumed to have some monopoly power, which allows them to set prices. (Remember, competitive firms set quantities, not prices!). Small costs to changing prices can make firms keep their prices fixed in response to demand changes. There can also be strategic reasons to keep prices fixed.

- A model with sticky prices + flexible wages easily generates a procyclical real wage, since then real wages simply trace out the labor supply curve. (Firms simply demand whatever labor is required to produce the demanded output. If $Y = F(L)$, then $L^D = F^{-1}(Y)$).



$$Y_2 > Y_1 \Rightarrow \left(\frac{w}{p}\right)_2 > \left(\frac{w}{p}\right)_1$$

Goods MKT. Equilibrium in Small Open Economies

- In open-economies, it is no longer true that Saving must equal Investment for the goods market to be in equilibrium. Discrepancies between the 2 can be financed by borrowing and lending with other countries.

$I > S \Rightarrow$ Excess Demand for Goods
 \Rightarrow Borrow from Abroad
 \Rightarrow Current Account Deficit

$I < S \Rightarrow$ Excess Supply of Goods
 \Rightarrow Lend Abroad
 \Rightarrow Current Account Surplus

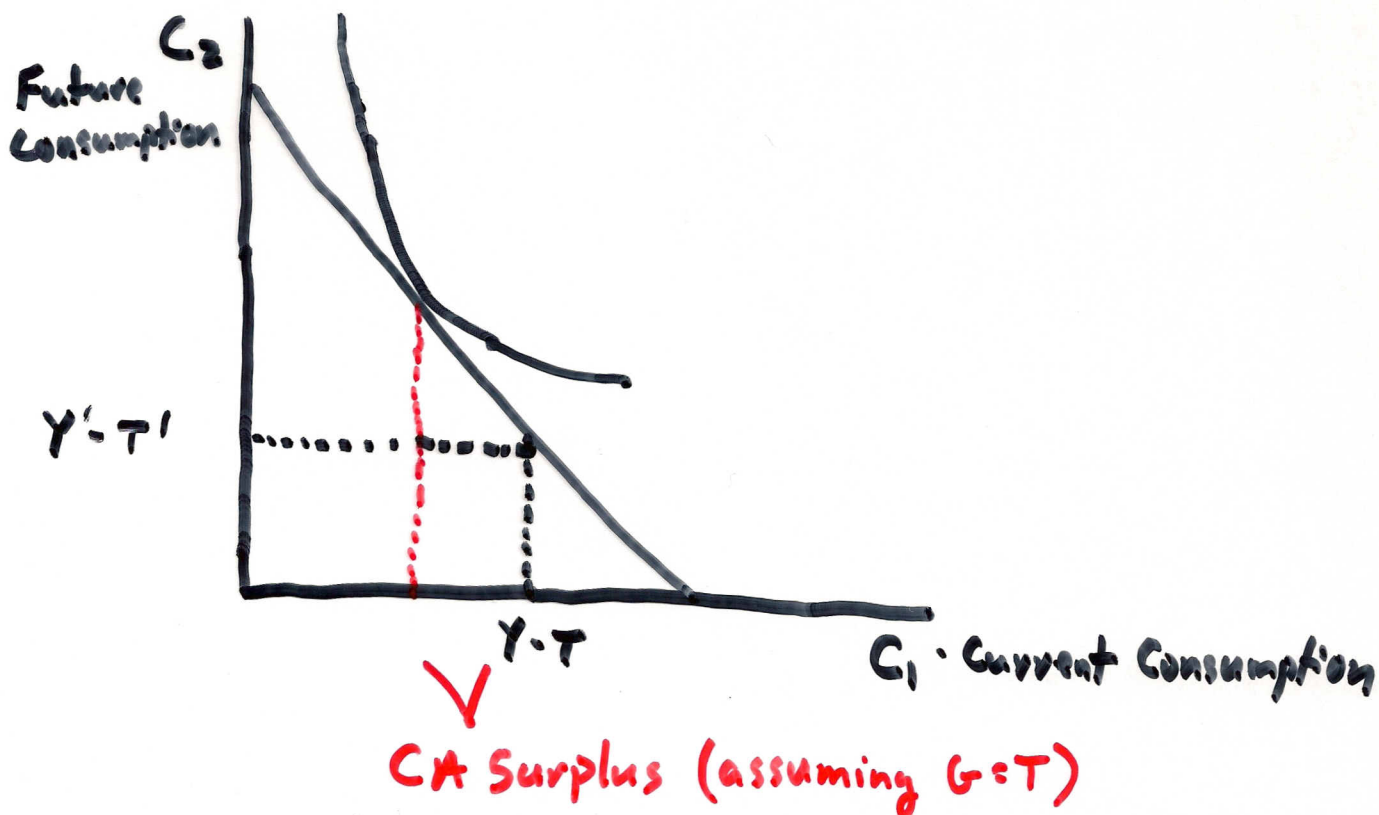
- A "small" open-economy can borrow & lend as much as it wants at a fixed interest rate. That is, it is a price-taker in the global capital market.

- When extending our Intertemporal General Equilibrium model to open-economies, we will follow the same strategy as we did for a closed economy, i.e., we will start by ignoring production + investment and study an endowment economy, where income is exogenous (as in Chpt. 8). Then we add production + investment (as in Chpt. 9). Finally, we will introduce money + exchange rates (as in Chpt. 10).

An Endowment Economy

- In Chpt. 8 we studied the Consumption/Savings decisions of a single household operating within a larger (closed) economy. The household took the interest rate as given. This same analysis can be applied to an entire (small) open economy operating within the global capital market. As with the household, the small open economy can borrow + lend at a fixed interest rate.

- We can therefore apply our Fisherian model of consumption to get a simple theory of the Current Account:



- In general, $CA = S - I$, but without investment, we just have

$$\begin{aligned}
 CA &= S_p + S_g = Y - T - C + (T - G) \\
 &= Y - C - G
 \end{aligned}$$

- Hence, countries run CA deficits when they borrow. Just as for individuals, borrowing isn't necessarily a bad thing. CA deficits enable countries to optimally smooth their consumption. However, borrowing + CA deficits could be bad if the borrowed money is wasted!

Determinants of CA Current Accounts

1.) Current Income (Relative to Future Income)

- All else equal, higher current income will increase saving and lead to CA surpluses
- All else equal, higher future income will decrease saving and lead to CA deficits.

2.) Current Govt. Spending (Relative to Future Govt. Spending)

- All else equal, higher current govt. spending will cause consumption to fall by less, so that a CA deficit occurs.
- All else equal, higher future govt. spending causes current consumption to fall, which leads to CA surplus

3.) Taxes

- With Ricardian Equivalence, the timing of taxes will not influence the CA. Private Saving will completely offset Govt. Saving.

4.) The Interest Rate

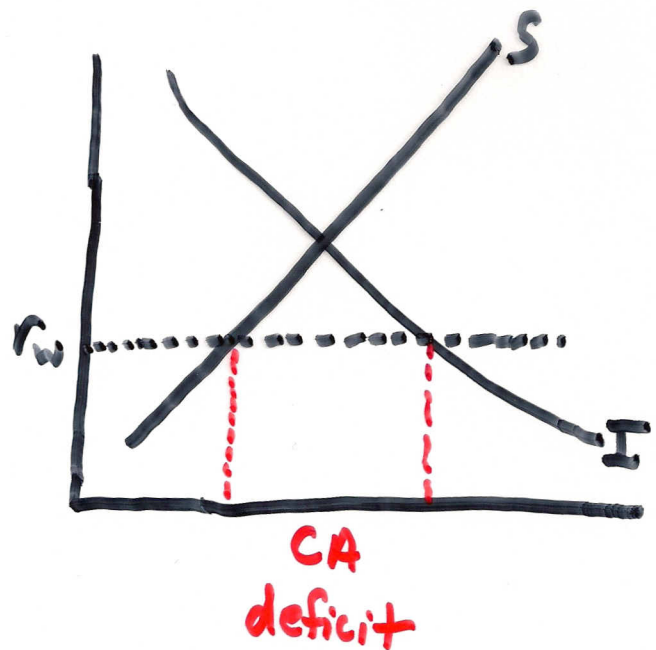
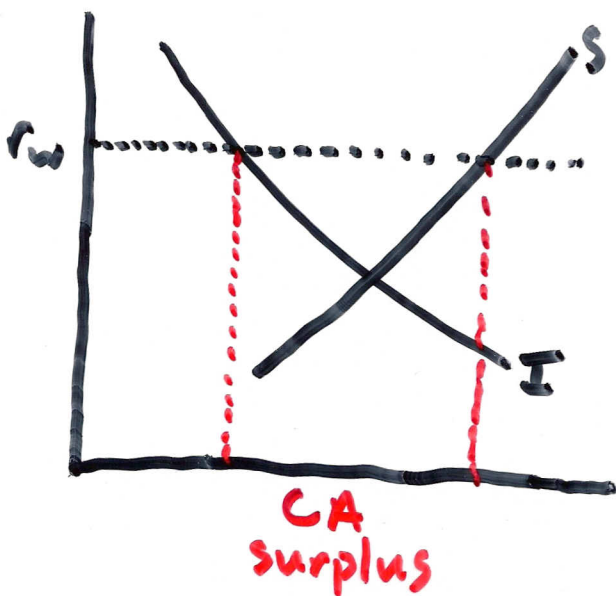
- Assuming substitution effects dominate, an increase in the (world) interest rate will increase the CA surplus. (or reduce a deficit).

Production, Investment + the Current Account

- Although saving tells us a lot about the determinants of Current Accounts, it's only half the story. In actual economies, investment is just as important. That's because

$$CA = S - I$$

- We can directly apply our results from Chpt. 9 to add investment. Investment will be a negatively sloped function of the (world) interest rate. In closed economies, Saving + Investment interact to determine the market clearing interest rate. In small open economies, Saving + Investment interact to determine the CA balance.



So now we can say,

1.) Current Account Deficits More Likely When:

a.) Domestic Saving is low

b.) Domestic Investment is high

c.) The world (real) interest rate is low

2.) Current Account Surpluses More Likely When:

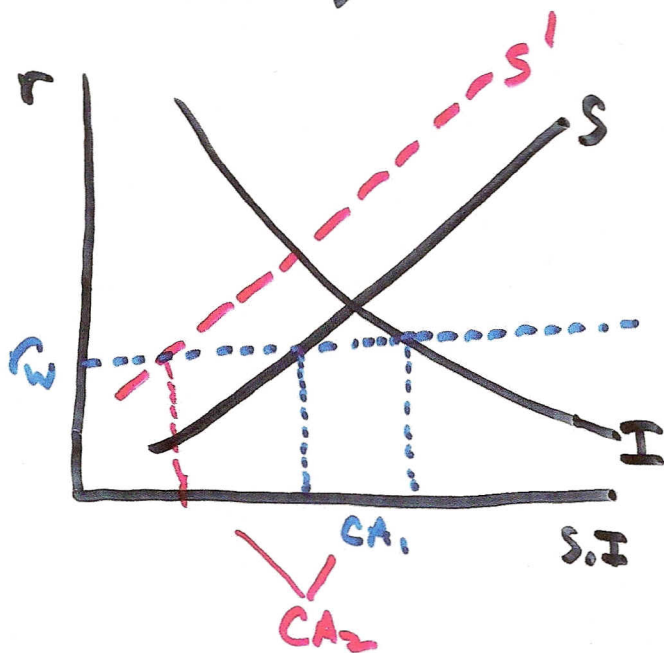
a.) Domestic Saving is high

b.) Domestic Investment is low

c.) The world (real) interest rate is high.

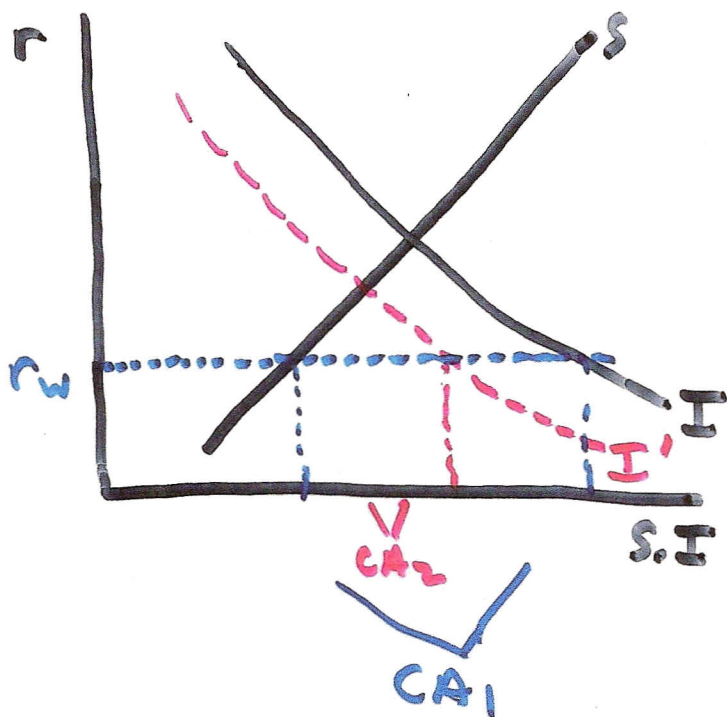
Current Account Comparative Statics

① Temporary Productivity Decline



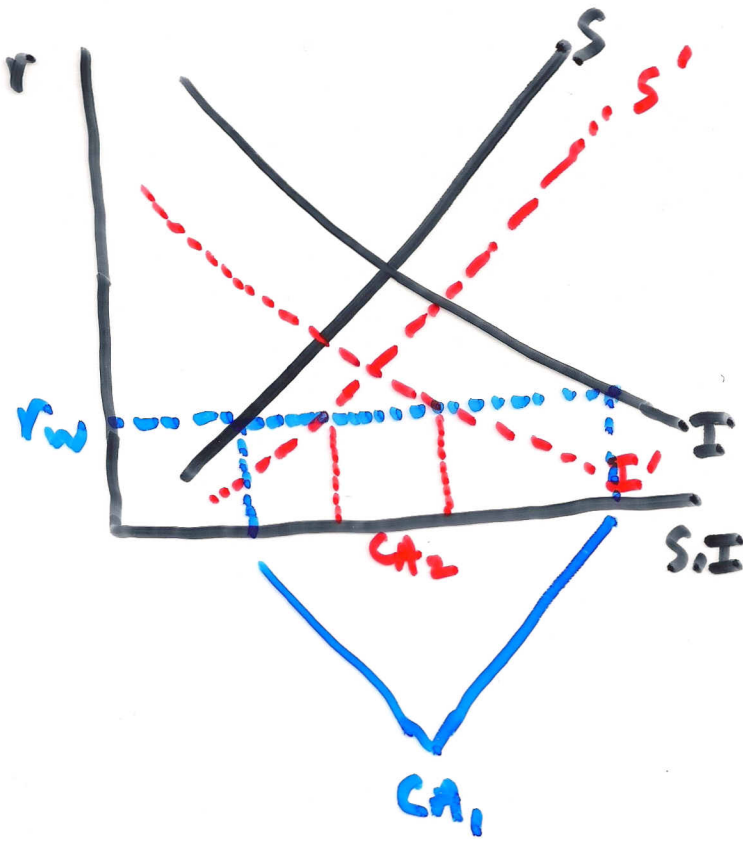
- 1.) $S \downarrow$
- 2.) Increased CA deficit (or reduced surplus)

② Permanent Productivity Decline



- 1.) $I \downarrow$
- 2.) Reduced CA deficit (or increased surplus)

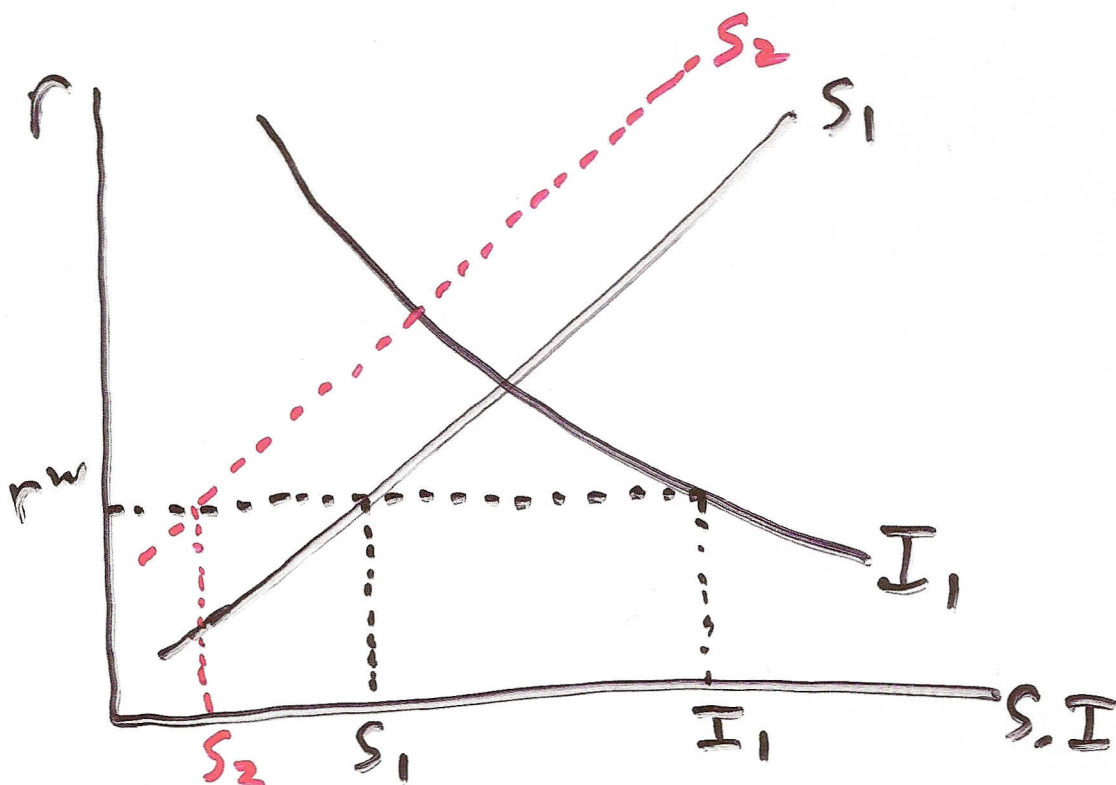
③ Future Productivity Decline



1.) $I \downarrow, S \uparrow$

2.) Reduced CA deficit
(or increased surplus)

The Twin Deficits



$$\text{Original CA Deficit} = I_1 - S_1$$

$$\text{New CA Deficit} = I_1 - S_2$$

Does it matter why $BD \uparrow$?

$$BD = G - T$$

Budget + Current Acct. Deficits Can Be Twins When!

1.) Ricardian Equivalence Doesn't Hold

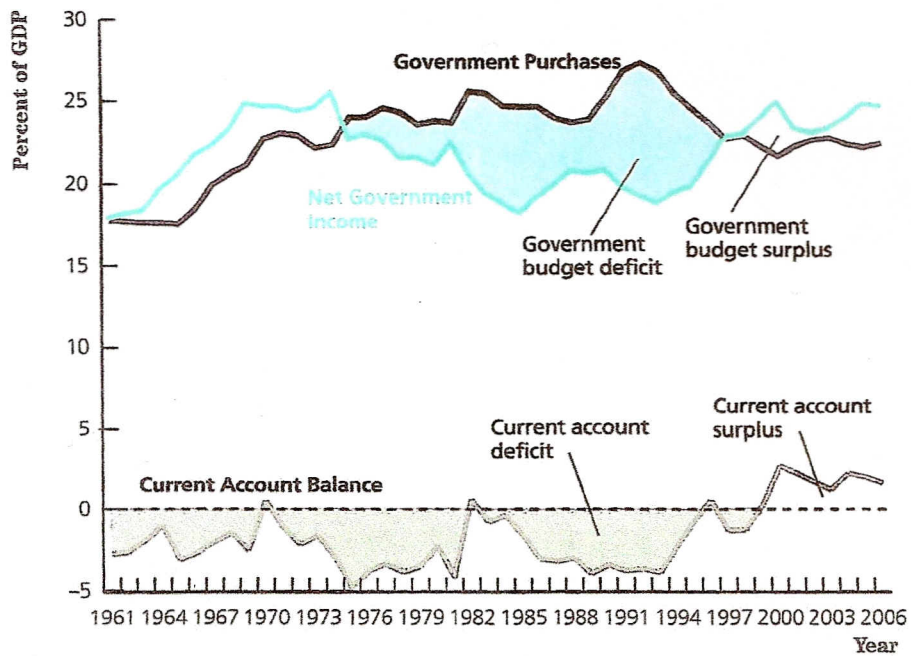
2.) Changes in Budget Deficit caused by (temporary) changes in Govt. Spending

Canadian Twin Deficits

FIGURE 7.12

THE GOVERNMENT BUDGET BALANCE AND THE CURRENT ACCOUNT BALANCE IN CANADA, 1961-2006

The figure shows government purchases, net government income (taxes less transfers and interest), and the current account balance for Canada for the period 1961-2006. Government data are for federal, provincial, territorial, and municipal governments, and each series is measured as a percentage of GDP. The government deficit (shaded area) is the difference between government purchases and net receipts. Note the twin deficits during almost the whole period from 1975 to 1998. Since 1998 Canada has experienced twin surpluses.



Source: Adapted from Statistics Canada, CANSIM II series v113713, v646937, v498327, v498332, v498316, and v498328.

Feldstein - Horioka Puzzle

- Just how mobile is capital internationally?
How integrated are global capital markets?
- One way to get an answer is to look at the prices of similar assets across countries. They should be the same.
- Another way is to look at the actual flows of capital between countries. This is what Feldstein & Horioka did in a famous paper published in 1980.
- According to our model, the main function of the international capital market is that it allows countries to separate their savings decisions from their investment decisions. For example, countries can finance investment projects without changes in domestic saving. In contrast, in closed-economies the correlation between S and I must be 1.0.
- What do the data tell us?

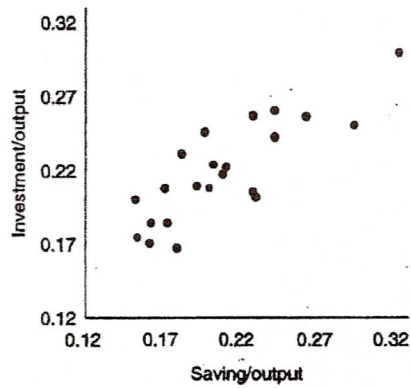


Figure 3.4
Industrial-country saving and investment rates, 1982-91

$$I/Y = 0.09 + 0.62S/Y, \quad R^2 = 0.69.$$

(0.02) (0.09)

Table 2 FELDSTEIN-HORIOKA REGRESSIONS, $I/Y = \alpha + \beta NS/Y + \epsilon$,
1990-1997^a

	No. of obs.	α	β	R^2
All countries ^b	56	0.15 (0.02)	0.41 (0.08)	0.33
Countries with GNP/cap. > 1000	48	0.13 (0.02)	0.48 (0.09)	0.39
Countries with GNP/cap. > 2000	41	0.07 (0.02)	0.70 (0.09)	0.62
OECD countries ^c	24	0.08 (0.02)	0.60 (0.09)	0.68

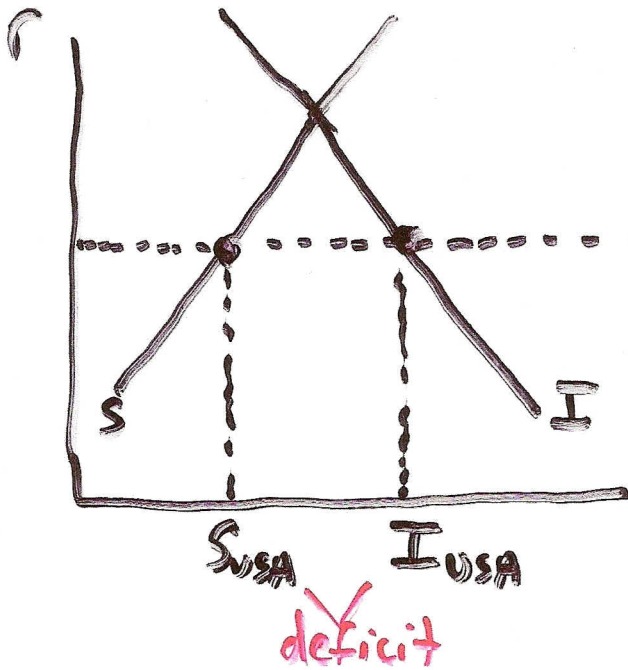
^aOLS regressions. Standard errors in parentheses.

^bIsrael is excluded from all regressions in this table. If Israel is added to the samples of size (56, 48, 41), the estimates of β are (0.39, 0.45, 0.63).

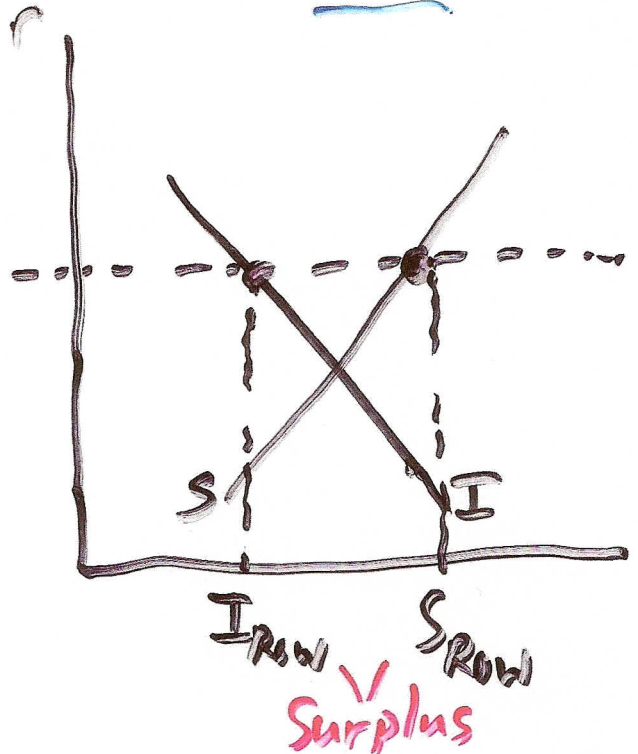
^cIf one adds Korea to the OECD sample, the estimate for β rises to 0.76. Korea is included in the larger samples.

"Large" Open Economy

USA



ROW



Equilibrium r^w :

$$S_{USA} - I_{USA} = I_{ROW} - S_{ROW}$$

Net Lending
by USA

Net Borrowing
by the ROW

① $CA_{USA}(r) + CA_{ROW}(r) = 0$

② $S_{world}(r) = I_{world}(r)$