

International Finance, Econ 3331

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Intertemporal consumption–saving decisions

Talan İşcan  
Dalhousie University

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## Preliminaries

- Consumption in period  $t$ :  $C_t \geq 0$
- Marginal utility of consumption:  $MU(C)$
- $MU(C)$  decreases in  $C$ : when  $C_1 < C_2$

$$MU(C_1) > MU(C_2)$$

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## A two-period problem (no uncertainty)

Marginal utility cost of saving an extra ‘dollar’ today:

$$MU_t(C_t) \quad (1)$$

Real return on that additional dollar over one year:

$$1 + r_t \quad (2)$$

Marginal utility benefit of an extra dollar next year:

$$MU_{t+1}(C_{t+1}) \quad (3)$$

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## Consumption smoothing over time

Marginal cost of saving equals its marginal benefit  
(over time)

$$MU_t(C_t) = (1 + r_t)MU_{t+1}(C_{t+1}) \quad (4)$$

Does **not** typically mean equal consumption over time.

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## An example

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Suppose

$$MU_t(C_t) = \beta^t \frac{1}{C_t} \quad \text{and} \quad MU_{t+1}(C_{t+1}) = \beta^{t+1} \left( \frac{1}{C_{t+1}} \right)$$

where  $0 < \beta < 1$  is the subjective discount factor.

Then, from equation (4)

$$\frac{1}{C_t} = (1 + r_t)\beta \left( \frac{1}{C_{t+1}} \right)$$

## Budget constraint

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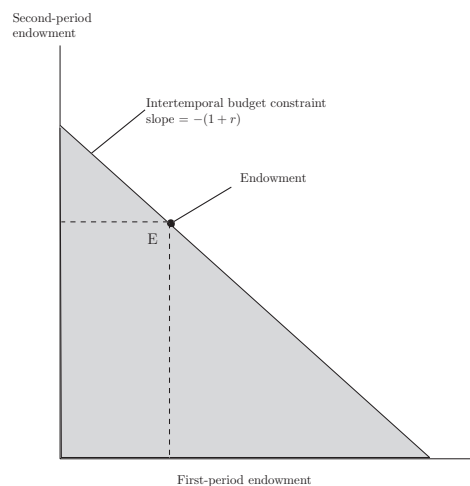
Endowment economy

- First-period consumption / endowment:  $C_1, Y_1$
- Second-period consumption / endowment:  $C_2, Y_2$
- Non-human wealth,  $B = 0$

Intertemporal budget constraint

$$C_1 + \frac{C_2}{1 + r} = Y_1 + \underbrace{\frac{Y_2}{1 + r}}_{\text{human wealth}}$$

## Budget constraint: endowment economy



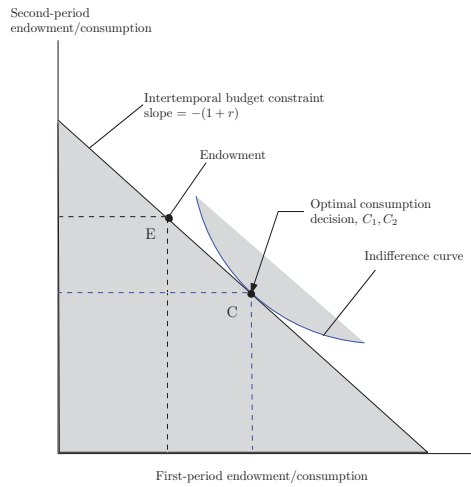
## Consumption–saving decisions

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Saving is a form of self-insurance against fluctuating consumption

(even in the absence of financial markets)

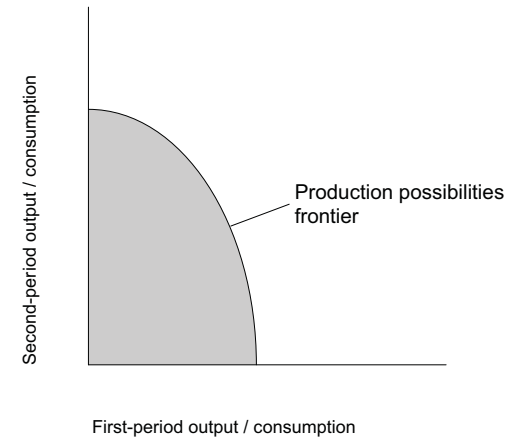
## Intertemporal consumption–saving decisions: endowment economy



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## Production possibilities frontier

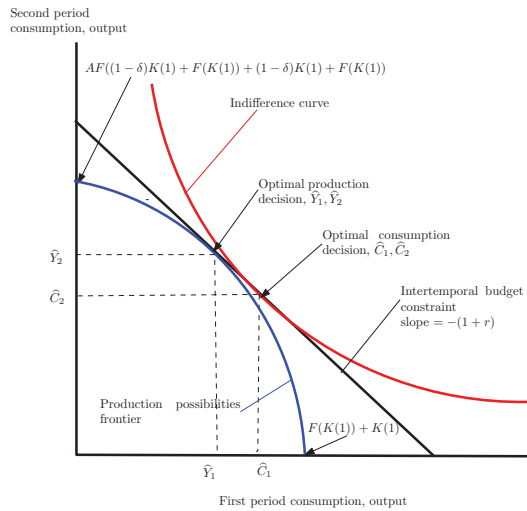


Production economy

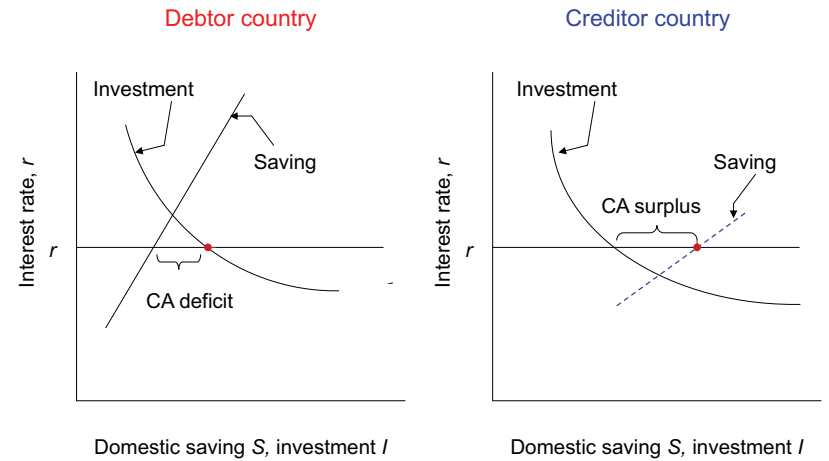
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## Intertemporal consumption–saving decisions: production economy



## Saving schedule in debtor and creditor countries



## The current account

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Recall the saving-investment identity

$$I \equiv S + (T - G) + CA$$

where  $CA$  is balance on the current account.

**Implication:** The current account reflects domestic saving-investment imbalances.

But, these are inherently **forward looking** behaviour.

## Intertemporal approach to the current account

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Pioneering empirical work:

- Sachs (1981)
- Feldstein and Horioka (1980)

## Current Account as Percentage of GNP

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Category	1972	1973	1974	1975	1976	1977	1978	1979
Developed countries	0.4	0.4	-0.9	0.2	-0.4	-0.5	0.3	-0.5
Oil-importing LDCs <sup>†</sup>	-1.5	-1.4	-3.9	-4.9	-3.2	-2.2	-2.4	-2.7
Oil-exporting LDCs <sup>‡</sup>	n.a.	-2.9	-4.4	-7.1	-4.9	-4.4	-4.2	-3.3

Source: J. Sachs (1981). <sup>†</sup> Net oil-importing less-developed countries. <sup>‡</sup> CA/GDP.

## Feldstein-Horioka regressions

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$$\begin{aligned} 1970-79 (N = 19): \quad I/Y &= 4.54 + 0.85 S/Y, \\ &\quad (2.90) \quad (0.12) \\ 1980-86 (N = 19): \quad I/Y &= 4.65 + 0.74 S/Y, \\ &\quad (4.10) \quad (0.18) \\ 1990-97 (N = 24): \quad I/Y &= 0.08 + 0.60 S/Y, \\ &\quad (0.02) \quad (0.09) \end{aligned}$$

Sources: Golub (1990); Obstfeld and Rogoff (2000).  $N$  is no. of OECD countries.

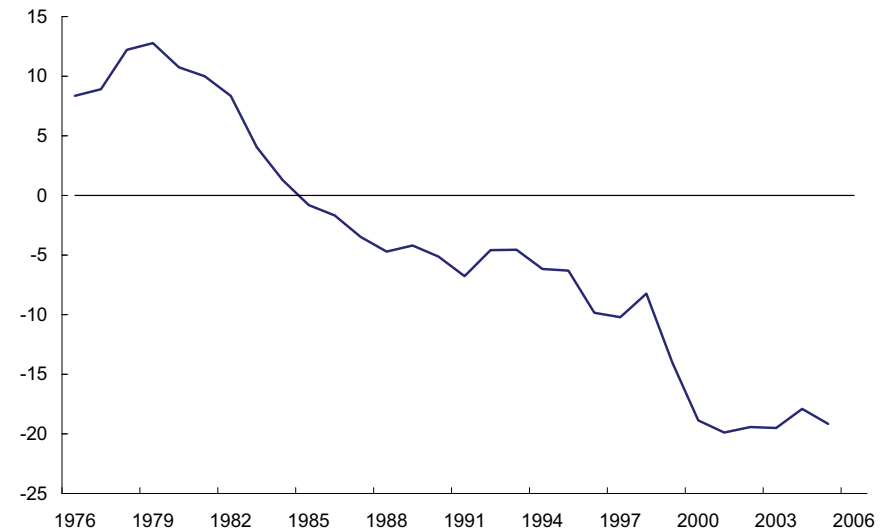
## Global dimensions of CA deficits and surpluses

- Financial and current accounts
  - deficits must be matched by surpluses ('global imbalances', 'savings glut')
  - CA deficits must be financed by 'lending'
- Declining domestic saving–investment correlations
  - globalization and financial integration?, or
  - manifestation of disequilibrium?

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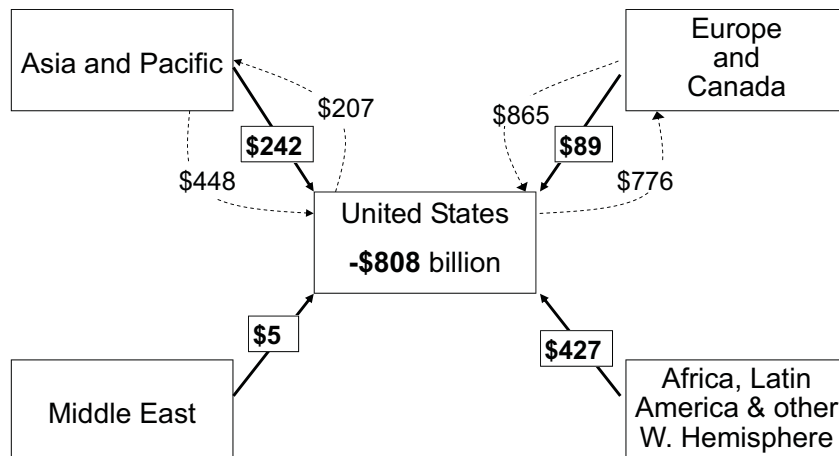
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Net international investment position of the US, % of GNP



us\_intinv06.xls

Gross versus net global financial flows, U.S. 2006  
(billions of US\$)



## Net foreign asset dynamics

$B_t$ : Beginning of period  $t$  net foreign assets

$r_t$ : Real one-year interest rate from  $t$  to  $t + 1$

$$B_{t+1} = (1 + r_t)B_t + CA_t$$

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## Global imbalances and savings glut

How to eliminate large current account deficits?

- Adjustment to saving–investment imbalances
- Adjustment of the real exchange rate
- Un-orderly adjustment:
  - sudden stops, CA reversals, shifts in sentiments

What is the **optimal** current account deficit or surplus?

## Current account adjustment: domestic demand

**Expenditure switching:** adjustments that switch domestic expenditures away from foreign goods and toward domestic goods.

**Expenditure reduction:** adjustments that reduce domestic expenditures (consumption, government spending, etc.) and increase domestic saving.

## Current account adjustments: relative prices

**Question:** By how much do trade flows respond to changes in the real exchange rate  $\varepsilon$ ?

- **High elasticity approach:** small changes in  $\varepsilon$  eliminate large current account imbalances.
  - domestic and foreign goods are close substitutes
- **Low elasticity approach:** large changes in  $\varepsilon$  are needed to eliminate current account imbalances.
  - differentiated products; “pricing to market”

Pegged exchange rates  $\Rightarrow$  devaluation and float

## Net international investment position, USA

[Billions of dollars - at market value]

2004	Changes in position in 2005				2005
	Financial flows	Valuation adjustment			
		Price	Exchange rate	Other	
-2,449	-785	1,061	-394	20	-2,546

Source: Bureau of Economic Analysis, *Survey of Current Business*, December 2006.