Issues in International Finance

Benefits of international capital markets

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Roadmap

- Where we have been
  1. Measuring external transactions and wealth
  2. Unbalanced trade means borrowing or lending with ROW
  3. The long run budget constraint
- Today
  1. The gains from international borrowing and lending
  2. Consumption smoothing, efficient investment, risk diversification

Open economy vs. closed economy

- In a closed economy, $TB = 0$. **Budget must balance every period.**

$$GNE = GDP$$

- In a closed economy $TB \neq 0$. **Budget must balance in the long run.**

$$GNE_0 + \frac{GNE_1}{(1+r^*)} + \cdots = (1+r^*)W_{-1} + GDP_0 + \frac{GDP_1}{(1+r^*)} + \cdots$$

Gains from intertemporal trade

- In “trade” class, learn about gains from trade
  - Comparative advantage
  - Heckscher-Ohlin
  - Gains from variety
  - Trade is balanced — do not discuss current accounts
- We are considering unbalanced trade
  - Trading over time: intertemporal trade
  - Associated with international borrowing and lending
- Gains from intertemporal trade
  1. Consumption smoothing
  2. Efficient investment
  3. Risk diversification

Consumption smoothing

- Assumptions
  1. A representative household (not important)
  2. The household wants smooth consumption (important)
  3. No G or I (will relax later)
  4. $W_{-1} =$ (not important)
  5. Country is small: cannot affect r^* (not important)
- Consider a two-period world. The LRBC is

$$C_0 + \frac{C_1}{1 + r^*} = Q_0 + \frac{Q_1}{1 + r^*}$$

- $C = GNE$ (since $G = I = 0$) and $Q = GDP$

Consumption smoothing

- Let's rewrite the LRBC

$$C_0 + \frac{C_1}{1 + r^*} = Q_0 + \frac{Q_1}{1 + r^*}$$

$$C_1 = Q_1 + (1 + r^*)(Q_0 - C_0)$$

- If $Q_0 - C_0 < 0$
  - Consume more than output in period 0
  - Consume less than output in period 1
- Opposite is true if $Q_0 - C_0 > 0$
- The relative price of period 1 consumption is $1 + r^*$

Consumption smoothing

- How should the household set C_0 and C_1?
- Need an intertemporal utility function
- Example:

$$U(C_0, C_1) = \min\{C_0, C_1\}$$

- The solution to this is $C_0 = C_1$
- If $Q_0 = Q_1$, this is easy: $C_0 = Q_0$ and $C_1 = Q_1$
- What about times when $Q_0 \neq Q_1$?
  - Recessions/expansions
  - War/peace
  - Natural disasters

Consumption smoothing

- An example: $Q_0 = 100$, $Q_1 = 105$, and $r = 0.05$
- In a closed economy, $C_0 = 100$, $C_1 = 105$ and $U = \min\{100, 105\} = 100$
  - Consumption is not smooth
- In an open economy

$$C_0 + \frac{C_1}{1.05} = 100 + \frac{105}{1.05}$$

$$C_0 + \frac{C_1}{1.05} = 200$$

- We want $C_0 = C_1 = C$, so

$$C\left(1 + \frac{1}{1.05}\right) = 200$$

- $C = 102.44$, $U = \min\{102.44, 102.44\} = 102.44$

Consumption smoothing

- The household is better off in the open economy because it has a smoother consumption path
- The BOP accounting

$$
\begin{aligned}
TB_0 &= Q_0 - C_0 = 100 - 102.44 = -2.44 \\
CA_0 &= -2.44 + 0 = -2.44, \ (NFIA = 0) \\
FA_0 &= 2.44
\end{aligned}
$$

- Borrow 2.44 in period 0, pay back with interest in period 1

$$
\begin{aligned}
TB_0 &= Q_1 - C_1 = 105 - 102.44 = 2.56 \\
CA_0 &= 2.56 - 0.1215 = 2.44, \ (NFIA = -2.44 * 0.05 = -0.1215) \\
FA_0 &= -2.44
\end{aligned}
$$

Consumption smoothing

- The two-period example extends naturally to many periods
- Output is 79, then 100 forever

	0	1	2	···	present value
Q	79	100	100	···	2,709
C	99	99	99	···	2,709
TB	–20	1	1	···	0
CA	–20	0	0	···	
NFIA	0	–1	–1	···	

- Does not pay off debt, makes interest payments forever

Consumption smoothing

- Less developed countries worry about access to international borrowing
  - Often, international lenders do not want to lend to countries during recessions (worry about repayment)
- These economies build up a stock of foreign assets ($W >> 0$) to spend during recessions, rather than borrow.
- This kind of savings takes two forms
  - Central bank foreign reserves (hold dollars, euros, . . .)
  - Sovereign wealth funds (buy assets in other countries)

Gains from intertemporal trade

- Gains from intertemporal trade
  1. Consumption smoothing ✓
  2. Efficient investment
  3. Risk diversification

Efficient investment

- Add investment to our previous model (labor & capital create output)

$$C_0 + I_0 + \frac{C_1}{1 + r^*} = Q_0 + \frac{Q_1}{1 + r^*}$$

- With $I_0 = 0$: $Q_0 = Q_1 = 100$
- With $I_0 = 5$: $Q_0 = 100, Q_1 = 110$
- In a closed economy either
  - $I_0 = 0$ and $C_0 = 100$, $C_1 = 100$
  - $I_0 = 5$ and $C_0 = 95$, $C_1 = 110$
- Very unsmooth consumption if investment is made

Efficient investment

- In an open economy

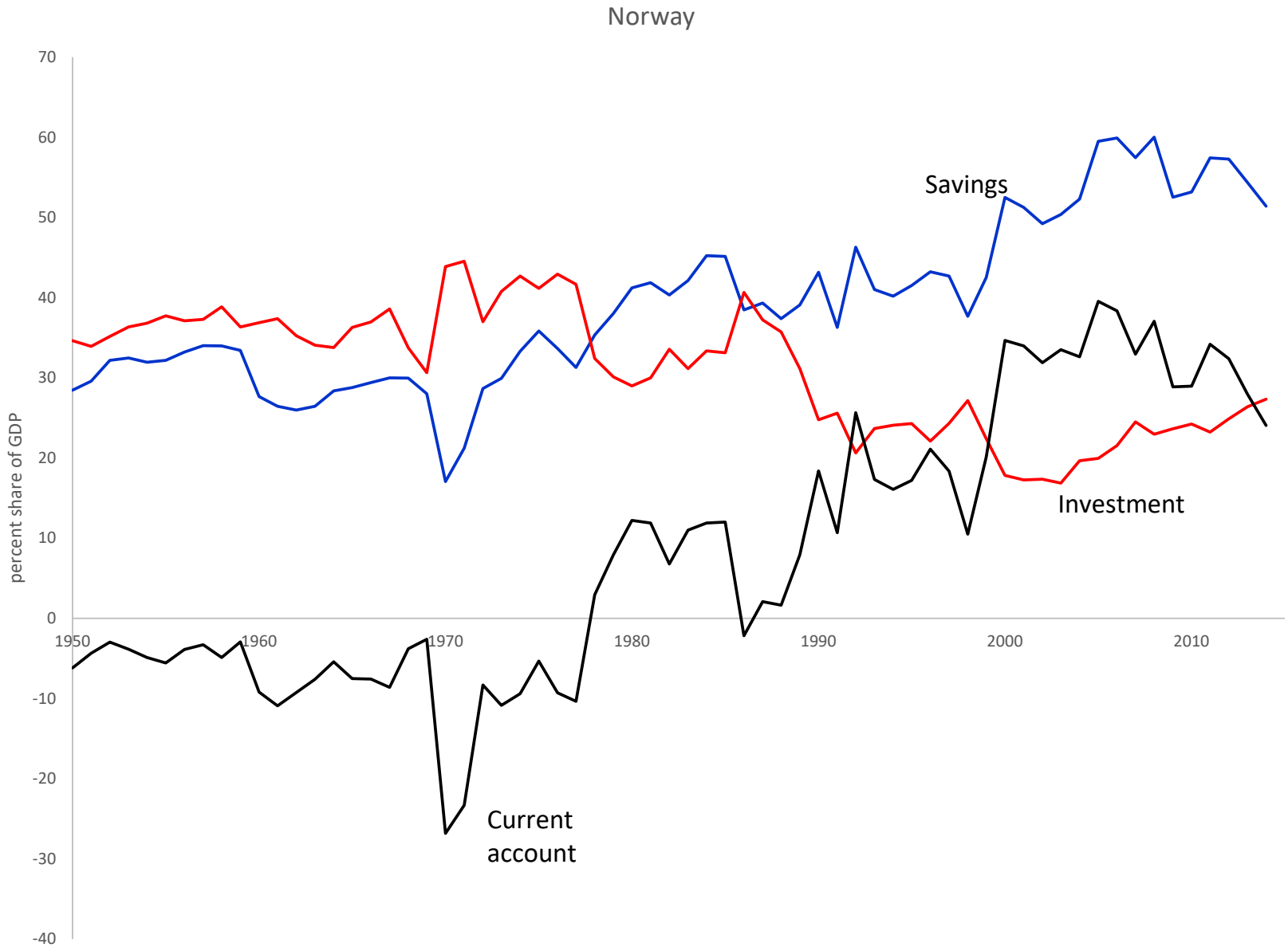
$$C_0 + 5 + \frac{C_1}{1.05} = 100 + \frac{110}{1.05}$$

$$C\left(1 + \frac{1}{1.05}\right) = 95 + \frac{110}{1.05}$$

- $C_0 = C_1 = 102.32$
- $TB_0 = Q_0 - C_0 - I_0 = 100 - 102.32 - 5 = 7.32$
  - Borrow the entire investment plus more!
  - Consume more today because you will be richer tomorrow

Efficient investment

- We have seen some of this before $S - I = CA$
- International borrowing/lending allows for smoother consumption while still taking advantage of investment opportunities
- Example: Norway
  - Massive investments in North Sea oil drilling
  - Would payoff in the future
  - Borrow from abroad to fund investment


Norway
70
60
50
40
30
20
10
0
-10
-20
-30
-40
percent share of GDP
1950
1960
1970
1980
1990
2000
2010
Savings
Investment
Current
account