

INTERTEMPORAL CONSUMPTION CHOICE

2 PERIOD MODEL

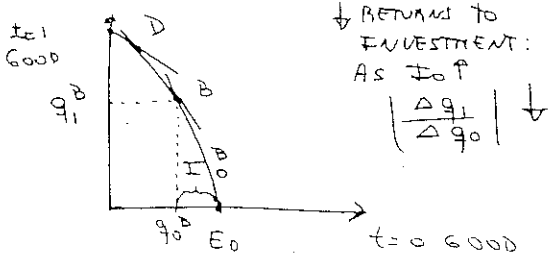
- SINGLE GOOD IN EACH PERIOD
- PREFERENCES OVER THE GOOD IN BOTH PERIODS.
- ASSUME:

PRESENT VALUE OF CONSUMPTION = PRESENT VALUE OF PRODUCTION

⇒ IF INT. RATE IS r AND SPOT PRICES EQUAL TO 1 ⇒

$$C_0 + \frac{C_1}{(1+r)} = q_0 + \frac{q_1}{(1+r)}$$

PROD. TECHNOLOGY



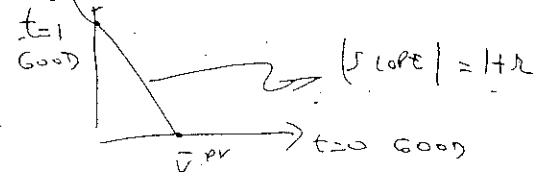
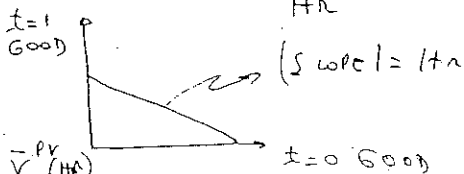
PPF: FEASIBLE COMBINATIONS OF q_0 AND q_1
 ↓ PRODUCTION OF CONSUMPTION GOOD AT $t=0$ & $t=1$

I_0 = INV AT $t=0$

NOTICE: $I_0 = E_0 - q_0$

- ISO VALUE LINES IN P.V. COMBINATIONS OF q_0 & q_1 THAT RESULT IN THE SAME PRESENT VALUE.

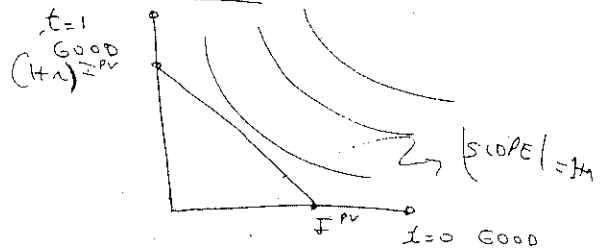
$$\bar{V}^{PV} = q_0 + \frac{q_1}{1+r}$$



SET UP DETAILS

- 2 PERIODS
 - ↳ TIME 0 ($t=0$)
 - ↳ TIME 1 ($t=1$)
- ONE GOOD AT EACH TIME PERIOD
 - ↳ CONSUMPTION
 - ↳ INVESTMENT (EX: CORN)
- PROD. TECHNOLOGY THAT TRANSFORMS $t=0$ GOOD INTO $t=1$ GOOD.
- CONSUMERS HAVE PREF. OVER $t=0$ & $t=1$ GOODS.
- ENDOWMENT:
 - $E_0 > 0$
 - $E_1 = 0$
- SPOT PRICES ARE EQUAL TO ONE
- AGENT CAN BORROW/LEND AT INTEREST RATE r
- AGENTS IDENTICAL WITHIN A COUNTRY

PREFERENCES



$$PV \text{ INCOME} = PV \text{ CONSUMPTION}$$

$$I^{PV} = C_0 + \frac{C_1}{1+r}$$

IF $C_1 = 0 \Rightarrow I^{PV} = C_0$

IF $C_0 = 0 \Rightarrow I^{PV}(1+r) = C_1$

|slope| = $1/(1+r)$ = RELATIVE PRICE OF GOOD IS HORIZ. AXIS IN TERMS OF COMMODITY IN VERTICAL AXIS = PRICE OF $t=0$ GOOD / PRICE OF $t=1$ GOOD

↑ $r \Rightarrow t=0$ GOOD BECOMES MORE EXPENSIVE.

AUTARKY EQUILIBRIUM

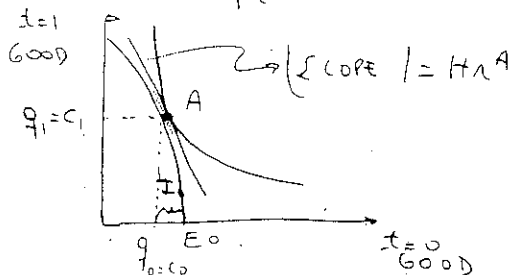
INT. RATE r^A (PRICE RATIO) SUCH

THAT:

- 1) CONS. MAX. UTILITY SUBJECT TO THE RELEVANT BUDGET CONSTRAINT
- 2) FIRMS MAX. PROFITS IN P.V. (I.E. MAX REVENUE IN P.V.)
- 3) MARKETS CLEAN:

$$q_0 = c_0$$

$$q_1 = c_1$$



INT. EQUILIBRIUM

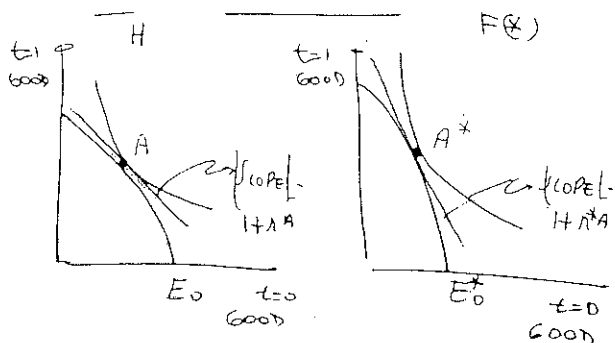
SMALL COUNTRY THAT CAN BORROW/LEND AT RATE r^*

- 1) CONS. MAX. UTIC. SUBJECT TO RELEVANT BUDGET CONSTRAINT
- 2) FIRMS MAX PROFITS IN P.V.
- 3) P.V. CONSUMPTION = P.V. PRODUCTION
i.e. P.V. EXPORTS = P.V. IMPORTS.

IF WORLD HAS ONLY 2 COUNTRIES: WORLD EQUIL

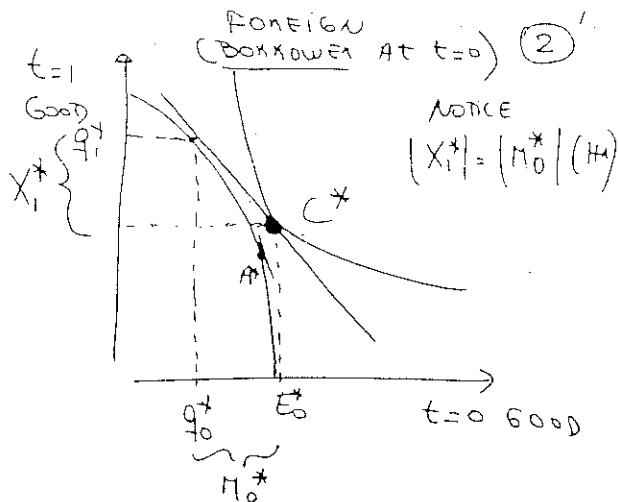
⇒ WORLD MARKETS CLEAN ⇒
VALUE EXPORT = VALUE IMPORTS
ONE COUNTRY OF ANOTHER
IN BOTH PERIODS

TWO COUNTRIES



AUTARKY: $r^A < r^*A$

ASSUME NOW INTERNATIONAL BORROWING/LENDING FEASIBLE ⇒ NEW EQUILIBRIUM



FOREIGN IMPORTS $t=0$ GOOD (FOREIGN ISSUES IOU'S & GIVES THEM TO HOME)

FOREIGN EXPORTS $t=1$ GOOD (FOREIGN GETS BACK IOU'S)