

# Lecture XVII: Basic Trade and Autarky

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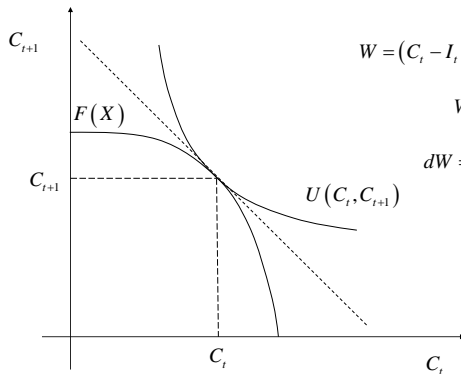
- 1 Capital Markets
  - The Robinson Crusoe Economy
  - Capital Trade
  
- 2 Agricultural Trade

# The Robinson Crusoe Economy

- I would like to start our discussion of trade with the development of credit markets.
- As a starting point, we consider Robinson Crusoe – a castaway with a stock of corn (probably barley) and goats.
- Crusoe must determine how much to consume this year  $C_t$  and how much to “invest” to produce consumption next year

$$\begin{aligned} C_{t+1} &= a + bC_t + cC_t^2 \\ F(C_t, C_{t+1}) &= 0 \end{aligned} \tag{1}$$

# Autarky – No Trade



$$W = (C_t - I_t) + \frac{1}{1+r}(C_{t+1} + (1+r)I_t)$$

$$W = C_t + \frac{1}{1+r}C_{t+1}$$

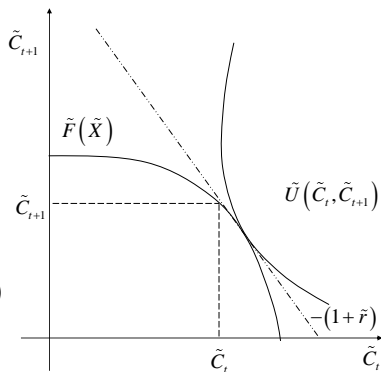
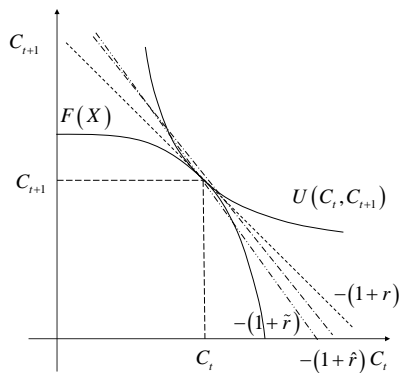
$$dW = 0 = dC_t + \frac{1}{1+r}dC_{t+1}$$

$$\frac{dC_{t+1}}{dC_t} = -(1+r)$$

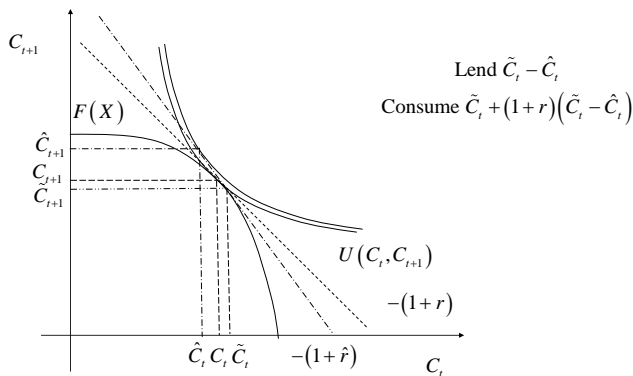
# Completing a Market – Trade

- Next, we assume that there exists a group of natives on the next island over.
- They are cannibals, so Crusoe does not want to live with them - but he will trade.

# Overview of the Capital Market



# Gains to Robinson Crusoe



# Completing the Trade

- Imagine the net consumption of individual 1 in period 1 and 2

$$\begin{aligned}C_t^1(r) - \tilde{C}_t^1(r) &= \hat{C}_t^1(r) \\ C_{t+1}^1(r) - \tilde{C}_{t+1}^1(r) &= \hat{C}_{t+1}^2(r)\end{aligned}\tag{2}$$

- Similar for individual 2

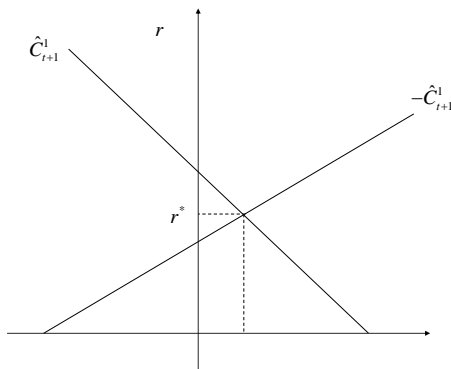
$$\begin{aligned}C_t^2(r) - \tilde{C}_t^2(r) &= \hat{C}_t^2(r) \\ C_{t+1}^2(r) - \tilde{C}_{t+1}^2(r) &= \hat{C}_{t+1}^1(r)\end{aligned}\tag{3}$$

- The market equilibrium would be where the supply and demand of funds balanced

$$\hat{C}_t^1(r) + \hat{C}_t^2(r) = 0, \quad \hat{C}_{t+1}^1(r) + \hat{C}_{t+1}^2(r) = 0\tag{4}$$



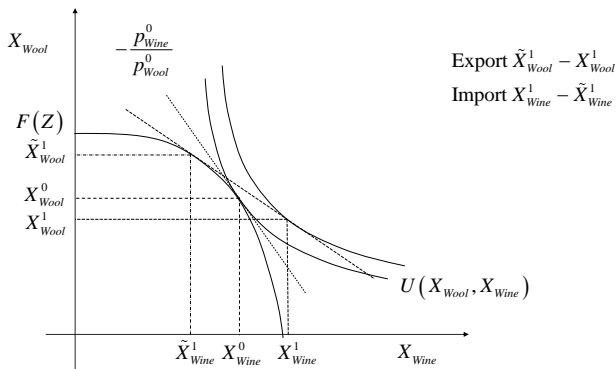
# Consumption Equilibrium



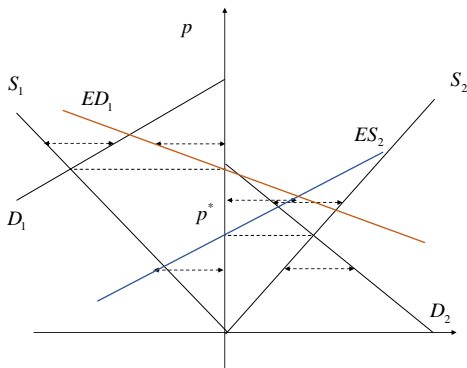
# Agricultural Trade

- Much of the early work revolved around the trade between England and France.
- England could produce wine (not good wine, but wine) or wool.
  - England was probably at an absolute disadvantage – it was probably not as good at producing either sheep or wine.
  - However, England had a comparative advantage at producing wool – it had to give up less wine for each unit of wool produced.
- France faced the same trade-off.
- The question was – what is the gain to trade?

# Trade Diagram



# Back-to-Back Setup



# Back-to-Back Equilibrium

