Lecture III: Banks as Institutions

Charles B. Moss[1]

[1]Food and Resource Economics Department
University of Florida

January 9, 2018

Table of Contents

Financial Markets

- Our discussion from Chapter 1 centered around the use of purchasing power to buy factors of production for use in a business enterprise.
- A fundamental point of finance in general and financial economics in particular is the fact that this purchasing power may not be owned (or in the possession of the individual who has the business opportunity).
  - In the case of agriculture, individuals in the city may have excess funds for investment, but no access to tillable ground for farming.
  - More traditionally, the capital holdings across several individuals may be small, but opportunities of investment may require a significant investment (i.e., in manufacturing plants). Hence, some aggregation would be required.

Grossman - *Unsettled Account*

Perhaps the best way to appreciate the importance of financial intermediators is to consider what the world would look like without them. In their absence, firms seeking finance and savers looking for investment opportunities would have to find each other and negotiate detailed contracts. Will funds be loaned or will they purchase a share of the enterprise? If loaned, for how long, at what interest rate, and against what collateral? If the funds purchase an ownership share, to what fraction of profits and seats on the board of directors will investors be entitled and, if the enterprise fails, how much liability will they bear?

Grossman - Continued

A system without financial intermediators would be, to put it mildly, inefficient. The transaction costs involved in seeking out investors and reaching agreements would be prohibitive, and firm managers, in all likelihood, would be forced to rely on retained earnings (i.e., funds generated by the firm but not distributed to owners) and the fortunes of friends and family to finance expansion. Economic growth, as typified by the modern industrialized-or industrializing-economy would seem impossible (Grossman, 2010, p.1).

Agriculture in the United States

- Farmers in the United States have historically borrowed money to purchase operating inputs, equipment, and land.
- Capital for business endeavors could take on several forms.
  - Equity investment through capital stocks or limited partnerships.
  - More market oriented borrowing instruments such as bonds.
- Both of these instruments are issued by other businesses for sale on financial markets such as the New York Stock Exchange.
- In each case, the market values of these ownership instruments can be used to place a value on the business.

Agriculture in the United States - Continued

- Instead of these market instruments whose values change based on the perceptions of investors, farmers have historically relied on fixed contract borrowing instruments such as mortgages or collateralized loans.
- This reliance on fixed contract borrowing is not unique to agriculture:

  Even with today's deep and liquid securities markets, the transaction and information costs (e.g., securing a bond rating, complying with government and exchange requirements) for small firms or firms in less developed countries may render access to securities markets impractical (Grossman, 2010, p.12)

Agriculture in the United States - Continued

- However, raising capital as agriculture in the United States does may imply additional costs:

  Historically, the obstacles were much higher: active securities markets were few and far between, high transaction costs limited market access to only the largest and most credit-worthy borrowers, and information flows were poor by contemporary standards. Without solutions to the information problem, capital may not flow in sufficient quantities to where it is most wanted, but to where high transaction costs and imperfect information direct (Grossman, 2010, p.12).

Theory: Interaction Between Lenders and Borrowers

- The emergence of the financial market is depicted in Figure 1.

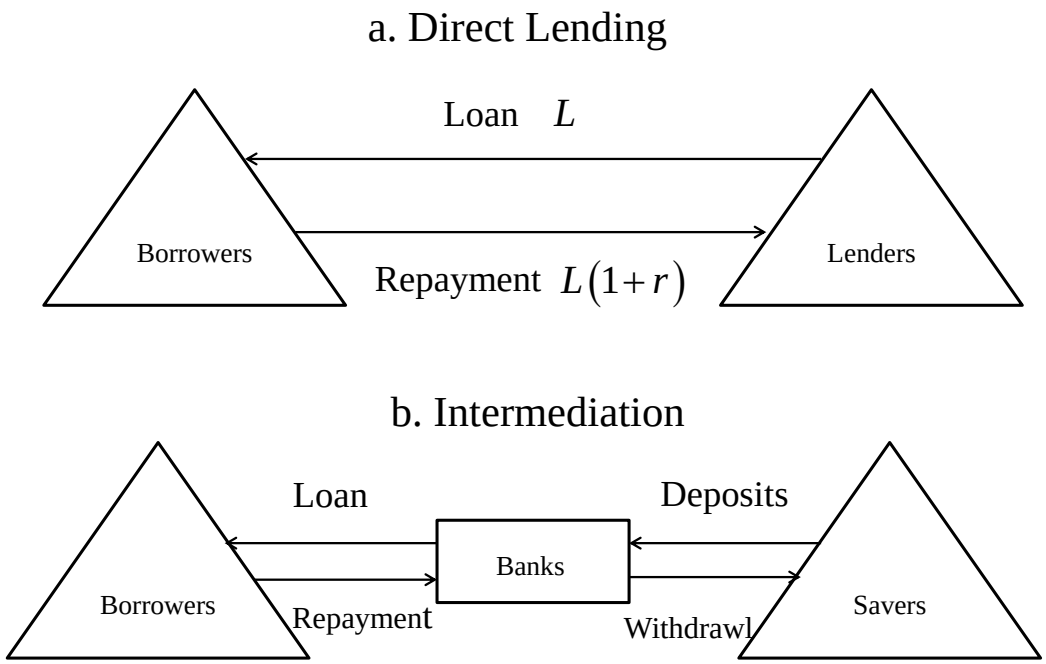


Figure: Comparison of Direct Lending and Intermediation

Direct Lending

- The scale of capital for agriculture at the beginning of the twenty-first century typically precludes direct interaction between borrowers and savers.
  - Not many households have $ 750,000 of cash on hand to lend to a single farmer.
  - If they did, lending that much money to a single farmer would represent a concentrated risk.
- Thus, aggregation of funds to a single lender such as a bank (as depicted in panel b of Figure 1 makes more sense).

- In addition, this aggregation function reduces the interest rate paid by farmers by increasing the liquidity of lenders (or depositors).
- Aggregation also reduces the risk (or exposure) of lenders (beyond a single borrower) which also reduces the interest rate required by lenders.

Positive Theory of Capital - The Austrian Theory

- The development a cohesive capital theory intertwined with the theory of interest rates.
  - Most accept interest rate as the price paid for the use of money.
  - This interpretation is the product of a significant debate both among business and economists.
- Barren Money
  - Historically, money or capital was looked on as barren - producing no output by itself.
  - Money had to be transformed into productive power by the purchase of an input.
  - The question was then how to separate the value added by the money from the value added by the item purchased.

- Based on this argument that money was barren Aristotle chastised the payment of interest. Similarly, the christian church declared that charging interest was a sin and threatened would be bankers with excommunication.

The Austrian Theory of Interest

- A formulation of interest as a payment for impatience or time (Georg Fredrich Roscher (1817-1894) Eugen von Böhm-Bawerk (1851-1914)).
- The key point of Austrian capital theory which was largely missing by more modern capital theories is two-fold.
  - Real capital is different from monetary capital.
  - Capital is heterogenous.
- In the first point we recognize that the price of real capital items (i.e., tractors or operating inputs) is determined by supply and demand based on available resources at any one point in time.

- The second point is more a criticism of Keyensian macroeconomic which regards capital as a single aggregate.
- Once monetary capital is transformed into real capital, it is fixed or less fungible.

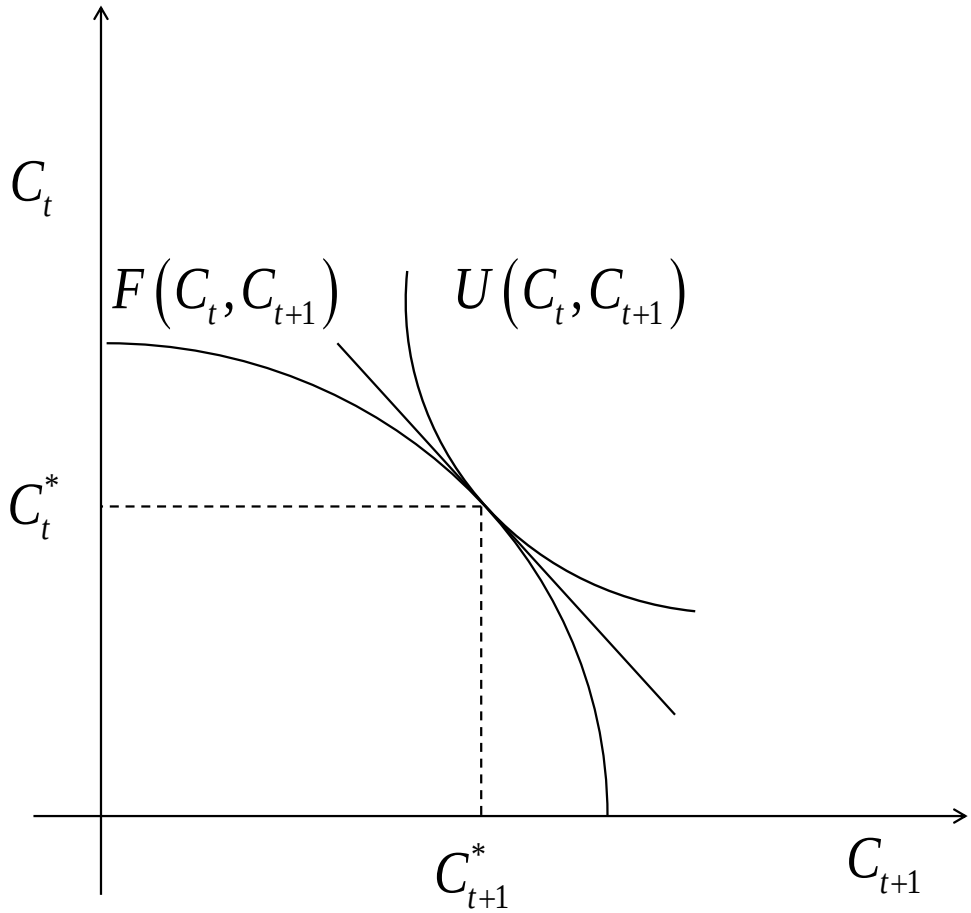
Hayek - Theory of Pure Capital

The term "capital" is a convenient description of the aggregate of non- permanent resources and one difficult to dispense with entirely. Its use is, however, as we have observed before, beset with dangers. Not the least serious of these, and one to which the majority of economists have succumbed at one time or another, is the temptation to regard the stock of "capital" as a quasi-homogeneous, quantitatively determined magnitude which can, like the supply of any other factor of production, be treated as a datum of economic analysis. One of the main conclusions of the while preceding discussion is that the supply of capital can not be treated as a single quantity in this sense. Nevertheless, in view of the established position which this idea occupies in economic theory, it seems advisable to examine it further (von Hayek, 2009).

Modern Treatment of the Financial Market

- A Financial Scenario - Robinson Crusoe the Agricultural Economist
- Robinson is shipwrecked with 100 lbs. of potatoes and sufficient land and tools to plant potatoes.
  - Robison has to decide how much to consume in the current period (C_t) and how much to plant in hope of gaining future consumption (C_{t+1}).
  - We represent Robinson's preferences with the standard utility function where the consumption goods are income in each period ($U(C_t, C_{t+1})$).
  - The production possibilities frontier which depicts the tradeoff between consumption in the current period and consumption next year is written as $F(C_t, C_{t+1})$.
  - The equilibrium without trade (assuming that a capital market does not exist) is presented in the following figure.

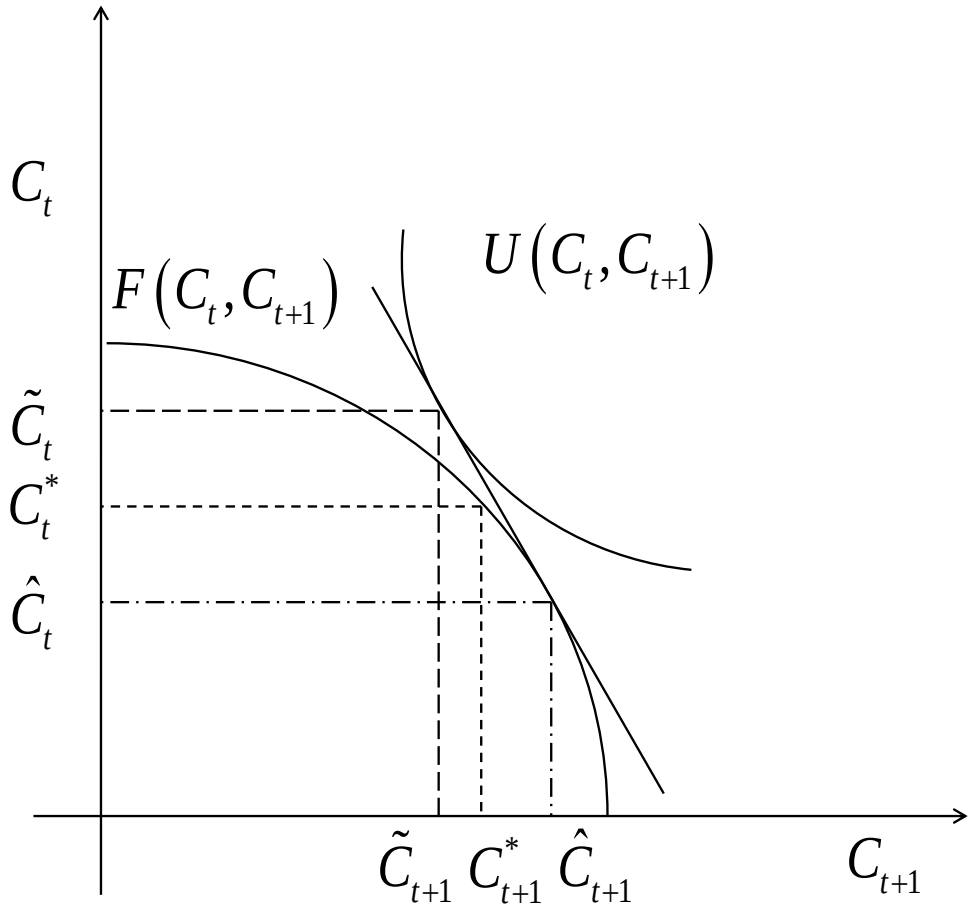
Robinson Crusoe Capital Market



Robinson Crusoe Autarky or Trade

- The solution depicted in Figure 20 is refered to as **autarky** which is a greek term for "self-sufficiency."
- The word is typically used to characterize the prohibition of international trade (Condliffe 1938), but has also been used in the development of monetary theory.
- A general conjecture in economics is that trade potentially makes both individuals better off and can never make both individuals worse off.
- In this example, we allow Robinson to trade with the natives of the adjacent island, the resulting equilibrium is depicted in Figure 3

Crusoe's Borrowing Solution



- In the original solution in Figure 18 Robinson consumes C_t^* in the first period and C_{t+1}^* in the second period.
- Under trade Robison produces $\hat{C}_t$ in the first period, but consumes $\tilde{C}_t$ in the first period.
  - The difference $B_t = \tilde{C}_t - \hat{C}_t$ is borrowed from the natives on the adjacent island.
- Similarly, Robinson produces $\hat{C}_{t+1}$ in the second period, but only consumes $\tilde{C}_{t+1}$.

- The later excess $\hat{C}_{t+1} - \tilde{C}_{t+1}$ represents the total payment for earlier consumption.
  - In most circumstances we assume that the amount paid in the next period has to exceed the amount received in the first period

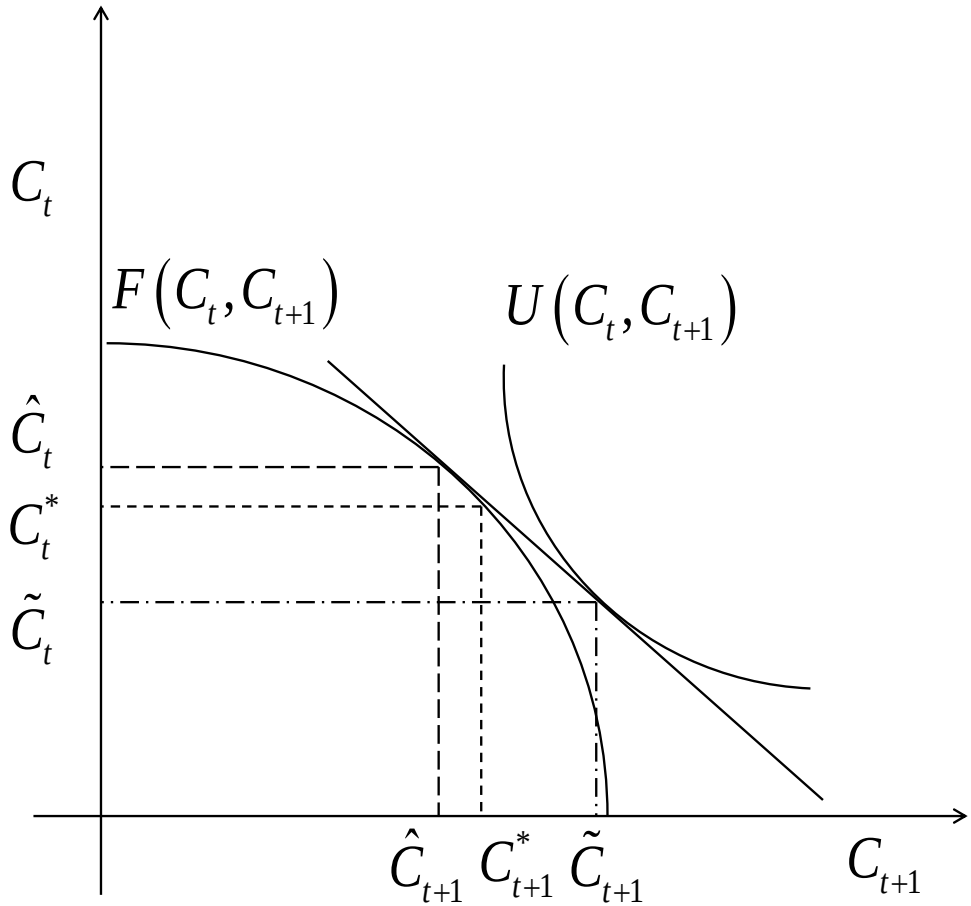
$$\hat{C}_{t+1} - \tilde{C}_{t+1} \gg \tilde{C}_t - \hat{C}_t \tag{1}$$

  - In fact, we would derive the interest rate by this trade off

$$1 + r = \frac{\hat{C}_{t+1} - \tilde{C}_{t+1}}{\tilde{C}_t - \hat{C}_t} \gg 1 \tag{2}$$

- Figure 4 presents a slightly different scenario (based on a different iterest rate demanded by the natives) where Crusoe is a lender.

Crusoe's Lending Solution

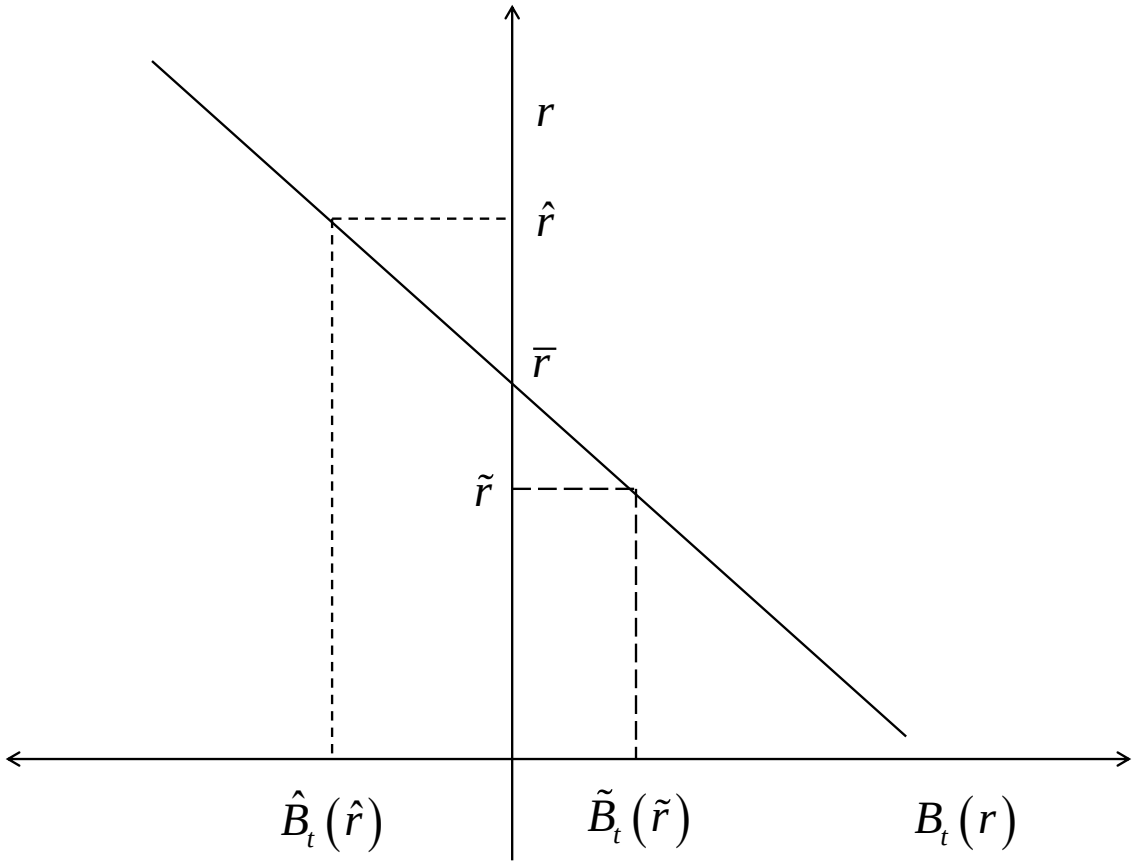


- Based on these solutions, we see that Robinson's capital market decisions are based on the interest rate set by natives on the adjacent island.
- Mathematically,

$$B_t(r) = \tilde{C}_t(r) - \hat{C}_t(r). \tag{3}$$

- If the interest rate is low (the market line is relatively steep), Robinson is a borrower.
- However, if the interest rate is high (the market line is relatively flat), Crusoe is a lender.
- Figure 5 maps out Robinson's demand for credit as a function of the interest rate.
- Figure 6 imposes the native's decisions forming a credit market and defining a capital equilibrium

Robinson Crusoe's Loan Demand



Capital Market Equilibrium