ECON2103: Financial Economics
Lecture 1

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This week's topics

- Introduction
- Classical perfect market
- Market failure
- Market power
- Information economics
- The Modigliani-Miller theorem
- Intertemporal decision making
- Consumers' problem
- The individual's wealth constraint
- The market opportunity line
- Interest rate
- Examples
- Perfect capital markets
- Capital market imperfection

Description of this course

- Although at first financial systems may appear to be complicated, financial economics provides a straightforward analytical and descriptive picture of how all such systems work by performing a set of functions.
- Microeconomic theory provides a theoretical framework for analyzing the economic behavior of individuals who are regarded either as consumers of products or as managers of firms.

What we learn in this course

- Financial decisions made by individuals in their roles as capital market participants can be grouped into 3 types.
- The first type is how, given an initial amount of wealth and a set of investment opportunities, the individual decides to allocate consumption over time.
- The second type of financial decision is the household finance decision.
- The third type of individual financial decision is how to allocate that amount amongst the investment opportunities available in the capital markets.

Road map

- We consider the tasks faced by individuals and managers in this certainty world within a perfect capital market.
- We learn how the price of investment funds is determined by the interaction of lender (or investor) preferences and borrower needs.
- We explain how the managers of firms can combine knowledge of security pricing processes with information about opportunities for investing in a firm.

Classical perfect market

- In the classical perfect market,
  - buyers and seller of products are assumed to be price takers and cannot influence the price of a product by their decisions;
  - they are also assumed to make rational decisions based on complete and accurate information that is costless to obtain.
- When either of these assumptions is violated, a market failure is said to have occurred.

Market failure

- In the first type of market failure at least one of the parties to the exchange exhibits some form of markets power, meaning that individual parties transacting in the market can influence the market price.
- The second type of market failure deal with what is popularly referred to as information economics. Information economics recognizes that different parties to a transaction may have different information about the environment in which they are trasacting.

Three important components

- Financial decisions by individuals
- Financial decisions by firm managers
  - The capital structure of a firm is the mix of debt (i.e., borrowed funds) and equity that management decides to employ to finance the operations of the firm.
  - The theory, referred to the Modigliani-Miller (the MM) showed that in a perfect capital market the capital structure of a firm is irrelevant.
- Capital market, risk and asset pricing
  - As with microeconomic theory, the baseline behavior of individuals and managers is studied under the assumptions of idealized market conditions, in what is referred to as a perfect capital market.
  - The first extension of perfect capital market theory has been to the consideration of risk in financial decision making.

The theory of consumer choice

- In a typical developed economy, consumers' purchases determine the outcome of more than two-thirds of the output produced.
- Consumers must consider what they can afford and what they would like to consume.
- The former consideration is expressed mathematically by a budget constraint and the latter by a function that expresses their preferences.

The simple setting

1. Every consumer lives in a world of certainty; that is, all decision-relevant information is known exactly to the consumer, now and for all future time.
2. Only two points in time are of importance, the present time and a later time that accounts for effects that may persist into many future periods.
3. There are many transactors in the capital market, and no single transactor is large enough to affect prices or interest rates.

The simple setting continued

4. Every market participant has the same (certain) information about market prices and the relevant terms of any transaction.
5. Transactions in the capital market can be made without payment of charges other than the ruling market rate of interest.

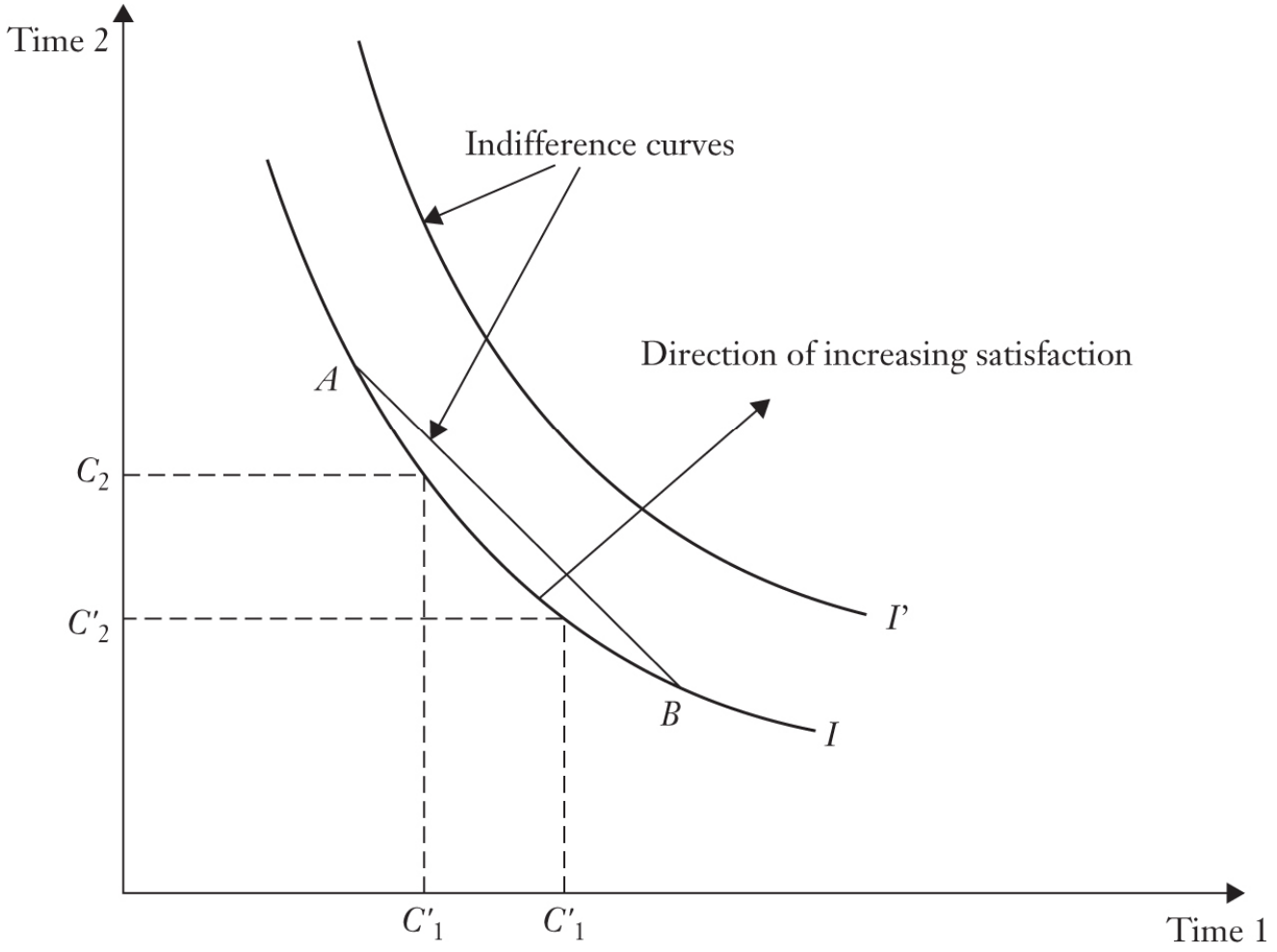
Describing individuals' preferences

1. The consumer can compare one pair of consumption (C_1, C_2) standards with another, say (C^0_1, C^0_2), and state which, if either, is preferred.
2. The consumer can make the comparisons transitively; that is, if one consumption standard is preferred to a second, and if the second is in turn preferred to a third, then the first is also preferred to the third.

Description continued

3. The higher the consumption expenditure, the greater the consumer satisfaction. This means that increasing satisfaction is represented in the diagram by movements in north, east, or northeast directions.
4. Any average over two equally satisfactory different consumption combinations yields a higher level of satisfaction than either of the combinations comprising the average.

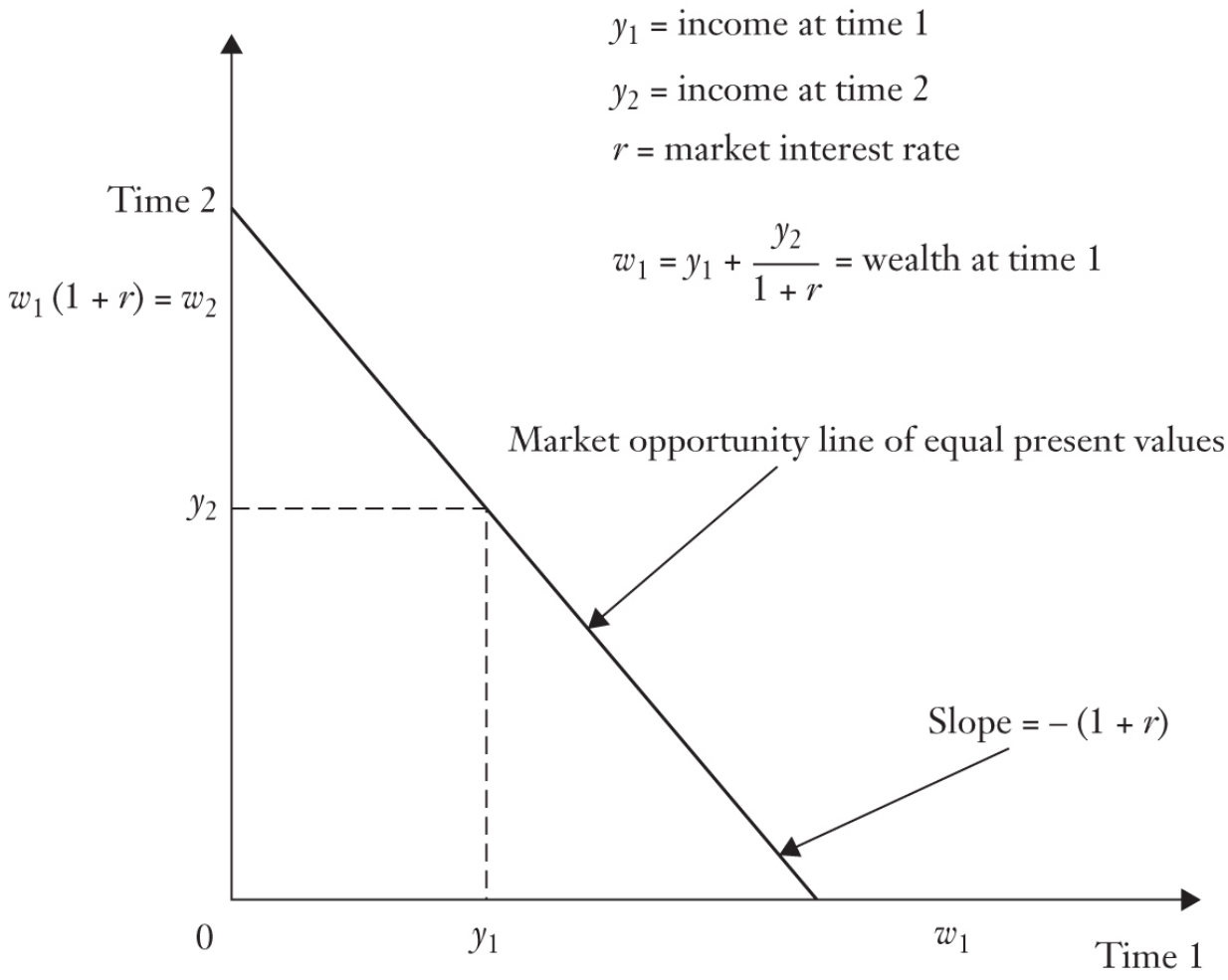
FIGURE 2.1
INDIFFERENCE CURVES FOR PERIOD 1 AND PERIOD 2 CONSUMPTION STANDARDS



Substitution and constraint

- The slope of an indifference curve at any point is called the marginal rate of substitution between present and future consumption.
- Consumers' choices are subject to the limitations of what they can afford (constraint).
- The individual's wealth constraint defines the maximum present value of different consumption expenditures that can be purchased by spending all available resources.
- This is also called the market opportunity line because it represents different combinations of funds available at times 1 and 2.

FIGURE 2.2
INDIVIDUAL'S WEALTH CONSTRAINT



The rate of interest

- In the present analysis the capital market is assumed to be perfect.
- In such a market only a single equilibrium price for credit can prevail.
- Denote this price by *p*, where p is the time 1 price for delivery of $1 at time 2 (i.e., one time period later).
- We express this price as an interest rate.

Example continued

- If p is the time 1 price of $1 to be delivered at time 2, we can say alternatively that $1 is the time 1 price of a sum *1/p* to be delivered at time 2.
- The sum initially borrowed or lent increases if individuals prefer to spend money now rather than later, as will usually be the case.
- When r denotes the rate of interest,

$$\frac{1}{p} = 1 + \frac{1-p}{p} = 1 + r \rightarrow p = \frac{1}{1+r}$$

The market rate of interest

- Each individual chooses her total consumption expenditures such that the ratio of marginal utilities for consumption at times 1 and 2 is equal to *1+r*.
- The market interest rate is the reward consumers receive for deferring consumption.

Reconciling preferences with opportunities

- We study Figure 2.3.
- Note that

$$y_2 - c_2^* = (c_1^* - y_1)(1+r) \qquad (2.3)$$

which implies

$$\frac{y_2 - c_2^*}{1+r} = c_1^* - y_1$$

or

$$c_1^* + \frac{c_2^*}{(1+r)} = y_1 + \frac{y_2}{(1+r)} = w_1 \qquad (2.4)$$

- The present value of optimal consumption choices is just equal to initial wealth.

FIGURE 2.3
INDIVIDUAL'S CONSTRAINED UTILITY-MAXIMIZING CHOICE OF CONSUMPTION STANDARDS

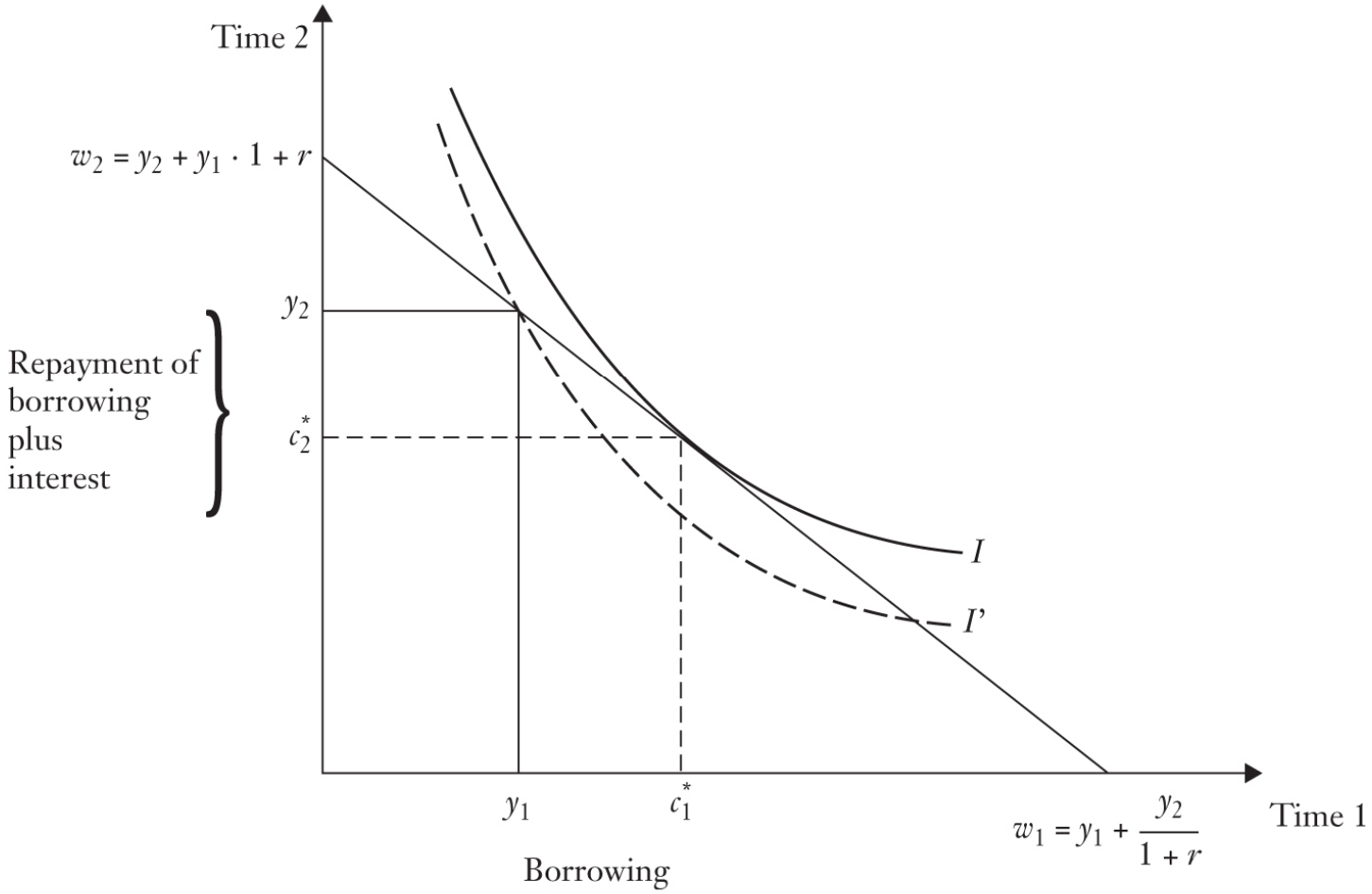
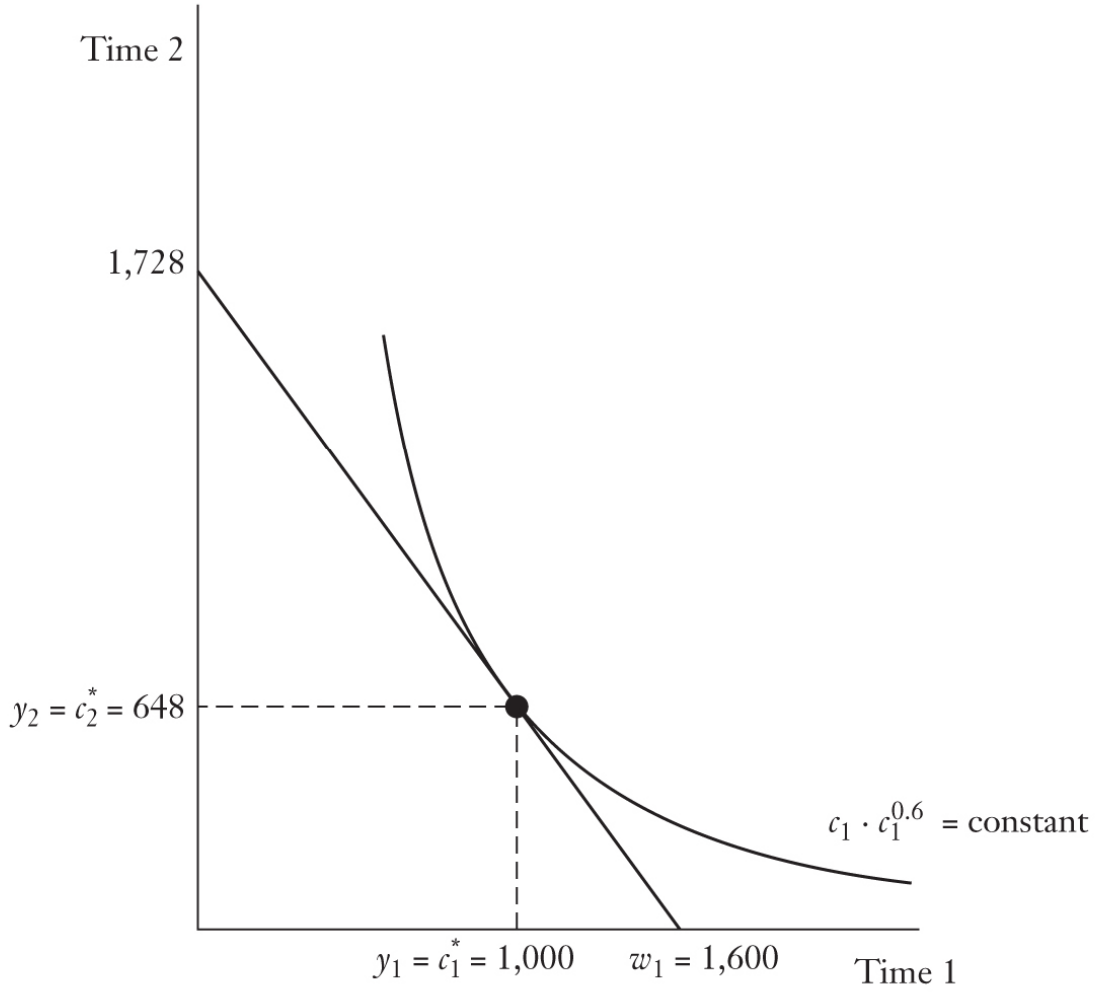


FIGURE 2.4
INCOME AND CONSUMPTION PATTERNS FOR MATHEMATICAL EXAMPLE



Numerical example

- Consider the following two income streams and a market rate of interest of 10%:

$$(y_1, y_2) = (\$1,000, \$660) \quad and \quad (y_1^0, y_2^0) = (\$300, \$1,430)$$

- Then

$$w_1 = 1,000 + \frac{660}{1.1} = \$1,600; \; and$$

$$w_1^0 = 300 + \frac{1430}{1.1} = \$1,600$$

Example continued

- In a perfect capital market the consumer will be indifferent between these two income streams because their present values are equal, so that w_1 and w^0_1 are perfect substitutes.
- The consumer can obtain the optimal consumption pattern (c_1^*, c_2^*), also required to have a present value of $1,600, with either income stream.

Another example

- A bit more mathematical example includes:

$$\max_{c_1, c_2} c_1 c_2^{0.6}$$

$$subject\ to\ y_1 = \$1,000, y_2 = \$648, and\ r = 0.08$$

- Then, $w_1 = y_1 + \frac{y_2}{1+r} + r = 1,000 + \frac{648}{1.08} = \$1,600$
- The solution must satisfy

$$c_1 + \frac{c_2}{1.08} = \$1,600$$

which implies

$$c_2 = (\$1,600 - c_1) \times 1.08$$

Example continued

- The original problem can be rewritten

$$\max_{c_1} c_1[(1,600 - c_1) \times 1.08]^{0.6}$$

- By taking the derivative (note $(ax^n)' = anx^{n-1}$),

$$(1,600 - c_1)^{0.6} - c_1 \times 0.6 \times (1,600 - c_1)^{-0.4} = 0$$

- Then

$$1,600 - c_1 = 0.6 \times c_1$$

- Therefore, we obtain:

$$c_1^* = \$1,000$$

Assumptions: perfect capital market

- It is assumed that consumers operate in a perfect capital market in which:

1. there are many transactors, and no single transactor is large enough to affect prices or interest rates;
2. the same (certain) information about market prices and the relevant terms of any transaction are available to all parties; and
3. there are no costs of transacting other than the ruling market rate of interest.

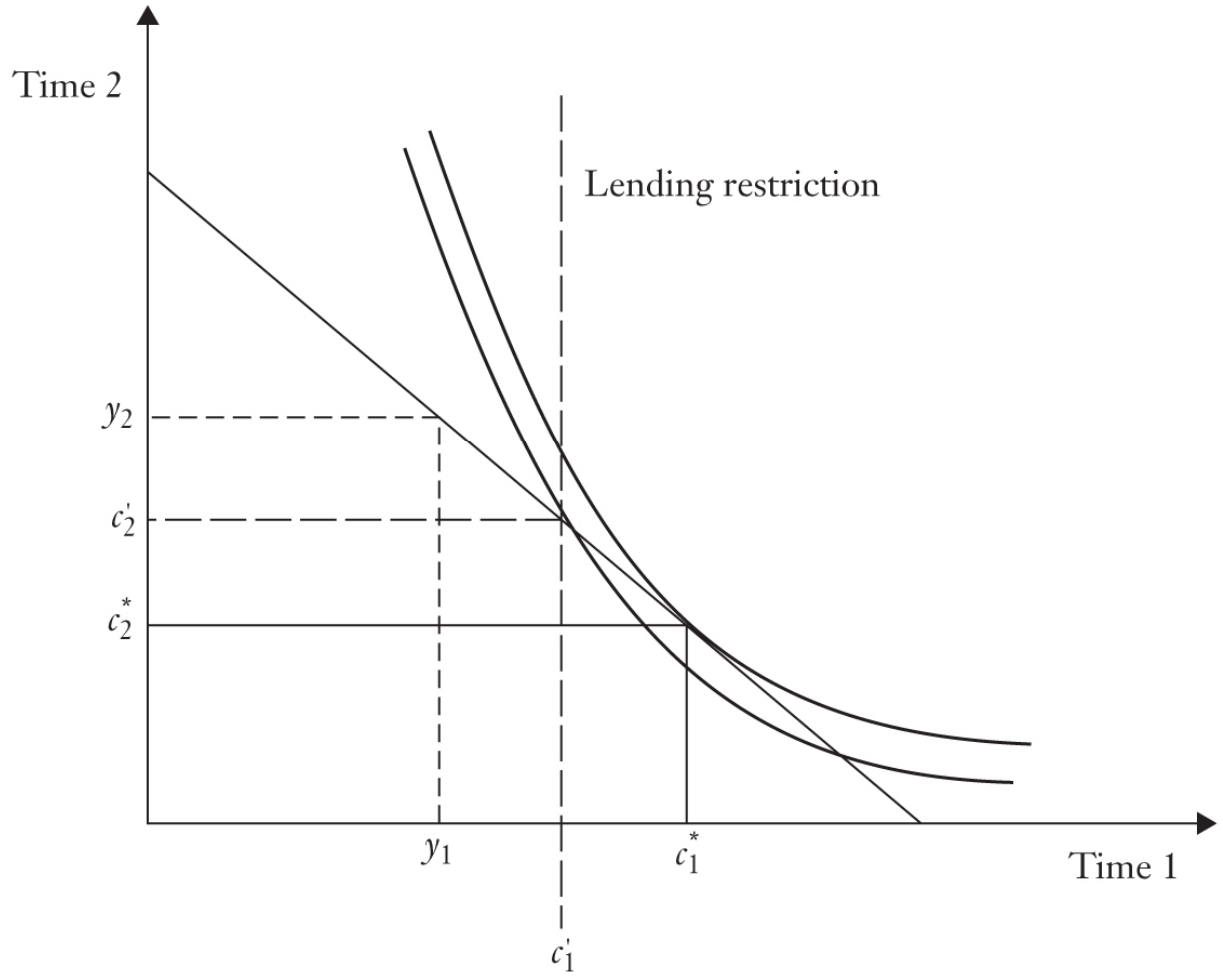
Capital market imperfection

- Individuals in economies with a perfect capital market are never made worse off, and are usually made better off, by their ability to borrow or lend freely in choosing consumption patterns.
- The presence of capital market imperfections is generally regarded unfavorably.
- For example, transactions charges such as brokerage fees restrict the amount of initial wealth available and consequently reduce the level of a consumer's well-being.
- Similarly, other kinds of imperfections such as unequally distributed information can inhibit or even prevent certain financial transactions from taking place.

Illustration

- Consider the effects of regulatory constraints that restrict lending.
- Such an intervention has a potential for leaving at least some individuals worse off, as illustrated in Figure 2.5.
- Here the individual is affected by a lending restriction that permits borrowing only up to a fixed maximum amount $c'_1 - y_1$, an amount less than the $c_1^* - y_1$ that would be borrowed if there were no constraint.
- The consumer can only attain the consumption standard (c'_1, c'_2), which is tangent to an indifference curve at a lower level of satisfaction than that reached by (c_1^*, c_2^*).

FIGURE 2.5
A LENDING RESTRICTION REDUCING INDIVIDUAL SATISFACTION



Key points 1

- Financial economics provides a straightforward analytical and descriptive picture of how all such systems work by performing a set of functions.
- The value of available assets at a given time consists of the market value of stocks of real durable goods and financial assets carried over from previous periods.
- The theory of consumer choice examines the trade-offs and decisions consumers make in their purchase decisions. The preference of consumers is expressed in their utility functions.

Key points 2

- A perfect capital market means consumers can never be worse off by having the freedom to borrow or to lend.
- Capital market imperfections include transactions charges, unequally distributed information, and regulatory constraints.
- As each consumer decides how much to lend or borrow, the aggregate of consumer decisions will determine the total amount of lending or borrowing and thus in turn the market interest rate.
- The market interest rate is the reward consumers receive for deferring consumption.