

Lecture 12

Money and Banking, Econ 345

Oleksiy Kryvtsov

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Summary so far

- So far - only one way to acquire consumption at a later time - by holding fiat money
- We start to study demand for money in presence of other assets
- Later: study banking - intermediation of assets into money and back, and central banking
- Today - capital
 - special asset because it affects the level of output

Equilibrium without money

- Remember that young want to use some of their endowment in order to consume when they become old
- Young : convert k_t units of their endowment into capital in period t , the budget constraint is

$$c_1 + k_t \leq y$$

- Old: consume goods produced by the capital - xk_t , the budget constraint is:

$$c_2 \leq xk_t$$

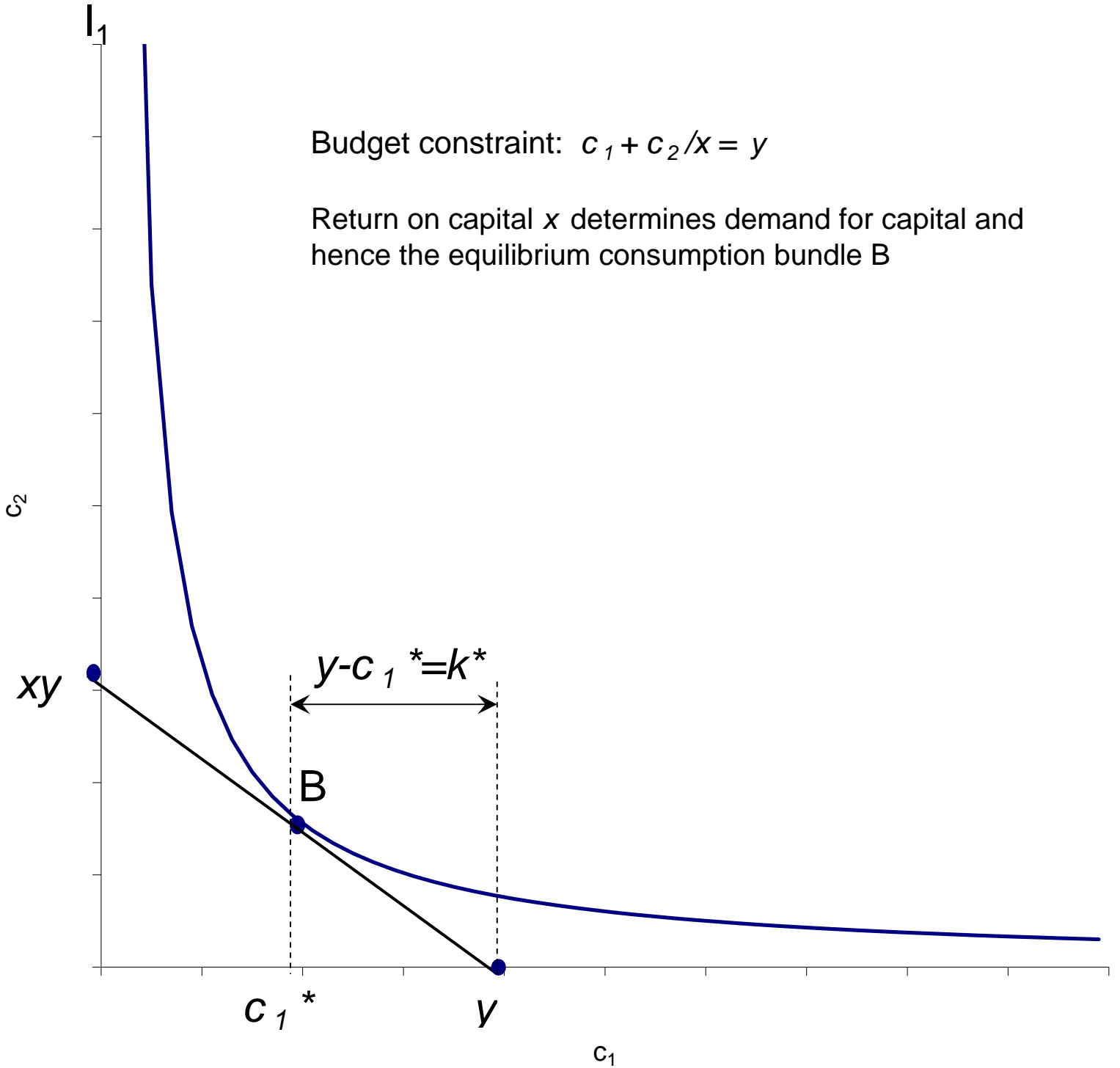
- Lifetime budget constraint

$$c_1 + \frac{c_2}{x} \leq y$$

Equilibrium with capital

Budget constraint: $c_1 + c_2/x = y$

Return on capital x determines demand for capital and hence the equilibrium consumption bundle B



Rate-of-Return equality

- Suppose there are other assets (ways to save value over time)
 - example: (1) claims on land, (2) claims to future income (loans)
- Suppose loans pay interest r , what is the relationship between r and x when both assets are valued?
- Rate-of-return equality (or arbitrage condition)

$$r = x$$

- If $r > x$ - only invest in loans, if $r < x$ - only invest in capital
- Rates of returns on *all* valued assets must be equal

Can money coexist with another assets?

- Yes, as long as real return on money is equal to returns on other assets
- Recall: return on money is $\frac{n}{\mu}$
 - n - population growth, μ - money growth
- Money coexists with other assets rate-of-return equality requires

$$\frac{n}{\mu} = r = x$$

- CF, example 6.1: Consider an OLG economy with two assets - capital and money. Suppose the number of young people born in period t is determined by $N_t = 1.5N_{t-1}$. Capital pays the gross rate of return $x = 1.25$. For what value of μ will fiat money be valued?

$$\mu = \frac{N_t / N_{t-1}}{x} = \frac{1.5}{1.25} = 1.2$$