FM1 Notes, Spring 2020
Introduction

I. Optimal Resource Allocation without Uncertainty and Fisher Separation

Basic Assumptions

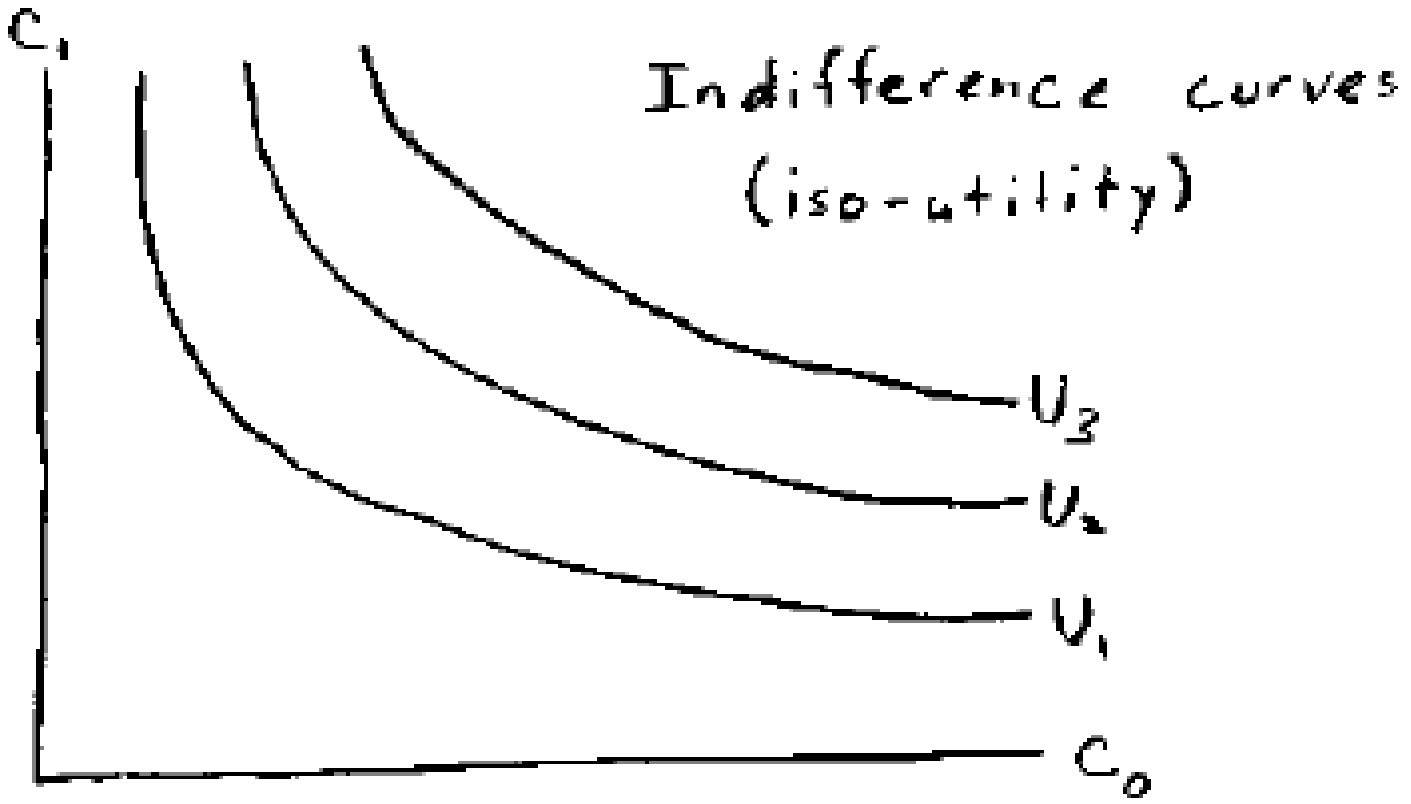
Two dates: today and tomorrow
U'>0, non-satiation

Diminishing marginal utility: U''<0

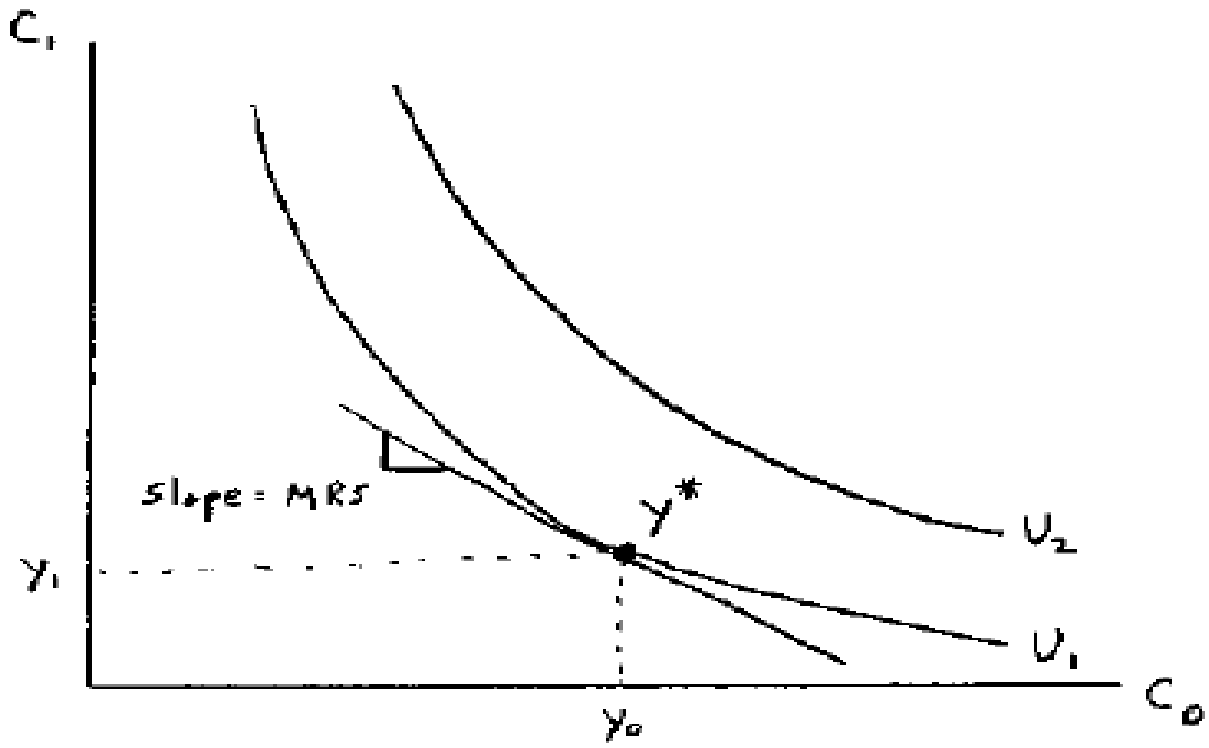
Initial endowment: y*

No uncertainty for the time being.

Concept of Indifference Curves



Case 1: In the Absence of Capital Market and Production



In this case, each agent consumes just its own endowment. There is no production technology to transform current consumption into future consumption, and there is no trade. Given endowment y*, the agent achieves a utility level U_1.

Given $U(C_0,C_1)$, the marginal rate of substitution (MRS) is

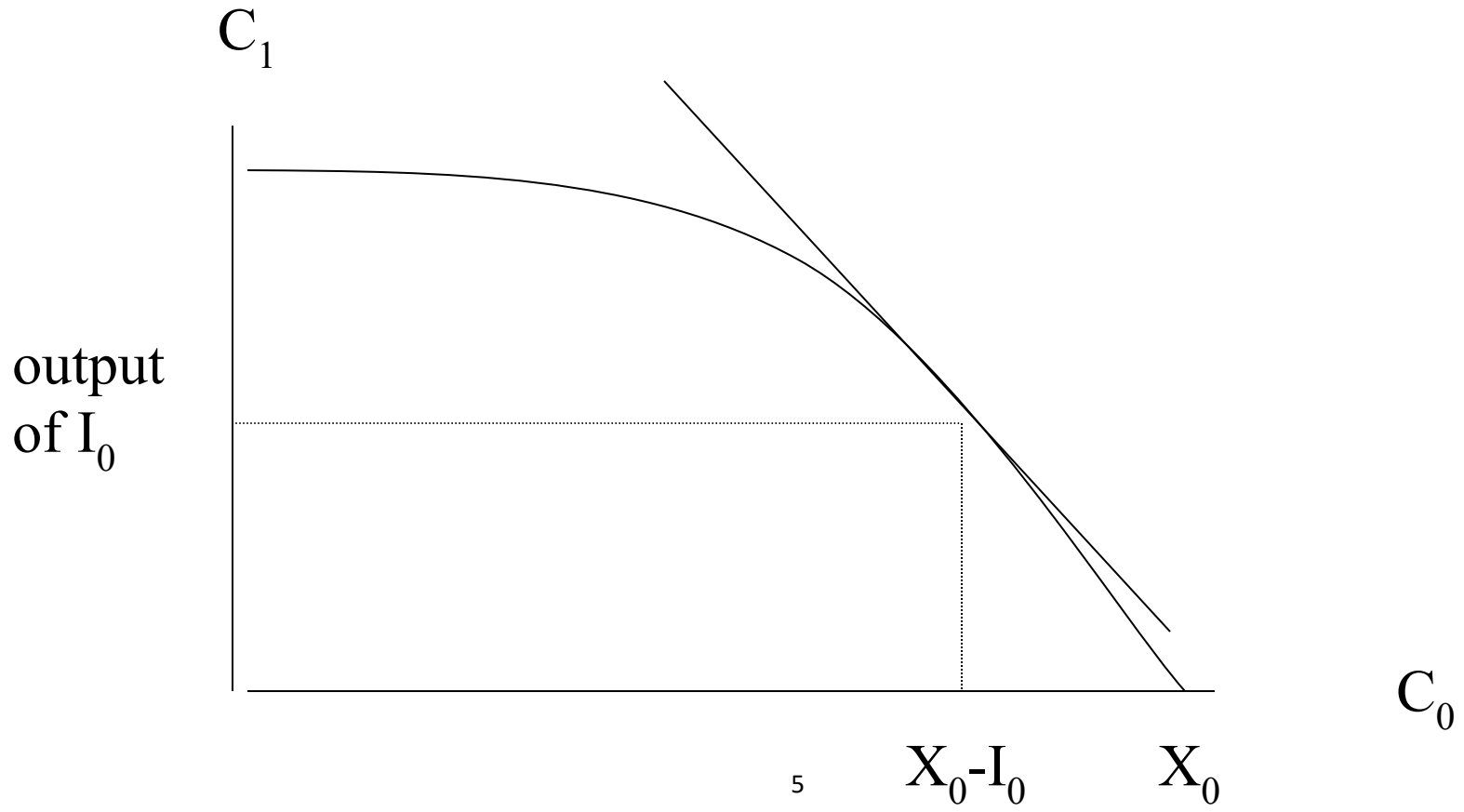
$$MRS = (\partial C_1/\partial C_0 \mid \text{given utility level constant}) = -(1+r),$$

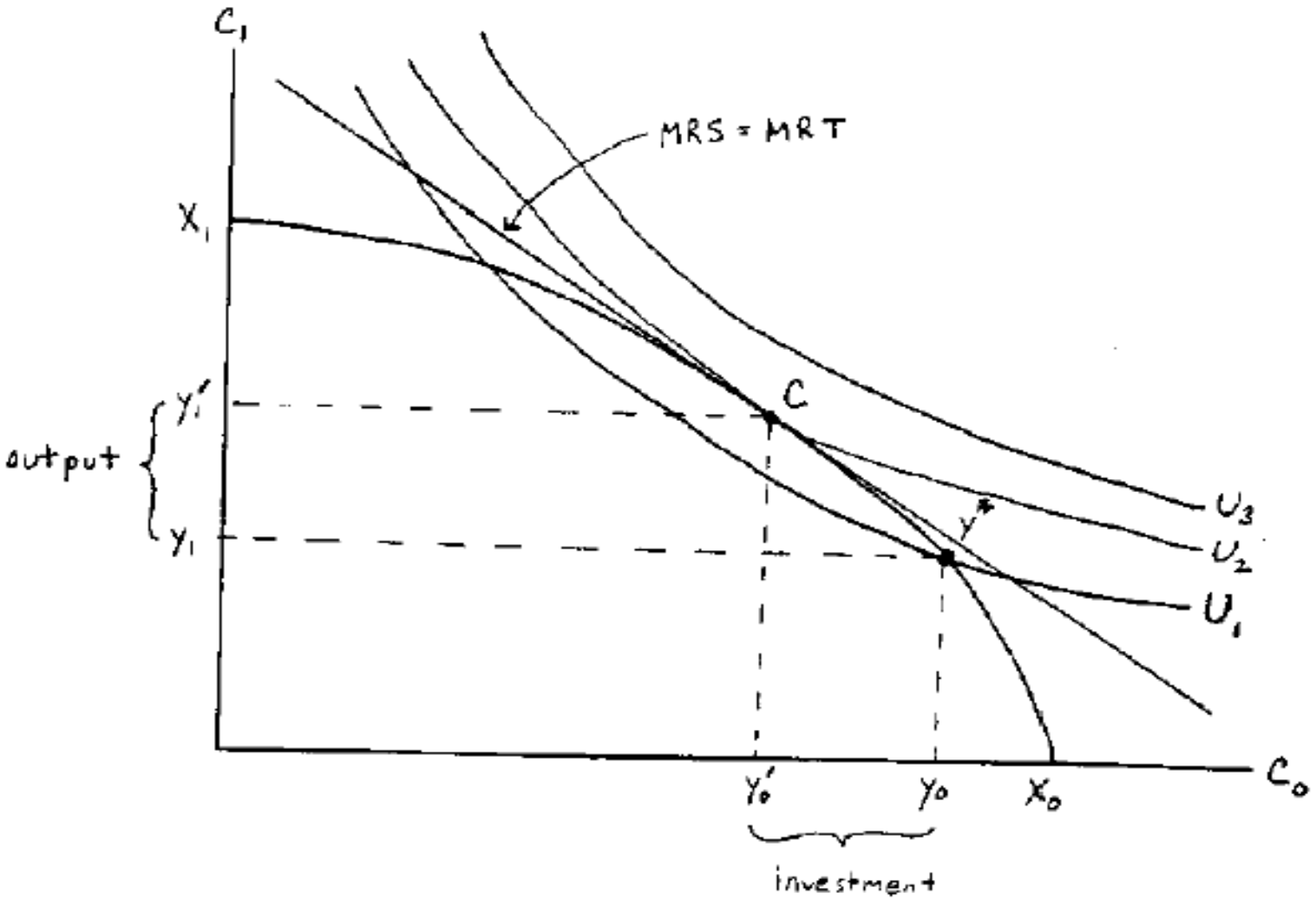
where r is the individual's subjective rate of time preference.

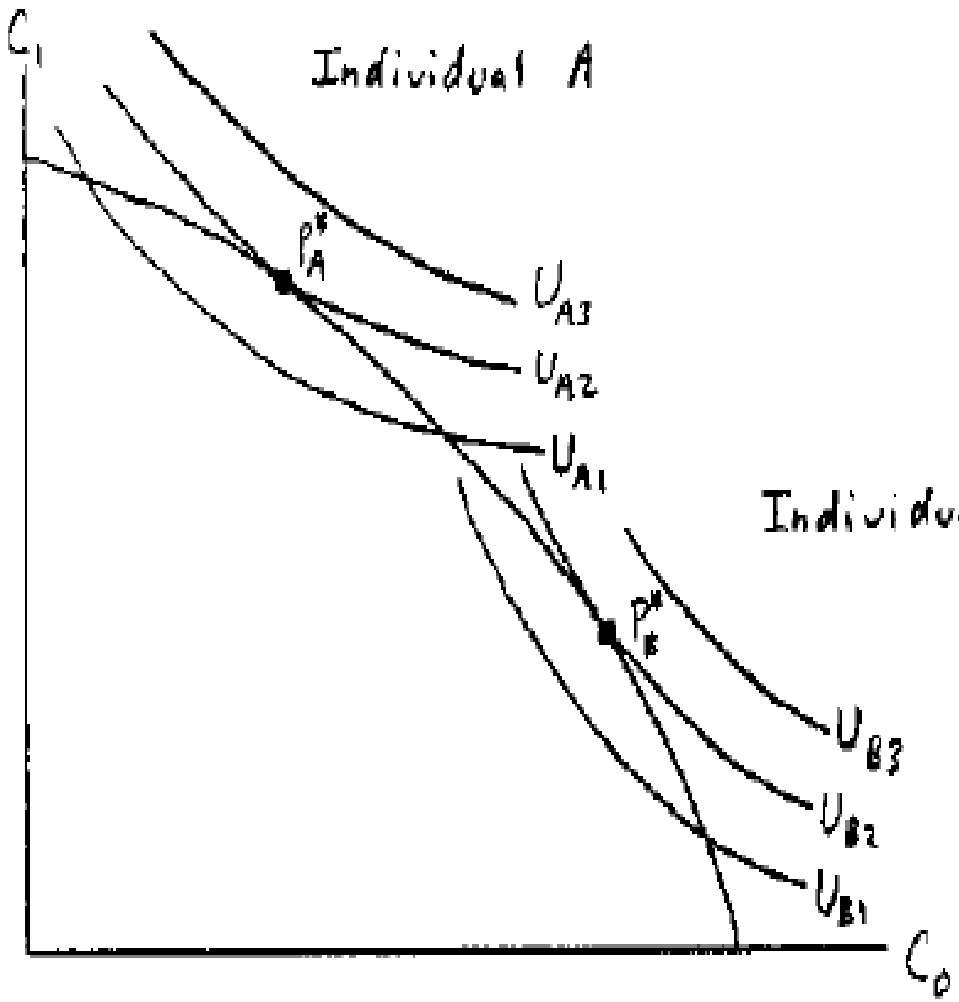
Case 2: With Production Technology, But No Capital Market

In this case, rational investors will invest their money in projects that earn the highest possible returns. Assume diminishing marginal return on investment.

Review of Production Possibility Frontier

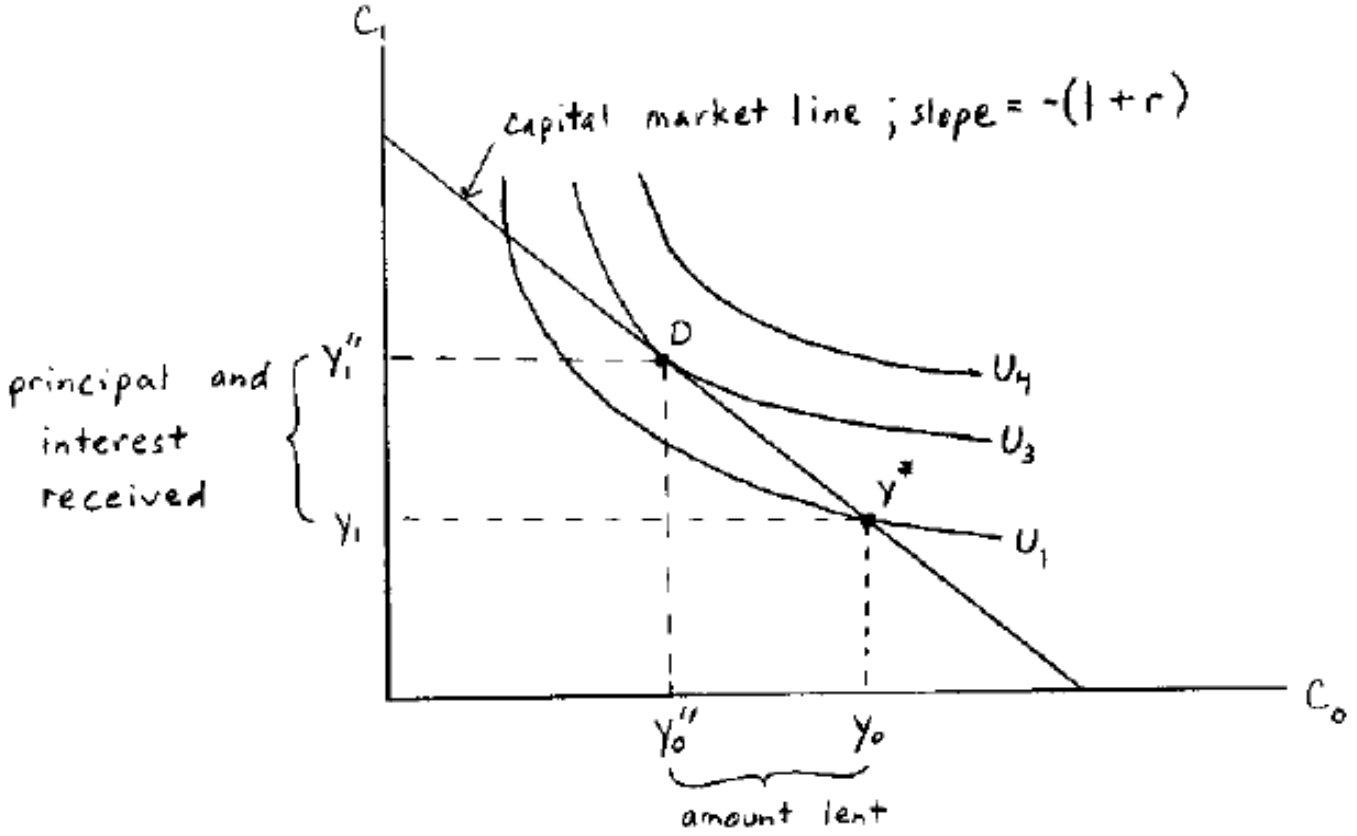



C_1
MRS = MRT
X_1
Y_1'
output
Y_1
C
U_3
U_2
U_1
Y^*
C_0
Y_0'
Y_0
X_0
investment

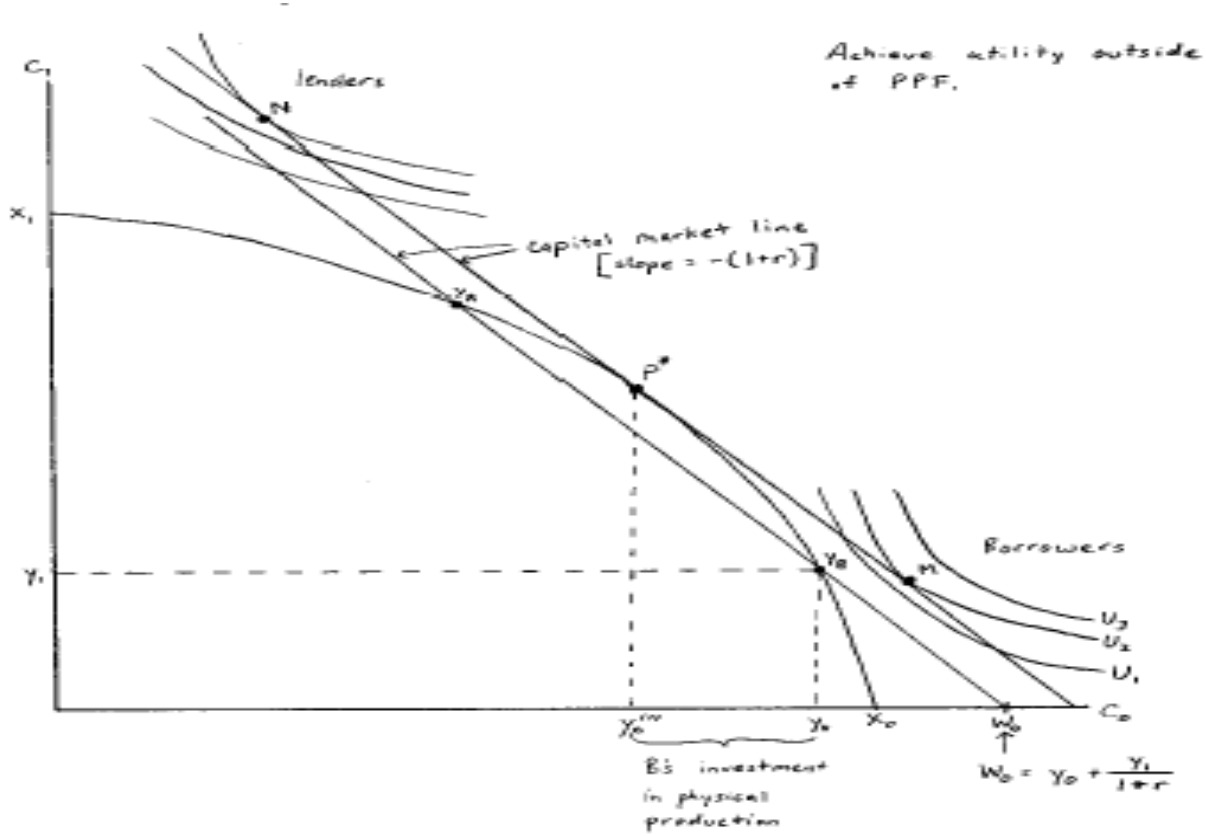


Individual B (higher time preference rate)

Case 3: With Capital Market, But No Production Technology



Case 4: With Production Technology and a Capital Market



Implication

$MRS_i = MRS_j = MRS = -(1+r)$, for all individual investors, i and j.

Fisher Separation Theorem

Given perfect and complete markets, the production decision is governed solely by an objective market criterion without regard to individuals' subjective preferences that enter into their consumption decisions.

Implication: Investment decision can be delegated to managers. Every investor will make the same production decision regardless of his/her indifference curves.

If capital market is not perfect (borrowing and lending rates are different), then the Fisher separation theorem may not hold.