

BASIC CONCEPTS FROM MICROECONOMICS

Goals for this Section

- A macro model is built from a description of consumers and their preferences, and the technology available to produce goods.
- This means we want to review some basic micro concepts

- The basic idea is that given optimizing behavior by households and firms, we can analyze how economic agents respond to changes in their environment

The Consumer Problem

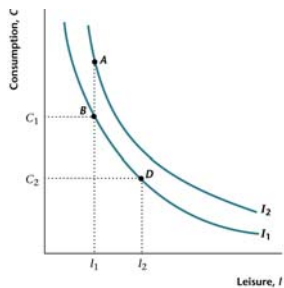
- The consumer attempts to maximize preferences subject to institutional constraints
- Preference are represented by a utility function.
- $U(C,I)$
C = Consumption I = leisure

Properties of the Utility Function

- More is preferred to less
- The consumer likes diversity in the consumption bundle
- Consumption and leisure are normal goods

DEFINITION: An indifference curve connects a set of points, with these points representing consumption bundles among which the consumer is indifferent

Figure 4.1 Indifference Curves



Properties of an Indifference Curve

- An indifference slopes downward (more is preferred to less)
- An indifference curve is convex, that is bowed-in toward the origin (diversity)

DEFINITION: The marginal rate of substitution of leisure for consumption is the rate at which leisure is substituted for consumption goods

- $MRS_{l,c} = -[\text{slope of the indifference curve passing through } (C,l)]$
- $MRS_{l,c} = -MU_l/MU_c$

The budget constraint represents the institutional constraints faced by the consumer

- Ask – What are the sources of income?
 - (1) wage income – wN
 N = hours spent working
 - (2) after tax dividend income- $\pi - T$
- Total Sources = $wN + \pi - T$

- Ask-What are the uses of income?
 - (1) Consumption

- The budget constraint is determined by writing total uses equal total sources
- $C = wN + \pi - T$
- Rewrite the budget constraint so that leisure appears as a variable

$$I + N = h$$

I = leisure time h = hours available

Hence:

$$C = w(h-I) + \pi - T$$

Figure 4.3 Representative Consumer's Budget Constraint ($T > \pi$)

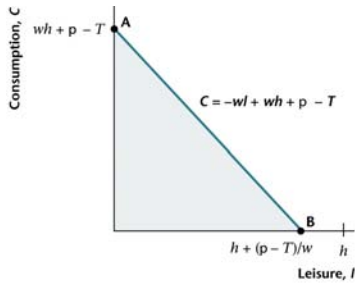
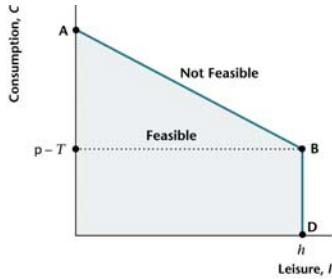


Figure 4.4 Representative Consumer's Budget Constraint ($T < \pi$)



Representation of the Consumer's Choice Problem

Figure 4.5 Consumer Optimization

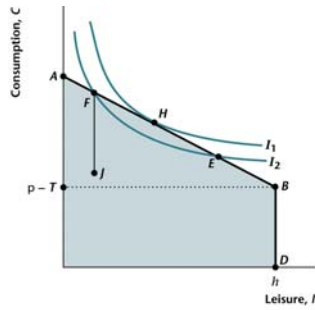
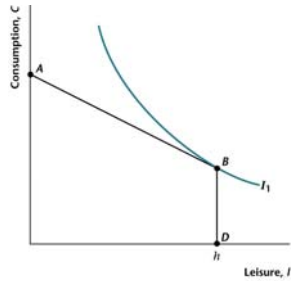
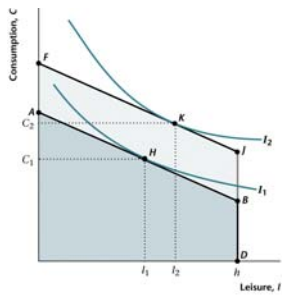


Figure 4.6 The Representative Consumer Chooses Not to Work



How does the consumer responds to an increase in after tax dividends?

Figure 4.7 An Increase $\pi - T$ for the Consumer

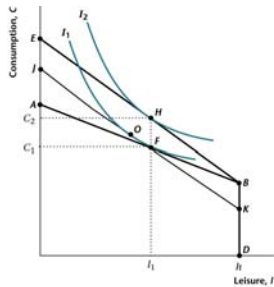


How does the consumer respond to an increase in the real wage?

Some Basic Concepts

- Income Effect – With normal goods, an increase in income means you want more of both goods
- Substitution Effect – when relative prices change, consume more of the good that is cheaper

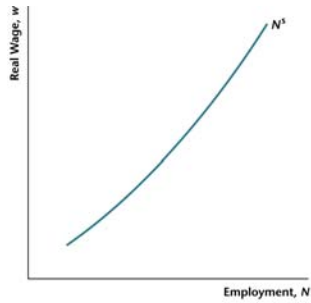
Figure 4.8 Increase in the Real Wage Rate—Income and Substitution Effects



Summary of responses to an increase in real wage

	Cons.	Leisure
Income Effect	+	+
Substitution Effect	+	-
Total	+	?

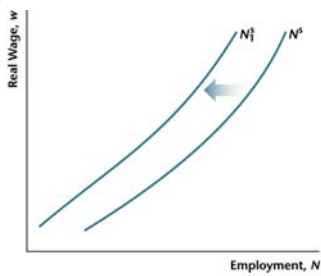
Figure 4.9 Labor Supply Curve



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Figure 4.10 Effect of an Increase in Dividend Income or a Decrease in Taxes



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The Firm's Problem

- Wants to maximize profits subject technology condition (production function) and input cost
- Definition: The marginal product of a factor of production is the additional output that can be generated with one additional unit of that factor, everything else held constant.

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- The optimality condition: Hire input up to the point where the marginal cost associated with an additional factor is just equal to the additional output.
- $w = MP_L$

Figure 4.15 Production Function, Fixing the Quantity of Labor and Varying the Quantity of Capital

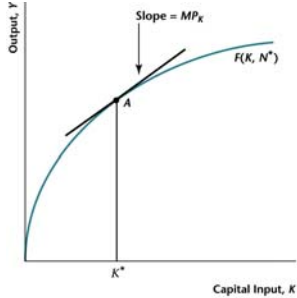


Figure 4.16 Marginal Product of Labor Schedule for the Representative Firm

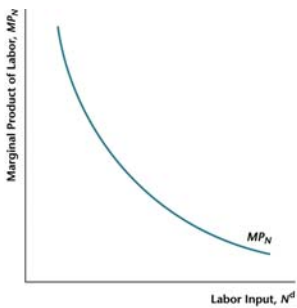


Figure 4.17 Adding Capital Increases the Marginal Product of Labor

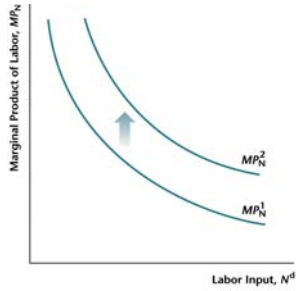


Figure 4.18 Total Factor Productivity Increases

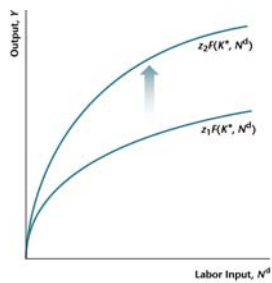


Figure 4.19 Effect of an Increase in Total Factor Productivity on the Marginal Product of Labor

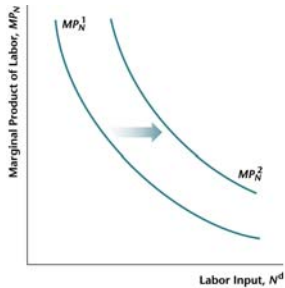
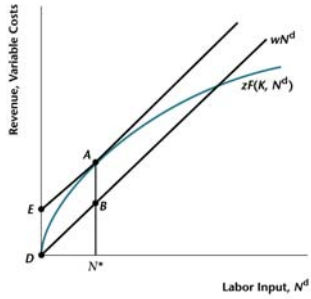


Figure 4.21 Revenue, Variable Costs, and Profit Maximization



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Figure 4.22 The Marginal Product of Labor Curve Is the Labor Demand Curve of the Profit-Maximizing Firm



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