Market for Factors of Production

ECO 120: Global Macroeconomics

Goals

- Specific goals:
  - Understand how quantities of factors of production are determined.
  - Understand how prices of factors of production are determined.
  - Understand what determines factor income.
  - Focus on labor and capital.
- Learning objectives:
  - LO2: Apply the supply and demand model to predict quantity and price outcomes of a number of different markets, including markets for currencies, labor, and loanable funds.
  - GELO2: Students will be able to construct and use models to analyze, explain, or predict phenomena.
  - *Ultimate goal*: use this knowledge to evaluate the impact of macroeconomic policies on the long-run growth rate of an open economy (LO6).

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Relevant Reading

- Labor markets: none available.
- Investment/Saving market: Module 29, pages 277-282.

Factors of Production

- Factor income is income earned from owning and selling factors of production:
  - Wages earned from working in labor market.
  - Interest earned by renting capital.
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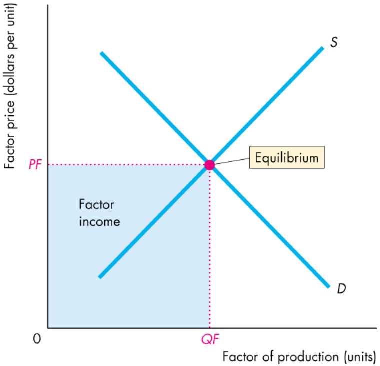
Supply and Demand

- Demand for factors of production is **derived demand**: demand depends on the demand for the goods being produced with the factors of production.
- Supply for factors of production is determined *households*.
- Income is determined by equilibrium supply and demand.



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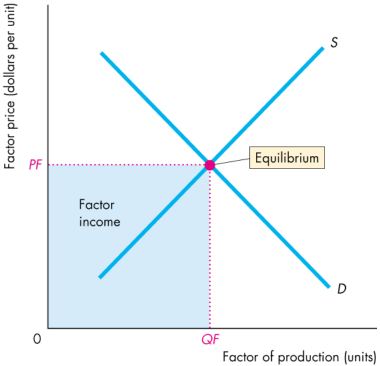

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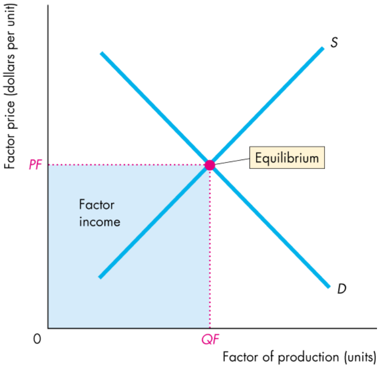

Measuring Revenue and Production

- **Total Product**: total level of production of the final good.
- **Marginal Product (MP)**: additional level of production attained when hiring *one additional unit* of labor/capital/land.
- **Total Revenue**: total amount of revenue earned on selling the final good.
- **Marginal Revenue (MR)**: additional revenue earned by producing one additional unit of the final good.
- **Marginal Revenue Product (MRP)**: the additional revenue earned by hiring one additional unit of a factor of production.
  - MRP = MP*MR

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Diminishing Marginal Product

- **Law of Diminishing Marginal Product** a.k.a. **Law of Diminishing Returns**: the marginal product decreases as you hire additional units of a factor of production.
- What is the shape of the marginal product curve?
- Shape of marginal revenue curve: depending on the type of market, as output increases marginal revenue may decrease or may stay the same (but it does not increase).
- What is the shape of the marginal revenue product curve?

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Example

Suppose a company's production schedule is as given below. Suppose also the company has a constant price for its product at \$3 per item.

Labor	Quantity
0	0
2	16
4	28
6	36
8	40

Compute the total revenue, marginal revenue, marginal product, and marginal revenue product for each given level of production.

Choosing Labor Demand

- If *MRP* $>$ *wage*, would you be interested in hiring more or less labor?
  - If you did this, what would happen to MRP?
- If *MRP* $<$ *wage*, would you be interested in hiring more or less labor?
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- Profit maximizing choice for labor demand: *MRP* $=$ *wage*.
- Since the MRP curve tells us labor demand for each wage, *it is the labor demand curve.*

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Determinants of Demand

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- Changes in the demand for the final good (changes MR).
- Changes in the quantities of other factors of production can change the MP.
  - An increase in capital makes labor more productive (increase in K increases MP_L).
  - An increase in employment makes capital more productive (increase in L increases MP_K).
- Changes in technology.

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Labor Supply

- This of all your time as either leisure or labor.
- Leisure is a normal good.
  - What is the income effect for leisure, and therefore labor supply?
- What is the price (or opportunity cost) of leisure?
  - What is the substitution effect on leisure, and therefore labor supply, when the price of leisure increases?
- What will be the overall effect of the wage on labor supply? Will labor supply be upward sloping or downward sloping?

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Labor Market Equilibrium

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- There is an improvement in computer technology?
- There is an increase in demand from abroad for U.S. goods?
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Demand for Investment

- Investment spending today determines the amount of capital in the future.
- Investment typically involves very large expenditures. How do you think investment is funded?
- Demand for investment (future capital) depends on expected *future* marginal product of capital and expected *future* marginal revenue.
- What things can shift demand for capital?
  - **Anything that affects future MP_K or future MR.**
  - Changes in technology.
  - Changes in the capital stock caused by war/destruction.
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Supply for Capital

- Who supplies capital? How do they do it? Very indirectly, it's households.
- Saving supply curve: How household saving responds to interest rate.
- Factors that shift saving supply:
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  - Changes in level of precaution.
  - Changes in wealth.

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- A hurricane destroys large amounts of capital stock in the Gulf of Mexico region.
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