7 Labor Market

7.1 Lecture 15: Input Markets I: Labor

7.1.1 Factor demand

- **Factor markets** is the markets for labor and capital that determine input prices. **Factor demand** is the general model for labor and capital.
- We are interested in the marginal benefit and cost of adding an additional unit of labor.
- **Marginal revenue product (**MRP**)** is the value to the firm of another unit of labor:

$$MRP_L = MR \cdot MP_L$$

  - The marginal cost of another unit of labor in a competitive labor market is wage w.
  - If the market is perfectly competitive, $MR = p$. The equation above becomes $MRP_L = w = p \cdot MP_L$. Firms hire until the wage equals the value of what that worker is producing.

7.1.2 Capital demand

- Similarly, **Marginal revenue product of capital(**MRP_K**)** is the value to the firm of another unit of capital:

$$MRP_K = MR \cdot MP_K,$$

  where MP_K is the increment in output from one extra unit of capital, holding labor fixed. Firms purchase additional capital until rental rate $= MRP_K$.

7.1.3 Labor supply

- Deriving labor supply is essentially exploring utility over **consumption** and **leisure**. We treat leisure as a good and consumption as its complement. Wage rate is the opportunity cost of leisure.
- The slope of the budget line, the rate at which you can trade off goods for leisure, is wage rate. The wage rate is the price of leisure in terms of goods, and is also the opportunity cost of leisure.
- We discuss labor supply using income and substitution effect. Income effect works against substitution effect if leisure is a normal good.
- When wage increases, the "price" of leisure rises. But higher wage also increases real income.

7.1.4 TO KNOW – Conceptual Understanding

- Derive factor demand in firms, explain marginal revenue product, marginal revenue product of labor, and marginal revenue product of capital
- Individuals choose between leisure and work
- When the wage rises, leisure becomes more expensive (substitution effect): people tend to work more. Simultaneously, a higher wage increases real income (income effect).

7.1.5 TO KNOW – Graphical and Math Understanding

- Plot the graph that reflects individual trade-off between leisure and consumption
- Illustrate the income and substitution effect in the leisure vs. consumption graph
- The intersection of aggregate labor-demand and labor-supply curves is the equilibrium wage and employment level

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