Labor Markets:

•People's direct demands for consumer goods create derived demands for resources

Profit Maximization:

•Firms hire additional labor to produce and sell more output until the last unit of labor adds as much to revenue as it adds to cost

MRP = MFC

Formulas:

•MRP = MR x MPP

Or change in TR/change in LABOR

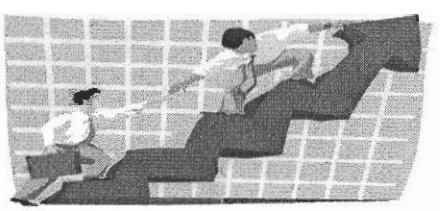
•VMP = P x MPP

MRP VS VMP:

- A resource's MRP reflects its value to the firm, which is not always the same as its value to society.
- A resource's MSB is the value as measured by the price of its marginal physical product.(MPP)
- VMP is a measure of a resource's value to society

Demand for labor:

- A competitive firm's demand for labor = MRP(of labor) or VMP(of labor)



Demand for labor shift factors:

- Output prices
- Price of other resources(substitutes vs complements)
- Technology
- Quality of labor(human capital)

Elasticity of demand for labor:

•% change in labor/% change in wage

Factors affecting the elasticity of demand for labor:

•Elasticity of demand for output

•Labors' chare of total costs

•Ease of substitution between labor and other resources

•Time

Supply of labor:

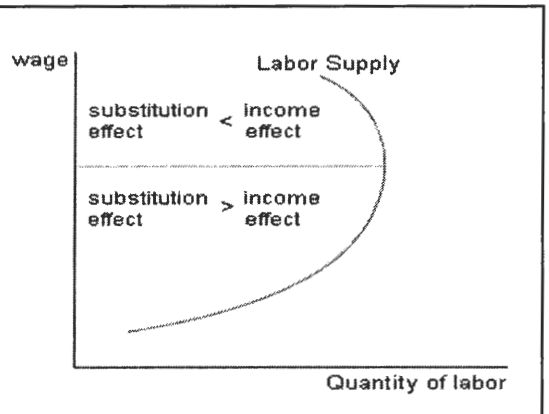
•The amounts of time people are willing to work at alternate wage rates

Determinants of the supply of labor:

- Population
- Preferences(labor vs leisure)
- Real wage
- Human capital

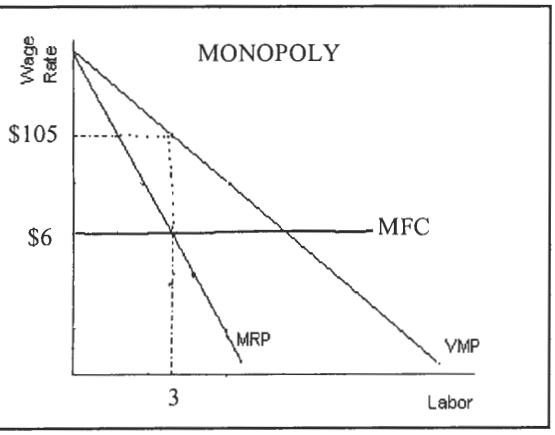
Labor vs leisure:

- Substitution effect- increase wage leads to decrease in consumption of leisure
- Income effect- leisure is a normal good. Increasing income increases the demand for a normal good.



Imperfect competition in the output market

- Firms with market power raise prices and restrict output. The result is fewer resources are employed
- Market power allows you to pay workers less than the social value of their output
  - Since p > MR ; VMP > MRP

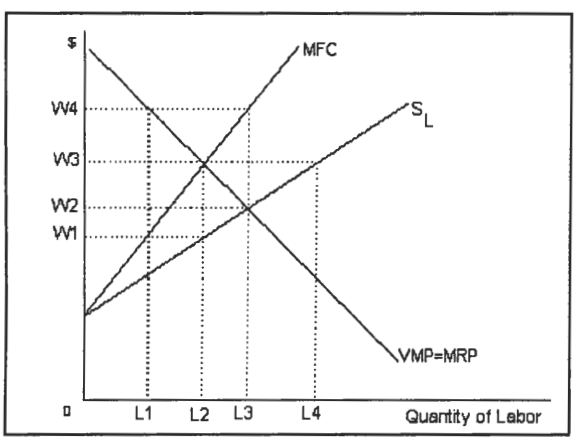


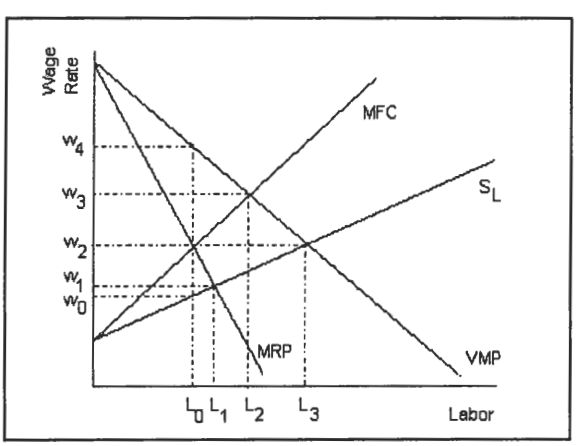
Monopolistic exploitation:

- Resource suppliers paid less than the value of their marginal products

Monopsony(imperfect competition in the labor market):

•If the supply of labor facing a individual firm is positively sloped, then the wage increases that must be granted to all workers cause the MFC curve to lie above the supply curve





Unions:

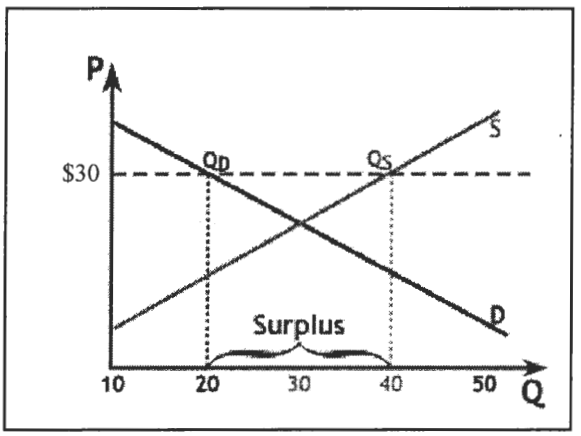
- Closed shop- make union membership a prerequisite for employment
- The Taft-Hartley act(1947) outlawed the closed shop

Union strategies to raise wages:

- Rationing work
- Restricting the labor supply
- Stimulation the demand for labor
- featherbedding

Rationing Work:

- A union that controls all of an industry's work force might simply bargain for a higher wage.
- If the wage is above equilibrium a surplus of labor will result
- Rules to allocate jobs range from first-come first-served to strict seniority



Restricting the supply of labor:

- The union movement has supported policies such as child labor laws, restrictive immigration policies, compulsory retirement plans and shorter work weeks

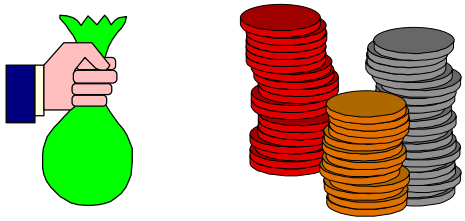
Stimulation the demand for union labor:

- Using political clout to obtain local building codes that require labor intensive technologies
- Lobbing for quotas that limit foreign competition

Featherbedding:

- Work rules that artificially boost the number of workers required for certain task
- Long after coal engines were replaced by diesel, railroad unions insisted that trains carry firemen
- Featherbedding was made illegal by the Taft-Hartley act

Interest and present value



Simple Interest

- Interest amount = P x i x n
- p = principle
- i = interest rate
- n = number of periods
- Assume you invest $1,000 at 6% simple interest for 3 years.
- You would earn $180 interest
- ($1000 x .06 x 3 = $180).

Compound interest

- When we compound interest we assume you earn interest on both principal and interest

- Assume we will save $1,000 for three years and earn 8% interest compounded annually

Compound interest

Original balance	$1,000
First year interest	60
Balance, end of year	$1,060
Balance, beginning of year two	$ 1,060
Second year interest	63.60
balance, end of year two	$ 1,123.60

Compound interest

Balance, beginning of year three	$1,123.60
Third year interest	67.42
Balance, end of year three	$1,191.02

future value of a single amount

writing in a more efficient way, we can say...

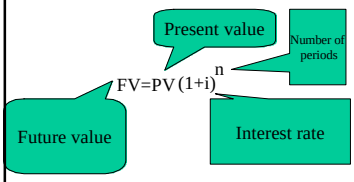
1000 x 1.06 x 1.06 x 1.06 = $1191.02

or

$1000 \times (1.06)^3 = \$1,191.02$

future value of a single amount

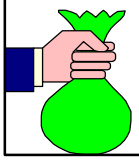
we can generalize the formula as...



Present value of a single amount

•Instead of asking what is the future value of a current amount, we might want to know what amount we must invest today to accumulate a known future amount.

•This is a present value question.



present value of a single amount

Remember our equation?

$$FV=PV(1+i)^n$$

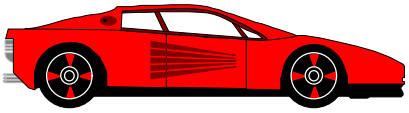
We can solve for PV and get...

$$\mathbf{PV=}\ \frac{\mathbf{FV}}{(1+i)^n}$$

Question

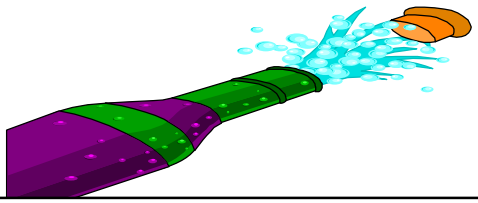
Assume you plan to buy a new car in 5 years. You think it will cost $20,000 at that time.

What amount must you invest today in order to accumulate $20,000 in 5 years, if you can earn 8% interest compounded annually.



Consistent interest periods and rates

How would we calculate the amount to be invested today in order to accumulate $20,000 in 5 years, if you can earn 8% interest compounded quarterly?



Consistent interest periods and rates

Because there are 4 compounding periods

8%/4 = 2% rate

5 x 4 = 20 periods

we will use 2% as the interest rate and 20 as the number of periods

Present Value of a set of cash flows

•the present value of each cash flow is given by the following

$$PV = \frac{C_1}{(1+i)} + \frac{C_2}{(1+i)^2} + \cdots + \frac{C_n}{(1+i)^n}$$

Net present value rule:

Accept if the project has a positive net present value:

$$NVP = -C_0 + \frac{C_1}{(1+i)} + \frac{C_2}{(1+i)^2} + \cdots + \frac{C_n}{(1+i)^n}$$

Example 1:

•Suppose a project requires an initial investment of $60,000

•At the end of the first year you expect to lose $20,000

•At the end of the second year(also the end of the project) you expect to gain $100,000

•You asses that, given the risk of the project, a cost of capital of 12% is appropriate.

•Should you accept the project?

Example 1:

Do the project because it has a positive NPV

$$NPV = -60{,}000 + \frac{20{,}000}{(1 + 0.12)} + \frac{100{,}000}{(1 + 0.12)^2}$$

$$= -60{,}000 - 17{,}857.14 + 79{,}719.39$$

$$= 1862.25 > 0$$

Expanding capital stock:

A firm can finance its purchase of capital in several ways

- funds on hand
- sell shares of stock
- borrow from a bank
- sell its own bonds

Regardless of the method of financing chosen, a critical factor in the firm's decision on whether to acquire capital is the interest rate

Expanding capital stock:

- The interest rate gives the opportunity cost of using funds to acquire capital rather than putting the funds to the best alternative use to the firm

Demand for loanable funds:

- A firm's decision to acquire capital depends on the net present value of capital
- The lower the interest rate, the greater the amount of capital firms will want to acquire.
- Lower interest rates translate into more capital with positive net present values.
- The desire for more capital means, in turn, a desire for more loanable funds.

Supply of loanable funds:

- Lenders supply funds to the loanable funds market.
- Lenders are consumers or firms that determine that they are willing to forgo some current use of their funds in order to have more available in the future.
- In general, higher interest rates make the lending option more attractive.

Shifts:

- An increase in the demand for capital will cause an increase in the demand for loanable funds.
- Example: If firms are optimistic about the future of the economy, they will want to invest in capital. To buy the capital the need loanable funds.
- The supply of loanable funds is affected by the willingness of people to save.
- Exanple: People expect high inflation in the future and do not want to save. The supply of loanable funds will decreade