

I. THE LABOR MARKET: MICRO FOUNDATIONS OF WAGES & EMPLOYMENT

GOALS OF SECTION

- (1) Outline the determinants of the short-run demand and supply of labor.
- (2) Examine what happens in the long run when labor is free to move.
- (3) Consider the case of the case for the minimum wage and how it is predicted to effect the labor market.

A. Factor Markets

1. Bottom of the circular flow.

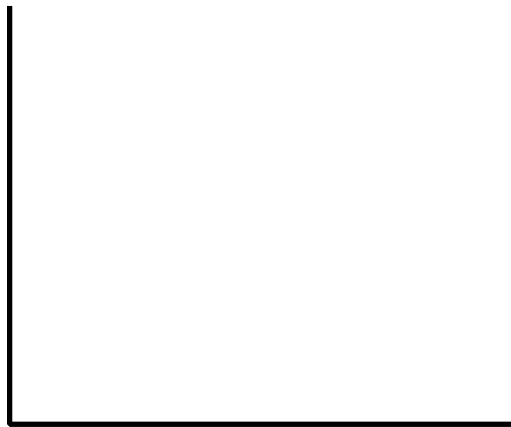
2. Some definitions

Short run: a time period sufficiently short so that workers cannot change occupations, locations, or retain, and firms have fixed plant capacity. (Not a measure of time but of flexibility)

Labor demand: a curve showing the relationship between wages and the quantity of labor demanded

Labor supply: a curve showing the relationship between wages and the quantity of labor workers will supply.

Equilibrium: the wage and employment level where the demand and supply of labor equal, or where there is no tendency for wages or employment to change.



B. Determinants of the Demand for Labor.

1. The marginal productivity of labor

MP_L = the change in output for a small (one unit) change in labor.

THE MARKETS FOR LABOR AND CAPITAL

Units of Labor	Output	MP_L	MRP_L
1	5		
2	9		
3	12		
4	14		
5	15		
6	15.5		

Note: the marginal product declines: The Law of Diminishing Marginal Returns

B. The marginal revenue product - Labor demand is a derived demand.

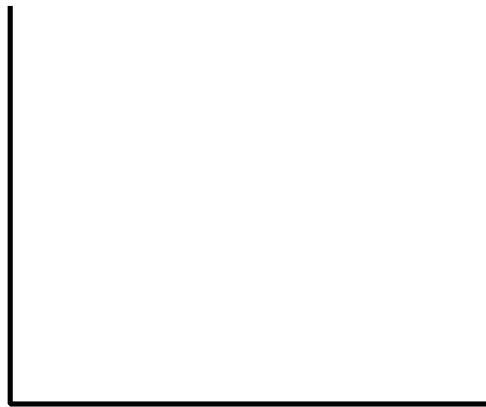
Firms do not buy labor for labor sake but what they produce and they can sell


$$\text{Marginal Revenue Product} = P * MP_L$$

The MRP_L is the demand for labor for a competitive firm - it is downward sloping because of the "Law of Diminishing Marginal Returns.

C. Some Economic Principles of Labor Demand

1. MRP_L is the demand for labor because it satisfies the profit-maximizing rule of expanding output when additional revenue exceeds additions to cost.



2. The shifters: curve shifts if variables change that are not on the axis but affect firm behavior (e.g., technology, the firms capital, the price of other inputs, the price of the product)

3. The market demand is the (horizontal) sum of all the firms demand curves

D. The Supply of Labor

1. The maximization rule for labor is to work as long as the value of additional income (i.e., the wage) is greater than the value of leisure time.

Note: in equilibrium the wage is equal to the value the worker places on the last marginal unit of leisure sacrificed.

2. The backward-bending individual labor supply



i. substitution effect - substitute words the good that has become relatively cheaper ($W \uparrow \rightarrow$ price of leisure $\uparrow \rightarrow$ leisure $\downarrow \rightarrow L \uparrow$)

ii. income effect - increases in the wage raise real income (I) and the demand for goods. ($W \uparrow \rightarrow I \uparrow \rightarrow$ leisure $\uparrow \rightarrow L \downarrow$)

3. Short-run market supply: sum of all individual labor supplies to a specific industry



Note: curve is always upward-sloping because wage increase in a given industry makes this job relatively appealing over some alternative industry.

D. Equilibrium: Short Run vs. Long Run

1. Short-Run Equilibrium: the wage at which the quantity of labor demanded equals the quantity of labor supplied in a given labor market.



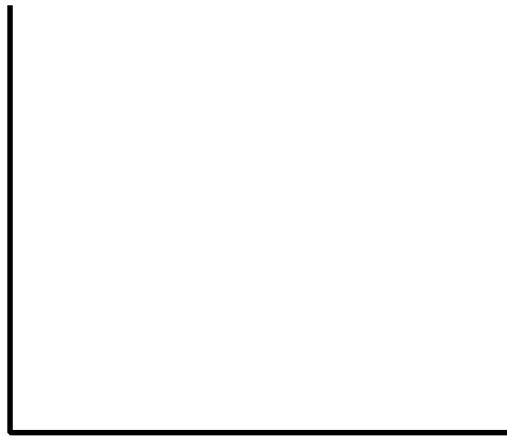
Note: in equilibrium both the firm and the worker do the best that they can. Therefore, there is no tendency to change. In addition, the wage is equal to both the value the worker adds to the firm and the value of the leisure sacrificed by the worker.

2. Long-Run Equilibrium: the wage at which the quantity of labor demanded equals the quantity of labor supplied across all markets. (Example: Journalists in Portland & Eugene)

C. Application: The Minimum (living) Wage:

1. Labor markets are unique - the bartered good cares about the outcome of market - thus government is tempted to interfere

2. single competitive market - impact of minimum wage on single market



creates unemployment ($L_S - L_D$): 2 separate effects

i. unemployment effect - new workers enter labor market because minimum wage is above their reservation wage but cannot find job ($L_S - L_0$)

ii. disemployment effect - persons who had a job before the minimum wage no longer have a job ($L_0 - L_D$)

moral of the story: creates inefficiency within the market

3. Minimum wage's effect between markets

i. expected wage in covered sector:

$$w_C = [\pi * \bar{w}] + [(1-\pi)*0] = \pi \bar{w}$$

where

π - probability of a job in covered sector

\bar{w} - minimum wage

ii. in equilibrium wages equalize between sectors

$$w_C = \pi \bar{w} = w_U$$

graph of covered and uncovered sector

4. who does minimum wage harm? Empirical studies focus on -

i. teenagers

ii. minorities

studies other groups generally yield no significant effect

Oregon minimum wage: raised wage from 4.25 to 6:50 in 3 steps between 1997-1999. No tip wage. Minimum wage found to reduce employment of restaurant workers.

II. OTHER LABOR MARKET ISSUES

GOAL

- (1) Introduce concept of human capital and explain how individuals and firms invest in labor.
- (2) Study the concept of present value and apply to the investment in human capital.
- (3) Examine how economists approach the problem of discrimination.

A. Labor Quality or Human Capital

1. What is human capital - unique set of abilities and acquired skills

education - improves your overall skills

on-the-job training - improves productivity on set of tasks

migration - move to where you are more productive

2. Labor is like any other asset that can be invested & earn a return.

B. Utility or Wealth Maximization

1. in some circumstance: maximizing happiness (utility) is the same as maximizes wealth

- i. pick career path that maximizes income
- ii. borrow/lend to consume to optimize timing of con.
- iii. requires capital markets work well (Jewish ex.)

2. Present value of a \$100 a year from now: 2 ways to pay.

- i. pay \$100 a year from now
- ii. put approximately \$95 in the bank at 5% interest
- iii. dollar today is not worth a dollar tomorrow

$$100 = PV(1 + r)$$

$$PV = 100/(1+r)$$

$$\text{if } r=5\%$$

$$PV = 100(1+ 0.05) = 95.24$$

2. Present value of \$100 two years from now

first year

↓

$$[PV(1+r)](1+r)$$

$$PV = 100/(1+r)^2$$

at 5%

$$PV = 100/(1+0.05)^2 = 90.70$$

3. present value of a payment w "t" years from now (w_t)

$$PV = w_t/(1+r)^t$$

4. present value of stream of payments

$$PV = \frac{w_0}{(1+r)^0} + \frac{w_1}{(1+r)^1} + \frac{w_2}{(1+r)^2} + \dots + \frac{w_T}{(1+r)^T}$$

$$PV = \sum_0^T \frac{w_t}{(1+r)^t}$$

D. Schooling Decision - College vs. Not

1. PV of college

$$PV^C = \sum_0^T \frac{w_t^C}{(1+r)^t}$$

2. High-School

3. go if:

$$PV^H = \sum_0^T \frac{w_t^H}{(1+r)^t}$$

i. $PV^C > PV^H$

ii. $NPV = PV^C - PV^H > 0$

4. Some short-comings of the model

- i. T differs by occupation
- ii. college as a consumption good
- iii. income uncertainty
- iv. appropriate interest rate?

All can be accounted for.

5. Example: You are currently a rice picker in China that earns the equivalent of \$3000 plus room and board. Your wage grows at a rate of 5% per year. However, you are thinking about migrating from China to the United States. It will cost \$3000 plus you will have to work for 4 years for no wages other than room and board. After 4 years, your earnings will be \$35000 a year as a garment worker plus your room and board. Your salary will increase at a rate of 10% per annum. The annual discount rate is 5%, and your working life is 20 years.

Question 1. What should be included in your calculation of the opportunity costs of migrating and why?

Ans. everything should be included except room and board - room and board would enter in both PV^C and PV^{US} and hence would not change the net present value

Question 2. Show theoretically how you would calculate the present value of the income streams for the two

occupations.

$$PV^C = \sum_0^{19} \frac{w^C(1 + r^C)^t}{(1 + r)^t}$$

$$PV^{US} = \sum_0^3 \frac{-C_t}{(1+r)^t} + \sum_4^{19} \frac{w^{US}(1+r^{US})^{t-4}}{(1+r)^t}$$

Question 3. Employ the formulation in (B) above to calculate the present value of your earnings in the two proposed occupations; plot the present value of your yearly earnings over the twenty years in each career. Which occupation should you choose to maximize wealth?

$$PV^C = \frac{3000(1+.05)^0}{(1+.05)^0} + \frac{3000(1+.05)^1}{(1+.05)^1} + \frac{3000(1+.05)^2}{(1+.05)^2} + \dots + \frac{3000(1+.05)^{19}}{(1+.05)^{19}}$$

$$PV^N = 3000(20)$$

first four years

$$PV^{US} = \frac{-3000}{(1+.05)^0} - \frac{0}{(1+.05)^1} - \frac{0}{(1+.05)^2} - \frac{0}{(1+.05)^3}$$

last 16 years

$$PV^G = \frac{3500(1+.10)^0}{(1+.05)^4} + \frac{3500(1+.10)^1}{(1+.05)^5} + \frac{3500(1+.10)^2}{(1+.05)^6} + \dots + \frac{3500(1+.10)^{15}}{(1+.05)^{19}}$$

THE MARKETS FOR LABOR AND CAPITAL

Year	China	US	Discount Factor	Growth Factor	China PV	US PV
0	3000	-3000	1	1	3000	-3000
1	3000	0	1.05	1	3000	0
2	3000	0	1.1025	1	3000	0
3	3000	0	1.157625	1	3000	0
4	3000	3500	1.21550625	1	3000	2879.459
5	3000	3500	1.2762815625	1.1	3000	3016.576
6	3000	3500	1.3400956406	1.21	3000	3160.222
7	3000	3500	1.4071004227	1.331	3000	3310.709
8	3000	3500	1.4774554438	1.4641	3000	3468.362
9	3000	3500	1.551328216	1.61051	3000	3633.522
10	3000	3500	1.6288946268	1.771561	3000	3806.547
11	3000	3500	1.7103393581	1.9487171	3000	3987.811
12	3000	3500	1.795856326	2.14358881	3000	4177.707
13	3000	3500	1.8856491423	2.35794769	3000	4376.645
14	3000	3500	1.9799315994	2.59374246	3000	4585.057
15	3000	3500	2.0789281794	2.85311671	3000	4803.393
16	3000	3500	2.1828745884	3.13842838	3000	5032.126
17	3000	3500	2.2920183178	3.45227121	3000	5271.751
18	3000	3500	2.4066192337	3.79749834	3000	5522.786
19	3000	3500	2.5269501954	4.17724817	3000	5785.776
Sum					60000	63818.45

Question 3. What other considerations, besides yearly earnings, might enter into your migration choice?

Ans. Non-wage amenities such as freedom and opportunities for your children.

Question 4 - What is likely to happen to your likelihood of migrating if the discount rate increases.

Ans: Less likely to migrate because you value the present more (wages are higher in the present in China).

Indicates that people the value the present more are less likely to move.

B. Discrimination: 3 Forms

1. Prejudice - "A taste for discrimination"

i. employer

ii. employee

iii. customer

2. Statistical Prejudgment - people pay for the characteristics of their group: PLC elevator

3. Market Power - discrimination is profitable

III. CAPITAL MARKETS or HOW TO GET RICH WITHOUT KNOWING MUCH

GOALS

(1) How the concept of present value, future value, and compounding relate to investing.

(2) Outline some basic economic principles that should guide the prudent investor.

Recommended reading: Burton Malkil, *Random Walk Down Wall Street*, W.W. Norton & Co. 1996 or Thomas J. Stanley & William D. Danko, *The Millionaire Next Door*, Simon and Schuster, 1998.

A. Five Basic Rules

1. Start now and invest for the long run.

i. Use the rule of 70 to evaluate your prospects. Tells you about future values

Rule of 70: Doubling time = $70 / (\text{rate of return})$

rate of return = 1% \Rightarrow 70 years to double

rate of return = 10% \Rightarrow 7 years to double

ii. Rule implies that everyone in this class should have between 2 & 5 million dollars saved by the time they retire.

Example 1: put \$1 in the stock market when you are 20 and earn average return of 10%. How much will you have in the market at retirement

Age	20	27	34	41	48	55	63
Money	1	2	4	8	16	32	64

Note 1: if you waited until age 34 you would only have \$16 - start early.

Note 2: a \$15 CD is worth \$480 in future. Think about today's purchases in the context of their future opportunity costs.

Example 2: Suppose a couple finishes college at age 21, has a joint income is \$80,000, saves 10% of income, and wage grows at 5% until age 65. Savings would be \$5.3 million dollars.

iii. Remember dollars in the present are worth more than dollars tomorrow: Present value of stream of payments!

$$PV = W/(1+r)^0 + W/(1+r)^1 + W/(1+r)^2 \dots + W/(1+r)^T$$

$$PV \approx W/r \text{ or } 100/0.10 = \$1000$$

2. Diversify your portfolio.

i. Take of basics first - good diet, go to school, stay within your budget (no credit card debt).

ii. Remember that risk and reward are related. J.P. Morgan - "If you cannot sleep at night, sell down to the sleeping point."

The Sleeping Scale of Investments

Sleeping Level	Expected Return
Semi-comatose state (bank accounts)	2 to 3 percent. No risk. Does not keep up with inflation.
Long afternoon naps (money markets and CD's)	3 to 5 percent. No risk. Will keep up with inflation.
An occasional dream(corporate bonds)	8 to 8.5 percent. Small risk if held to maturity. Inflation safe.
Some tossing and turning(blue chip stocks)	9 percent. Moderate to great risk, depending on holding time (25 %).
Nightmares but long term rest (aggressive growth stocks)	9 to 12 percent. Substantial (up to 50%) but good inflation hedge.
Vivid dreams(real estate)	Same as common stocks
Insomnia(Gold and other Commodities)	Can not predict.

iii. Know and stick to your objectives

- do you want to buy a home?
- do you want to send you kids to college
- when you want to retire & how much do you need to live on?

iv. Actual risk depends on the time you hold an asset

Best Performing Markets in the Early 1980's & 1990's

Investment Type	Percent Return
1981 Treasury Bills	14.7 percent
1982 Long term bonds	40.4 percent
1990 Treasury Bills	7.8 percent
1991 Small Stocks	44.6 percent
1992 Small Stocks	23.3 percent
1993 Foreign Stocks	32.9 percent
1994 Foreign Stocks	8.1 percent
1995 S&P 500	37.4 percent
1996 S&P 500	23.1 percent
1997 S&P 500	33.4 percent

Range in Average Returns On Common Stocks For Various Time Periods, 1950 to 1994

Holding Period	Expected Return
One Year	52.6 to -26.5 %
Five Years	23.9 to -2.4 %
Ten Years	17.6 to 1.2 %
Fifteen Years	16.8 to 4.3 %
Twenty Years	14.6 to 6.5 %
Twenty Five Years	11.2 to 7.9 %

3. Make Investment a habit

i. Take advantage of dollar cost averaging.

give a fixed amount a day - a month

ii. Consider your stage of life

4. Dodge Uncle Sam when you can.

i. maximize avoidance (e.g., 15k before tax in IRA's)

ii. always consider tax multiplier when making investment (e.g., with mutual funds make sure to consider tax effect, and timing of sales).

5. Stay within your knowledge and be clear about how much time you want to spend.

i. The no brainer: buy the market with low costs.

Index funds - buy an index of stocks of: (1) total market; (2) S&P 500; (3) market segments.

These funds require no thought and beat 90% of the managed funds!

ii. Hire a professional: If you want to invest in a more managed funds and do not have the time to understand how they work.

iii. Do it yourself: Be prepared to put in the time and prepared to be patient.

B. Some Things to Remember

1. If it sounds too good to be true, it is!

A lot of lying or illegal activity.

2. Think broadly about investments.

Remember your education, your house, and your kids are also investments.

3. Have a plan and stick with it.

The market makes a lot of money from people who go in and out of the market frequently based on a hunch.

4. Keep your eye on the market - watch and be aware.

5. Move on the margin -

Do not make large changes in portfolio if this is really the right one for you.