

- Second exam will cover only Chapters 10-12
- Final exam will be cumulative for entire course
- Answers to practice second exam will be reviewed in discussion sections week of Fri Nov 4 to Wed Nov 9
- An alternative practice exam is also available on the course web page

## Chapter 13: Labor Markets, Poverty, and Income Distribution

### A. Demand for labor



Joe's Muffler Shop

#### Inputs:

- building
- tools
- utilities
- labor



#### Output:

- number of mufflers replaced



- Joe's shop nets: \$100 for each muffler replaced
- Question: take building, tools, and utilities fixed, vary labor

Number of workers	Output (mufflers per day)
1	5
2	8
3	9



#### Definitions:

The *marginal product of labor* is how much output would increase from hiring one more worker

The *value of marginal product* is how much revenue would increase from hiring one more worker

Number of workers	Output (mufflers per day)		
1	5		
2	8		
3	9		

Number of workers	Output (mufflers per day)	Marginal product (mufflers per worker)	
1	5		
2	8		
3	9		

Number of workers	Output (mufflers per day)	Marginal product (mufflers per worker)	
1	5	5	
2	8	3	
3	9	1	

Number of workers	Output (mufflers per day)	Marginal product (mufflers per worker)	Value of marginal product (\$ per worker)
1	5	5	
2	8	3	
3	9	1	

Number of workers	Output (mufflers per day)	Marginal product (mufflers per worker)	Value of marginal product (\$ per worker)
1	5	5	\$500
2	8	3	\$300
3	9	1	\$100

Definition:  
 The tendency of the marginal product of labor to fall as the number of workers hired increases is referred to as *diminishing returns to labor*

Number of workers	VMP (\$ per worker)
1	\$500
2	\$300
3	\$100

- If Joe had to pay each worker \$200/day, he would want 2 but not 3 employees
- If Joe had to pay each worker \$100/day, he would want 3 employees

Proposition: A profit-maximizing firm would hire labor up to the point where VMP equals the wage

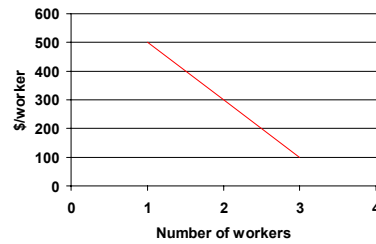
Note this is a special case of the general principle of setting marginal benefit equal to marginal cost

Marginal benefit of hiring one more worker = VMP

Marginal cost of hiring one more worker = wage

$MB = MC$  requires  $VMP = W$

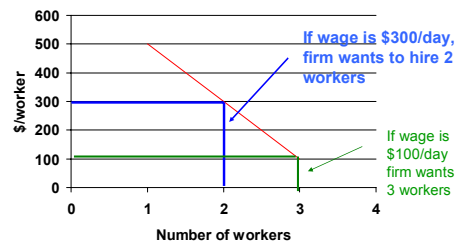
### Value of marginal product



### Value of marginal product



### Value of marginal product

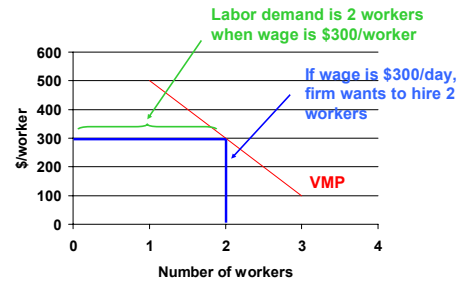


We can read firm's demand for labor off the VMP schedule

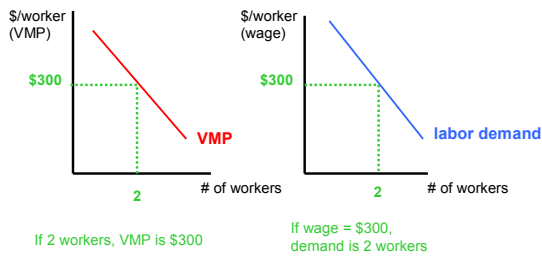
Summary: how to calculate firm's demand for labor

- Calculate how much output goes up by hiring one more worker (=MP)
- Calculate what this is worth in dollars to the firm (=VMP)
- Find largest number of workers for which VMP is greater than or equal to the wage
- This is the number of workers the firm wants to hire

On a graph, labor demand is the horizontal distance out to VMP schedule



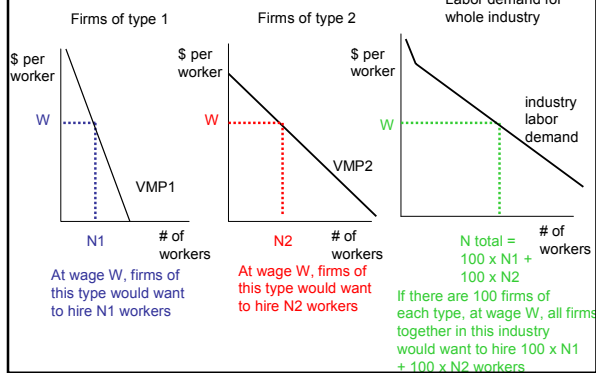
Conclusion: VMP and labor demand are just two names for the same curve



### Chapter 13: Labor Markets, Poverty, and Income Distribution

- Demand for labor
- Firm versus industry labor demand

Industry-wide labor demand is horizontal summation of each individual firm's VMP schedule



### Chapter 13: Labor Markets, Poverty, and Income Distribution

- Demand for labor
- Firm versus industry labor demand
- Supply of labor

Could ask three different questions:  
How many people would be willing to work for a given wage:

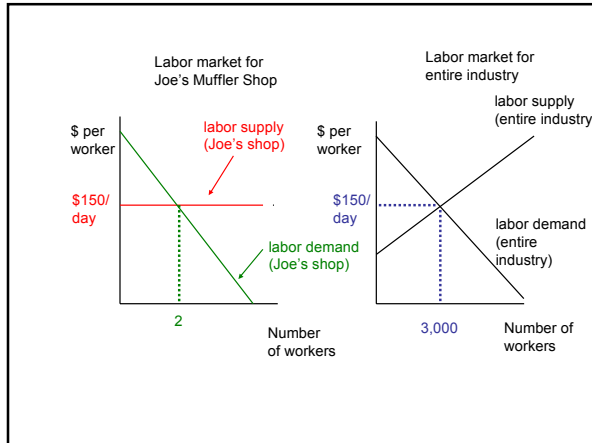
- at this particular firm? (gives us firm's supply of labor)
- in this industry? (gives us industry's supply of labor)
- in the entire economy? (gives us economy-wide supply of labor)

Perfect competition in the labor market:

- There are a large number of firms in this industry
- Workers don't care which firm they work at
- All workers have the same productivity

Implications:

- All firms in this industry must pay the same wage
- The individual firm's supply of labor looks flat from point of view of the firm



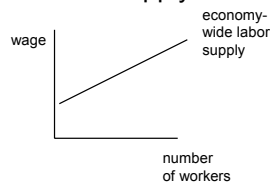
Labor supply curve for one industry: raise wage in this industry, holding wages in other industries constant

Labor supply for entire economy: raise wage in all jobs, what would happen to number of people who want jobs?

### Substitution effect

One possibility: some people are attracted into labor force who wouldn't otherwise want to work

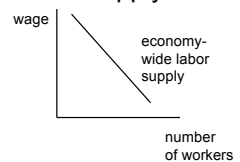
In this case, economy-wide labor supply curve would slope up



### Income effect

Another possibility: if one member of couple earns more money, the other might feel he or she doesn't need to work (or each worker puts in fewer hours)

In this case, economy-wide labor supply curve would slope down



Unclear (from both theory and evidence)  
which effect dominates

Assumption for some simple illustrations:  
income and substitution effects exactly  
cancel out (vertical labor supply)

