Request that you should not refuse

- PLEASE SWITCH OFF AND PUT AWAY YOUR CELL PHONES
- LAPTOPS OK IF WORK IS ACADEMIC
- REMOVE BAGS AND OTHER MATERIALS THAT CAN CAUSE DISTRACTION
- STOP HAVING SIDE CONVERSATIONS
- PARTICIPATE IN CLASS

Class 9

Finishing Touches on: Minimum Wages (using updated lecture 8 – in canvas)

Information Economics: Theory of Contracts (using updated lecture 8 – in canvas)

Mid Term 1 Exam Review

Going over Select problems from the Problem Set 1

- **Read for Wednesday's Class (Class 10)**

Just prepare for the exam

Come to class on time for the exam – do not be late

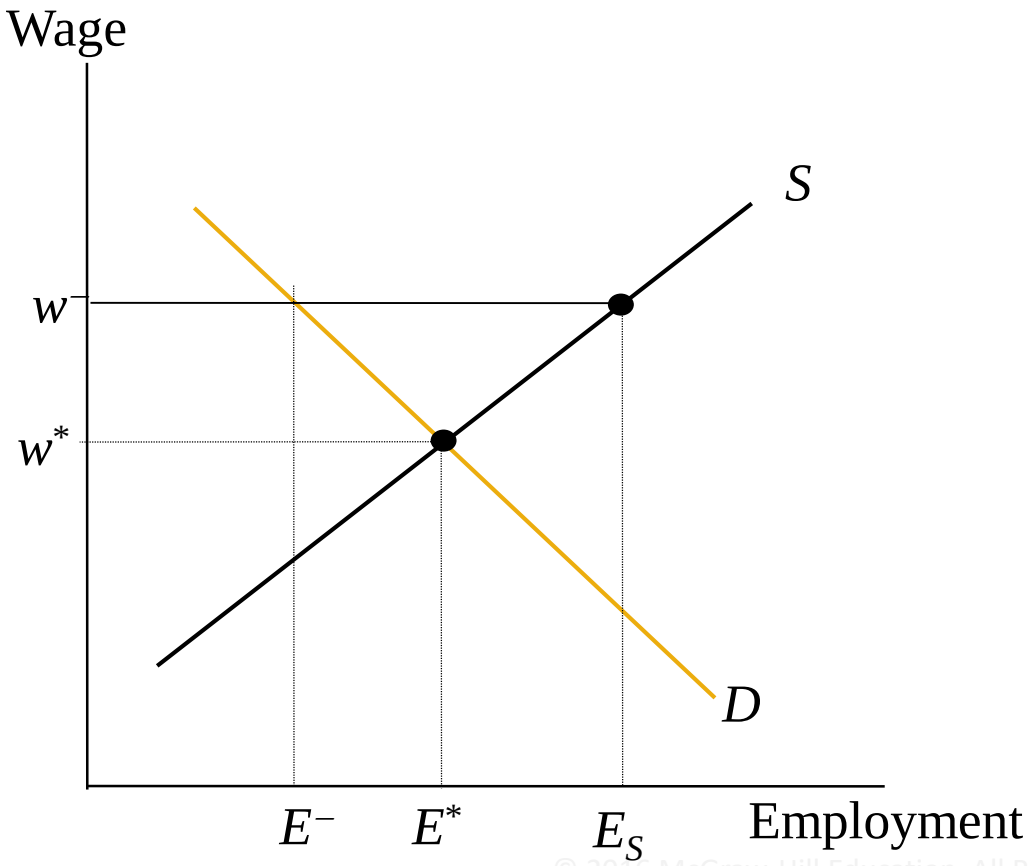
Extra office hours Wednesday 2PM – 5 PM

If we decide to make any changes during class on Monday, I will update this file and repost it on Monday night to reflect the changes.

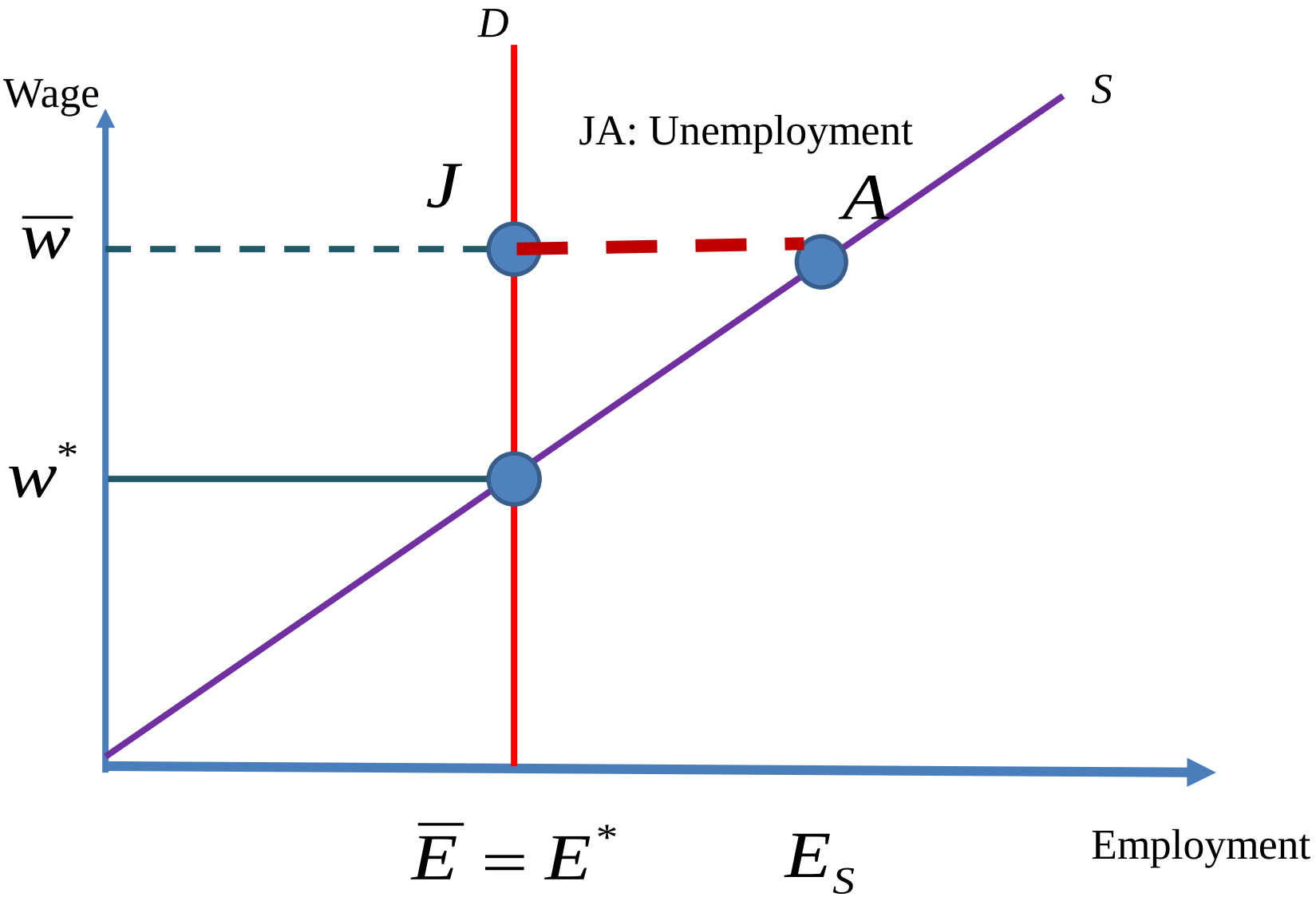
I will post a new file called **Class 9 – Mon – May 1 - Updated**

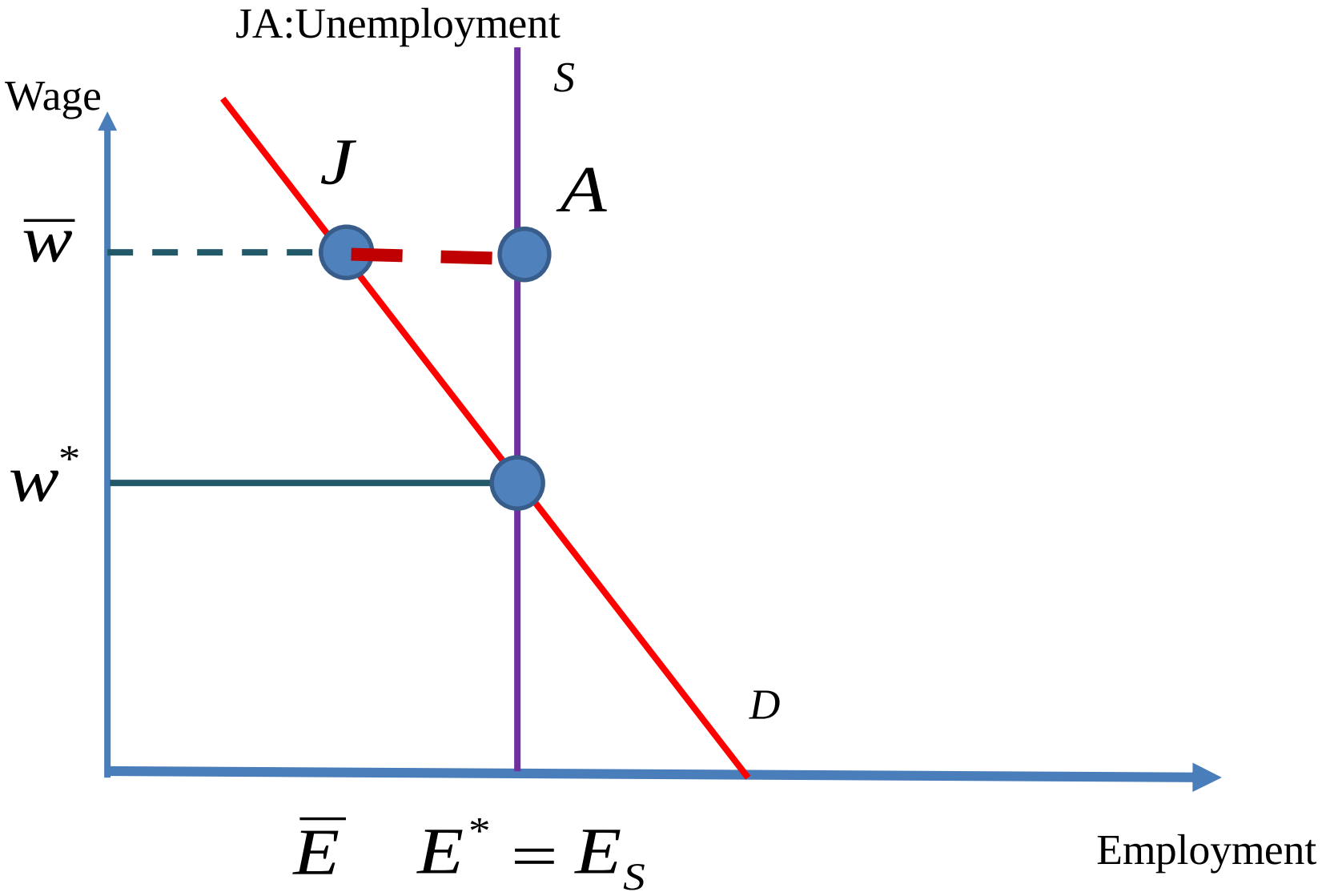
The Impact of the Minimum Wage on Employment

$$Unemoplyment\ \ Rate = \frac{E_s - \overline{E}}{E_s}$$



A minimum wage set at w^- results in employers cutting employment from E^* to E^-. The higher wage also encourages $E_S - E^*$ workers to enter the market. Thus, under a minimum wage, $E_S - E^-$ workers are unemployed.


D
Wage
S
JA: Unemployment
J
A
$\overline{w}$
w^*
$\overline{E} = E^*$
E_S
Employment


JA:Unemployment
Wage
S
J
A
$\overline{w}$
w^*
D
$\overline{E}$
$E^* = E_S$
Employment

Suppose the manufacturing industry in a US city has labor demand and supply curves estimated as

$$w = A - BE^d \ldots(1)$$

$$w = C + DE^s \ldots(2)$$

$$w^* = \frac{AD + BC}{B + D}$$

$$\overline{w} = Z$$

$$E^* = \frac{A - C}{B + D} \quad \overline{E} = \frac{A - Z}{B} \quad E_S = \frac{Z - C}{D}$$

$$Unemoplyment\ \ Rate = \frac{E_s - \overline{E}}{E_s} = ?$$

$$Under\ \ what\ \ condition\ \ is\ \ Unemployment\ \ Rate = 0$$

$$E^* = \frac{A-C}{B+D} \qquad \overline{E} = \frac{A-Z}{B}$$

$$E^* - \overline{E} = \frac{A-C}{B+D} - \frac{A-Z}{B} = \frac{BA-BC-BA+ZB-DA+ZD}{B+D}$$

$$E^* - \overline{E} = \frac{Z(B+D)-(AD+BC)}{B+D}$$

$$E^* - \overline{E} = Z - \frac{(AD+BC)}{B+D} = Z - w*$$

$$If \;\; Z = w^* \;\; Then \;\; E^* - \overline{E} = 0$$

$$Unemoplyment\ \ Rate = \frac{E_s - \overline{E}}{E_s} = ?$$

$$\overline{E} = \frac{A - Z}{B} \qquad E_S = \frac{Z - C}{D}$$

$$E_s - \overline{E} = \frac{Z - C}{D} - \frac{A - Z}{B} = \frac{ZB - CB - AD + DZ}{D}$$

$$\rightarrow E_s - \overline{E} = \frac{Z(B + D) - (AD + BC)}{B \times D}$$

$$\rightarrow E_s - \overline{E} = \frac{Z - \frac{(AD + BC)}{(B + D)}}{\frac{B \times D}{(B + D)}} = \frac{(B + D)(Z - w^*)}{B \times D}$$

$$Unemoplyment\ \ Rate = \frac{E_s - \overline{E}}{E_s} = \frac{\left(B+D\right)\left(Z - w^*\right)}{B \times D \times E_s}$$

$$E_S = \frac{Z - C}{D}$$

$$Unemoplyment\ \ Rate = \frac{E_s - \overline{E}}{E_s} = \frac{\left(B+D\right) \times \left(Z - w^*\right) \times D}{B \times D \times \left(Z - C\right)}$$

$$Unemoplyment\ \ Rate = \frac{\left(B+D\right) \times \left(Z - w^*\right)}{B \times \left(Z - C\right)}$$

$$Unemoplyment\ \ Rate = \frac{\left(B+D\right) \times \left(E^* - \overline{E}\right)}{B \times \left(Z - C\right)}$$

$$If\ \ Z = w^*\ \ Then\ \ E^* = \overline{E}\ \ \&\ \ Unemoplyment\ \ Rate = 0$$

Unemployment from Min wages

Theoretically depends on

- Elasticity of demand and supply curves
- Demand shifts
- Covered versus Uncovered Sectors
- Possibility changes in non wage benefits
- Labor – Labor Substitution

Empirically Depends on

- Identification Strategy/Endogenity Issues

1. Sectors you are looking at: fast food versus other industries
2. Geography: Country? State? County?

- Measurement errors/ Selection Issues

1. Separate turnover from unemployment b/c min wages
2. Spike at the minimum wage point

Overrated is possibly not the correct word to describe minimum wages

Perhaps we need different theoretical model to guide us to empirical work

Information Economics: Study of Incentives
MORAL HAZARD & SCREENING

- Labor is not uniform
- Labor can contain efficiency units
- Quality of work matters
- How do we explain bonuses?
- Effort is neither OBSERVABLE nor VERIFIABLE
- Moral hazard: one person knows more about the effort – worker; manager knows little about worker effort, but wants worker to not shirk
- How do we modify the objective function budget constraint to make the model realistic?

Endogenous Variables: bonuses, standard

Objective Function: profit function

Subject to: Participation Constraint

Subject to: Incentive Constraint

Classroom teaching fits this model of moral hazard

Additional issues: double moral hazard; multidimensional moral hazard;

The importance of Trust/ Public Goods Game/ Prisoner's Dilemma/ Trust Game/

Mid Term Exam 1 Review: Basic labor market

- Assumptions behind basic labor markets
- Identify shortages, surpluses & wage response to them
- Existence, Uniqueness and Stability of an equilibrium
- Compare and contrast different kind of labor markets (full information versus imperfect information)
- What real life facts can you answer using the basic labor markets
- How does minimum wages, automation and immigration fit into the basic labor market
- Workers Surplus and Firm's surplus through showing triangles on a graph

Mid Term Exam 1 Review: Econometric Analysis

- The difference between missing variable bias & endogeneity
- Know the difference between endogeneity and selection bias
- Knowing how difference in difference works
- Knowing how IV works: what is a strong IV? What is an exogenous IV?
- Knowing how fixed effects work
- You should be able to comment on if the estimate is overestimated or underestimated & give reasons/ find conditions for it verbally

Mid Term 1 Exam Review: Basic Labor Market: Algebraic/Parametric equations version

- Algebraically compute equilibrium price & quantity in terms of the parameters of the model
- Graph the demand, supply and equilibrium
- Algebraically compute new equilibrium price & quantity in terms of the parameters of the model if shift parameters are introduced
- Graph new demand, supply and new equilibrium
- Algebraically compute new equilibrium if new immigrants, new robots and minimum wages are introduced in the market
- Finding conditions and proofs

Mid Term 1 Exam Review: Demand for Labor: Algebraic/Parametric equations version

- Algebraically set the objective function (equation for isoquant) & the constraint (equation for isocost)
- Identifying conditions for Returns To Scale
- Graph the Isoquant/Isocost equilibirum
- Algebraically compute equilibrium using Lagrangian (for long run)
- Algebraically compute new equilibrium if the parameters change (e.g. wage; price of the product, rental rate)
- Algebraically compute demand for labor functions & find labor supply elasticity & comparative statics
- Finding conditions and proofs
- Writing production function and isocost from a word problem

Theoretical/Conceptual Papers (Lemar, Brojas, Autor, Brown)

- If the paper has theoretical/conceptual analysis; know the following
- What was the main question that the author try to answer?
- What is the answer to the question ?
- What are the critical / not so critical assumptions made?
- What would happen if a certain assumption is relaxes (i.e. how do you know the assumption was critical to begin with)
- Can you tell if certain assumptions change, how would a curve in a graph (used in the paper) change?
- How would change in parameters affect the results?
- Contribution of the paper to the literature

Empirical Papers (Solomon et al, Acemoglu et al, Neumark)

- If the paper has empirical analysis; know the following

- Empirical strategy to identify the effect
- Mechanisms of the effect
- Variables used
- What are the variables are proxy of?
- Dependent variable(s)
- Main Independent variable
- Control Variable(s)
- Potential challenges to identification strategy & how authors have answered them
- Other problems with the papers

List of Papers for the Exam

- Taking the con out of Econometrics - **Lemar**
- Effect of Natural Disasters on local Labor Markets – **Solomon et al**
- Immigration Surplus – **Borjas**
- Why are there so many jobs - **Autor**
- Women War and Wages – **Acemoglu et al**
- The Overrated Minimum Wage - **Brown**
- Minimum Wage Controversy - **Neumark**

PS 1 Super Important Problems

- Problems Based on Class Discussions/Readings (part c; f/g)
- Problems To test your understanding of causality in Empirical Studies (part c)
- Quantitative Problems: Basic Labor Market Analysis (part c)
- Quantitative Problems : Labor Demand (part d)
- Quantitative Problem: Minimum Wage (Using Symbols instead of numbers)

Exam Rules

- NO
- CELL PHONES
- CALCULATORS
- BOOKS
- NOTES
- NO DICTIONARIES – ask me or the TA if you have questions
- NO BATHROOM BREAKS
- SIT NEXT TO/BESIDE/BEHIND STUDENTS YOU ARE NOT USED TO SITTING
- I will give you papers to write your answers. Please write clearly and legibly – try to PRINT if your handwriting is not good
- Instructor reserves right of moving people around if he does not like the seating arrangement
- 1 hour and 30 min test, you can take 15-30 min more if you think that is necessary