ECO111 : Lecture 25

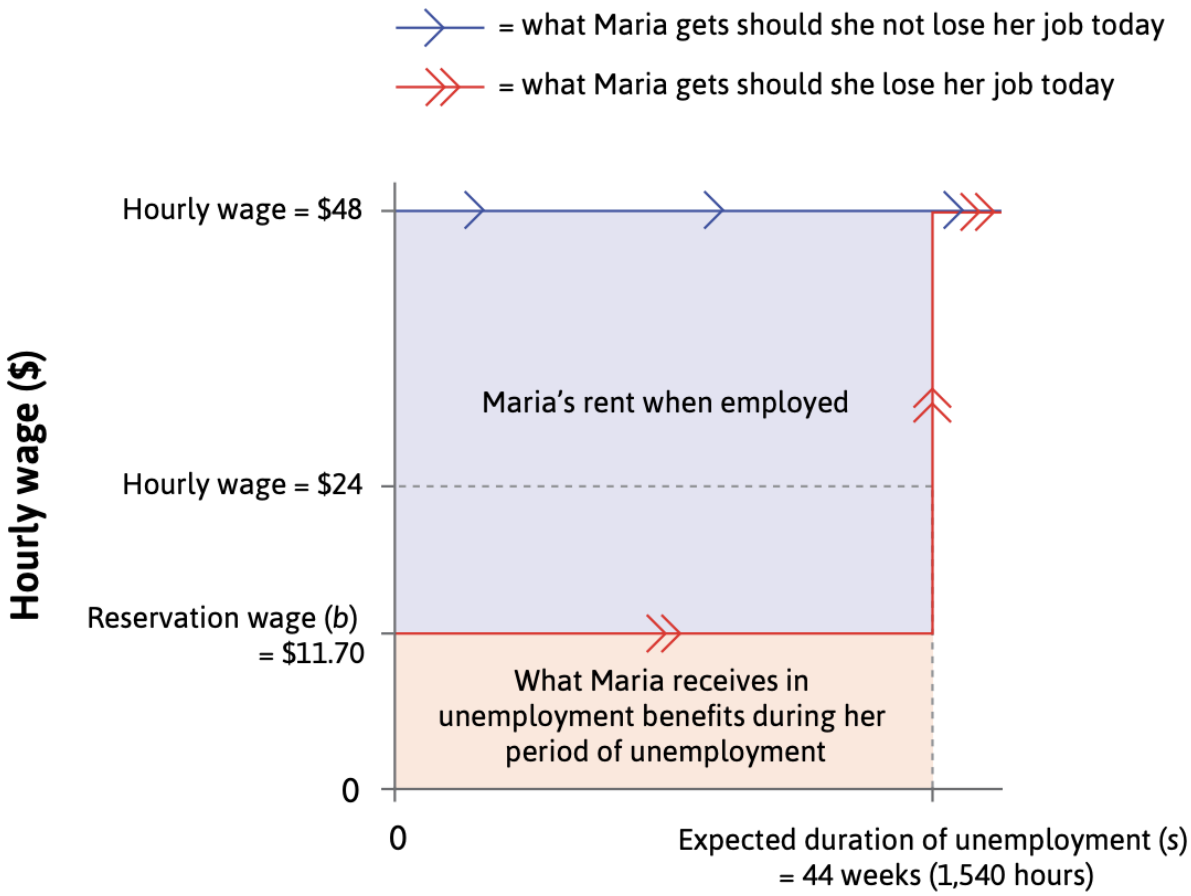
2 October 2024

The Labor Discipline Model

- If Maria chooses her work effort as a best response to the employer's offer, and the employer chooses the wage that maximizes his profit given that Maria responds the way she does, their strategies are a Nash equilibrium
- Maria's effort can vary between 0 and 1, where 0 implies all the time of the working day she shirks off, while 1 implies she works diligently 100 percent of the working day.
- An effort level of 0.5 means she spending half her working day on non-work related activities.
- Maria's reservation wage is at what wage would she be indifferent to not having a job and having a job.
- Assume the reservation wage = \$11.70 as shown in the figure earlier. This is the unemployment benefit Maria receives.
- So, her best response to wage of \$11.70 would be to not work.
- The effort she puts in for work comes at a cost = the disutility of the work she puts in; and a benefit = the likelihood of keeping the job and the economic rent she receives from having a job.

Employer's effort

- If Maria were paid a higher wage than the reservation wage, her economic rent increases, thus giving her more incentive to increase her effort.



Best Response Function of an Employer to Wage

- The area of the economic rent rectangle increases given her unemployment period does not change and her unemployment benefits do not change.
- **Worker's best response function (to wage)** is the amount of work that a worker chooses to perform as her best response to each wage that the employer may offer.
- Maria's best response to a wage offer depends on how long she would expect to be unemployed before getting a new job if she were to lose her job.
- For our analysis we assume this = 44 weeks.

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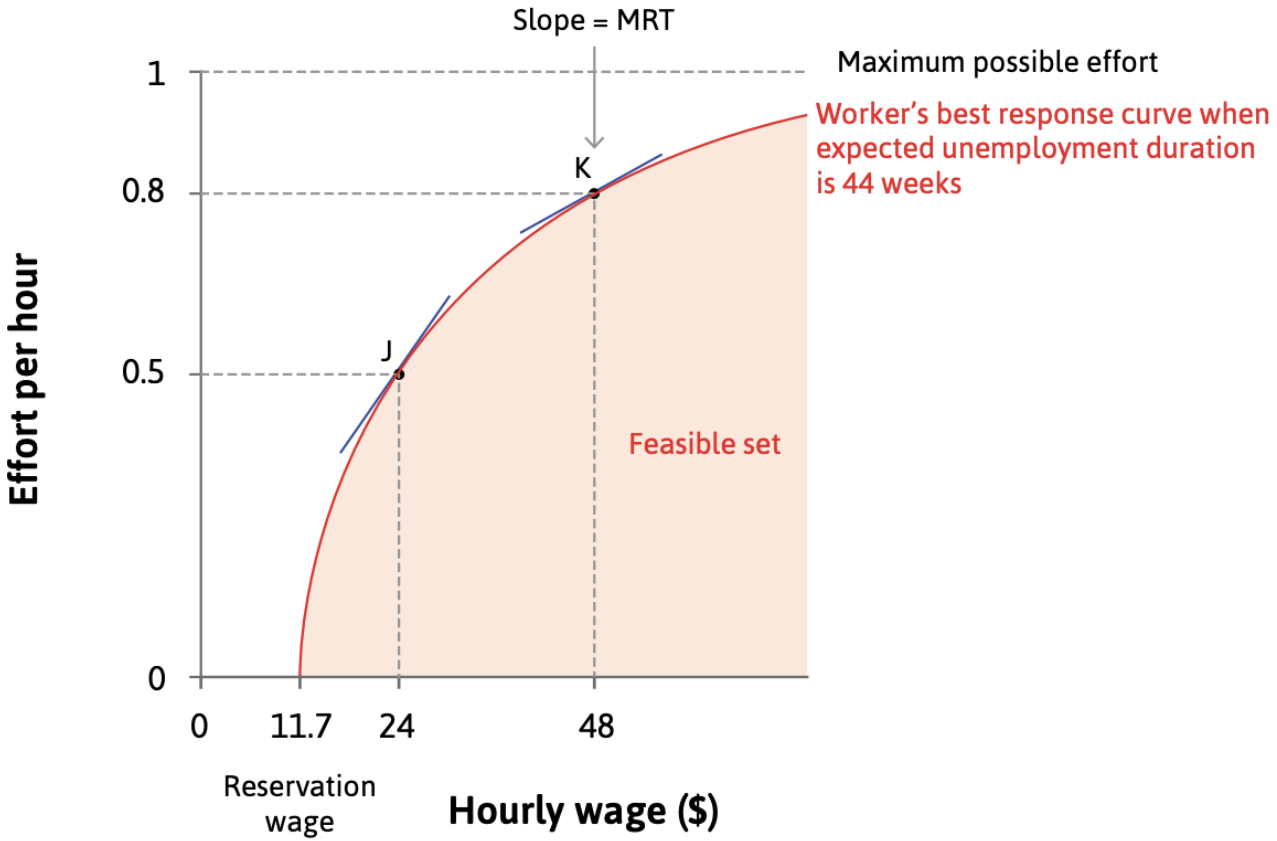
Slope = MRT
Maximum possible effort
Worker's best response curve when expected unemployment duration is 44 weeks
K
J
Feasible set
Effort per hour
1
0.8
0.5
0
0
11.7
24
48
Reservation wage
Hourly wage ($)

Workers' Best Response Curve

- The best response curve of the employer is concave.
- It becomes flatter as the wage and the effort level increases.
- As the level of effort increases to the maximum possible level, the disutility of effort becomes greater.
- So it takes a larger employment rent (thus, wage too) to get a given amount of extra effort from the employee.
- The best response curve shows how paying higher wages can elicit higher effort, but with diminishing marginal returns.
- So, the higher the initial wage, a \$1 increase in wage per hour, will receive smaller increase in effort from the employee.
- The best response curve is the frontier of the feasible set of combinations of wages and effort the firm can get from its employees.
- The slope of the frontier is the marginal rate of transformation of wages into effort.

Minimize Cost Per Unit of Effort

- The minimum wage the firms/employers can set is the reservation wage = \$11.70. But at this wage the effort by the employee = 0.
- Maria here has some bargaining power, that is the option to not work at all.
- While Maria determines how hard she would work, the employer can determine the conditions which Maria makes that choice.
- The employers face a trade-off that they can get a higher payoff by offering higher wages.
- To maximize the firms' profits they minimize the cost of production (later we will see how a firm's profit maximization problem and cost minimization problem are the same).
- Maria's effort is an input in production, and the employer would like to purchase it at the lowest possible cost. This does not imply paying the lowest possible wage.

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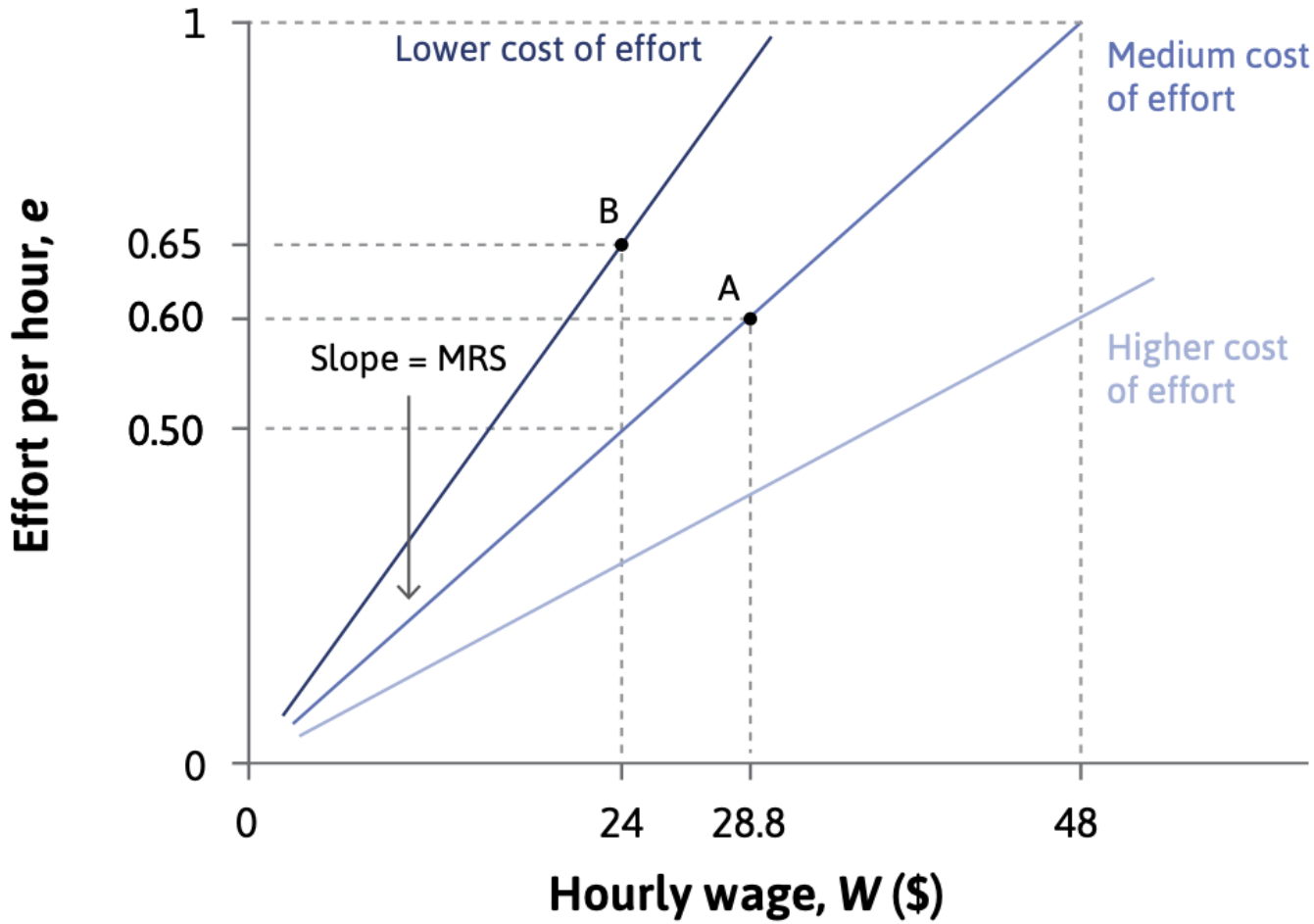
- The wage, W is the cost to the employer of an hour of a worker's time.
- What matters in production is not the number of hours Maria provides, but many units of effort she puts into the work.
- Suppose Maria puts in 0.5 units of effort per hours and the wage paid per hour is W, tho cost per unit of effort is $2W$.
- For each unit of effort e per hour, the cost is $\frac{W}{e}$.
- Employer should maximize the number of units of effort **efficiency unit** that he gets per dollar of wage cost, e/W.

Iso-Cost Line



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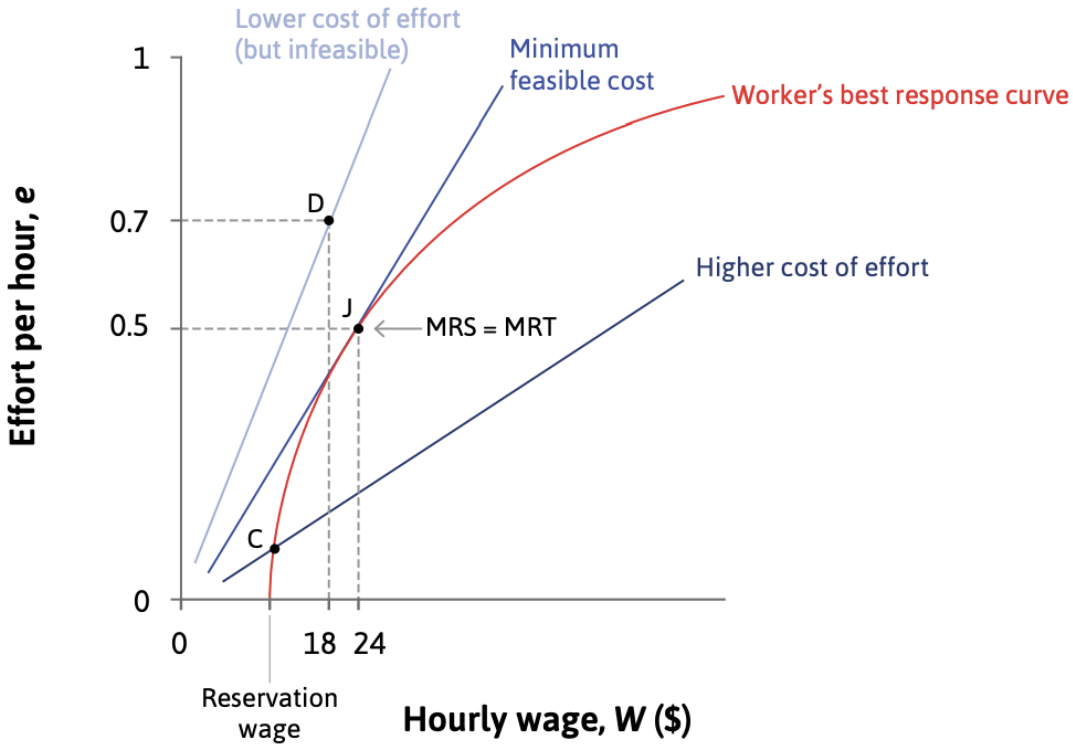
- Iso-cost curves joins all the points with the same effort per wage ratio (e/W).
- The employer would be indifferent between paying a wage rate of \$24 per hour and the worker providing 0.5 units of efforts per hour AND paying a wage rate of \$28.8 and receiving 0.6 units of effort per hour.
- It is the production equivalent of an indifference curve in consumption.
- Since the cost per unit of effort is the same along an iso-cost line, the employers are indifferent between any points along this curve.
- The steepest iso-cost lines have the lowest cost of effort, and hence the employers would like to be on the steepest feasible iso-cost line.
- The employee's best response function is the employer's feasible frontier.
- Given, the best response function the employer seeks to minimize the cost per unit of effort.
- This is the tangency point of employer's best response curve and the employer's iso-cost line.

Efficiency Wage



- The employer will offer a wage of \$24 per hour at point J for an effort of 0.5 unit per hour.

The firm's constrained choice problem

- At point J the MRS of the iso-cost line = MRT of the best response function.
- The MRS of the iso-cost line is rate at which the effort per hour should increase for each additional unit of wage per hour, for the employer to have a constant cost per unit of effort.
- The MRT of the best response function is the rate at which the employee increases the effort per hour for each additional unit of wage per hour.
- The wage set by the employer following the profit maximization or cost minimization exercise is called the **efficiency wage**, as it maximized the effort per unit of wage per hour.

Involuntary Unemployment

- A person who is seeking work, and willing to accept a job at the going wage for people of their level of skill and experience, but unable to secure employment is involuntarily unemployed.
- From the labor discipline model we can summarize that there must always be involuntary unemployment. Why?
- We started with the assumption that there must be some period of unemployment before Maria / the employee finds another job if she was fired. This assumption is crucial to ensure that she receives positive economic rent when employed.
- If she were to be hired by another employer at the same wage as she was initially employed, as soon as she was fired by another employer, her economic rent = 0. Her reservation wage in that case is say \$24 in the example we are dealing with.
- In which case she would receive a wage \$24 per hour and put in an effort = 0.
- Then the employee would be indifferent between keeping the job and losing the job.
- This cannot be an equilibrium.

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- This situation is the similar as when there are plenty of jobs paying $24 per hour and no one is unemployed.
- Each employer will start offering a higher wage to ensure the employees have a positive economic rent of being employed and hence increase the effort.
- The employer offering higher wage would not employ everyone at the new wage as the effort from each employee has increased.
- These newly unemployed workers would not be able to find a job immediately as all the other firms have hired at their optimum for the earlier wage.
- Gradually the economy would move to a new equilibrium with higher wages and lower jobs.
- In equilibrium, wages and involuntary unemployment have to be high enough.

Owners, Employees, and Public Policy

- Changes in the macro-economic conditions can shift the best response functions of the employees.
- The employees' incentive to put in effort, is reliant on economic rent and the probabilities of losing the job.
- The position of the best response function depends on:
  1. The utility of the things that can be bought with the wage.
  2. The disutility of effort.
  3. The reservation wage.
  4. The probability of getting fired, at a given effort level.

Unemployment and Unemployment Benefits' Effect on Wage

A higher unemployment rate

- When unemployment rate in the economy is high, the workers who lose their job can expect a longer period of unemployment before getting hired.
- An increase in the duration of a spell of unemployment has two effects:
  1. Reduces the reservation wage: increasing the employment rent per hour.
  2. Extends the period of lost work time: increasing the total cost of job loss and hence total employment rents.

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- A higher unemployment rate increases the duration of unemployment.
- This increases the employment rent that is to be gained of the employee were employed.
- The employment rent $= s(Wh - B)$
- The reservation wage is when $sWh = B$ and is $b = B/sh$
- When s, the unemployment duration increases, the reservation wage b declines.
- The increase in the employment rent shifts the best response function up. The best response function also shifts to the left as reservation wage falls.
- An increase in unemployment benefit will have the opposite effect of the best response function shifting down and to the right as the economic rent declines.

Economic policies

- Economic policies that alter the economic rent affects the wages paid by the employers.
- A higher employment benefit will increase the wage paid as the best response function of the employees move to the right and downward.
- A rise in the unemployment rate increases the economic rent shifting the best response function to the left and upward, thus the wage the employer has to pay to get a given level of effort declines.
- *Workers are favored by a rightward shift of the best response function.*
- *Employers are favored by a leftward shift of the best response function.*