

Unit 6

Previously, we have considered the decision-making process of individuals in isolation, individuals when their actions are constrained by the actions of others, and how power and institutions affect outcomes.

Now we will explicitly model a decision-making process that involves interaction among economic actors: firm and employee. Firms are interesting in that they are actors in the capitalist economy as well as a stage where interactions occur. Of chief concern this unit is how do the interactions between the firm's owners, managers, and employees influence wages, work, and profits and how this affects the entire economy.

This is the first time you will be introduced to the principal-agent problem. The presence of asymmetric or non-verifiable information gives rise to incomplete contracts. Incomplete contracts are crucial element of the efficiency wage model we will develop.

For those who have studied micro, consider Labor supply and Labor demand model; in equilibrium the labor market clears and there is no involuntary unemployment. Is it a realistic feature of a capitalist economy to not have involuntary unemployment? No, the empirical reality is that unemployment is a problem; moreover, it is a problem which disproportionately affects subsets of the population.

The context for this unit

Let's start by asking why is work important? Well, work is how we as a society have collectively decided to solve the economic problem: work is how society organizes to produce the material means of well-being.

After producing, another question arises, how do we distribute the surplus to ensure production continues in the future. Essentially what we are asking is how the pie is divided. The pie is divided into wages and profits, income to labor and capital, respectively. If one group gets a larger share of the pie, the other group must get a smaller share. Division of the surplus creates conflict.

This unit

Modern capitalist economy is defined by the 3 dominant institutions: firms, markets, and private property. One question that we will consider is the difference between firms and markets.

Coordination of labor occurs within the firm but can also be coordinated within the market through the interactions of firms. When labor and capital cooperate in the firm, mutual gains arise. The distribution of these gains it what creates conflict.

What is a firm

Firms are a dominant institution in capitalism and serve both as important actor and a stage in which interactions occur.

They hire people, purchase inputs in the market, combine the inputs with labor to produce output which is then sold in the market at a price greater than its cost.

Firms vs markets

Ignoring household work, in the capitalist economic system, the division of labor is coordinated either through markets or in firms. As a quick aside, how is household work coordinated? Who prepared your dinner?

Coordination in firms and through the market differ in the nature of power present in the interaction. Firms represent a concentration of power. Orders are issued by those higher up in the hierarchy to those who occupy a lower position.

Whereas coordination through the market is characterized by a decentralization of power.

I know that many of you work and are familiar with nature of employment, when your boss tells you to come to work at a certain time and perform a certain task, you obey if you want to keep your job.

Contracts

Considering how the nature of contracts which form the basis of exchange differ within markets and the firm will help to distinguish these two dominant institutions.

Within the firm, a wage labor contract gives the employer the right to issue orders to the employee. Contracts for labor confers a temporary authority over a person's activities and ownership of whatever results from those activities. What the employee sells to the employer is the power to perform labor.

In a goods market, the contract permanently transfers ownership of the good that is privately owned from seller to buyer.

Relationships within a firm

The social interactions that occur within a firm often last much longer than the short-lived one-time interaction that occurs in the market. As a result of the extended duration, the participants to the interaction will develop relationship-specific assets. When the relationship ends, the benefits accruing to both parties is lost.

The value to both employee and employer that exists from continuing the relationship, unites two often conflictual parties in their common interest for the firm's success.

Asymmetric information

You will notice that the arrows facing up and down, which represent a flow of information, are not the same. The hierarchal nature of a firm creates a problem of asymmetric information when knowledge or information is not known between those members occupying the different levels.

The other thing that becomes apparent from studying this figure is the nature of the employment relationship— one party issues orders to the other party who has transferred authority of their power to perform work.

The grey arrows going from the top down represents orders or commands like show up at 8am and clean the toilets.

Incomplete contracts

The concept of incomplete contracts remains one of the most important features of the model we will introduce later. Because of uncertainty there are future tasks which may be required and cannot be known and thus cannot be included in the contract: tasks required of workers cannot be fully specified. And there are aspects of performing labor that cannot be measured: firms cannot monitor effort on the job.

Before advancing think about job of a professor or instructor at any level and why the employment contract is necessarily incomplete. What important parts of the job cannot be covered in a contract or, if they are, cannot be enforced.

Workers effort

If contracts are incomplete, then why do workers exert any effort let alone work hard?

Here you can see a variety of reasons listed, many of which are not motivated by pure self-interest.

Let me spend a minute on that last point, the fear of being fired. Because of contractual incompleteness, and specifically because firms cannot measure effort, they will often pay a wage above lowest possible wage. In fact, paying low is not a profit maximizing strategy. Herein lies the answer to why workers work hard, by paying above the minimum, the employer creates an employment rent or equivalently creates a cost if you were to lose the job. Fear of losing the job, specifically losing the rent from working at that job, motivates workers to work hard enough to avoid being fired.

Employment rents

Employment rents are the incentives causing workers to supply effort in response to firm's wage offer. It is imperative that you understand what determines the size of the employment rent, as the rent changes so too does the incentive to supply effort to the employer.

Paying a wage above the reservation option, reduces shirking- doing less than agreed, minimizes turnover- expensive to hire new workers, and is also influenced by social conventions related to fairness and reciprocity.

Calculating employment rents

Employment rent can also be conceived of as net cost of job loss. The height of the box in the image is determined by the wage offered. The width of the box is determined by expected duration of unemployment which is a positive function of the unemployment rate: if the unemployment rate goes up, the expected duration of unemployment also rises.

In this simplified presentation, there are many other costs and benefits which are excluded:

- Costs of traveling to and from work
- Firm-specific assets, insurance, social and psychological

Rents also benefit employer. Employee has something to lose which facilitates the exertion of power by employer over worker. Rent also reduces turnover which reduces costs to the firm greatly

I will conclude this slide by leaving you with a question to ponder. How does policy influence employment rent?

Labor discipline model

The labor discipline model that is about to be introduced is another constrained optimization model. There is a function that we are trying to optimize, a function which acts as a constraint, and the equilibrium condition.

Wages and effort

What are the costs and benefits of effort to the worker Maria? Disutility of work is a cost of effort; the basic idea here is that work sucks and leisure is more fun. A benefit of effort is that it reduces the likelihood that Maria will be fired and lose the employment rent.

Maria needs to find a balance between costs and benefits with her choice of effort.

The employment games

Recall the modelling process: we have a question and have determined what variables matter, now we need to define the relationship between variables: what are the rules of the game or what are the possible actions and consequences of those actions.

Remember that we described a game as a description of a social interaction, including:

- a list of the players
- the strategies they can adopt
- the order in which the players choose their actions
- what the players know when they choose their actions
- the outcomes for each of the players (their payoffs) for all of the strategies that may be chosen

The employment game is a sequential game that is repeated at each period of employment.

Before the employer can choose the wage, they need to know how Maria will respond in terms of effort.

Workers best response curve

The way we model Maria's effort in response to a given wage offer, *ceteris paribus*, is with her best response curve.

The vertical axis is effort per hour and the horizontal axis is hourly wage.

How much effort would Maria provide at a wage of 6 per hour? Why? Nothing, because that is her reservation wage. The horizontal intercept is the reservation wage. If the reservation wage changes, *ceteris paribus*, the best response curve will shift.

The best response curve is upward sloping and represents effort expended per value of hourly wage. How can the employer get greater effort from the employee? Well, one way is to pay a higher wage; move to the right on the horizontal axis and because the BRC is an upward sloping function, we end with higher effort.

When wage is low, best response curve is steep— small increase in wage causes substantial increase in effort. While at higher wages, an increase in the wage causes smaller increases in effort. Like the production function we saw before, the BRC is concave and is an if-then statement.

Best response curve is the feasible frontier (the maximum feasible quantity of one good for a given quantity of the other: effort and wage) of the employers feasible set (all of the combinations of the things under consideration that a decision-maker could choose given the economic, physical or other constraints that they face).

From the employer's perspective— higher wages translate into higher effort but with diminishing marginal returns: this is a concave function.

The slope of the best response curve is the marginal rate of transformation— the rate at which wages are transformed into greater effort. This is the function which serves as the constraint.

The BRC is drawn under the assumption that expected unemployment would last 44 weeks. What would happen to her employment rent if labor market conditions deteriorated so that expected unemployment duration increased?

An increase in the expected duration of unemployment will drive the employment rent higher: the rent box from earlier becomes wider. As a result of the increased employment rent, for any wage offer, the employee will exert higher level of effort. Graphically the BRC will move left.

The next question is the BRC shifting or rotating, is the reservation wage changing or not. If the reservation wage changes, then the BRC shifts. If the reservation wage does not change, then the BRC rotates: the horizontal intercept does not change. In this example, a decrease in the disutility of effort would cause the BRC to rotate to the left. Decreasing the disutility of effort, increases the employment rent, *ceteris paribus*. The employee responds to higher rent with greater effort for every given wage offer.

Firms best response

Because greater effort requires a higher wage, firms too face a trade-off that results from the upward sloping BRC. Asymmetric information and incomplete contracts generate a somewhat surprising result, the lowest possible wage is not the cost minimizing choice for the firm. The firm is seeking to minimize the cost per unit of effort.

Go back to unit 2 where we introduced a concept which hallowed us to compare costs of different combinations of inputs— isocost lines. Here the isocost lines represent the cost per unit of effort' the slope is given to us by effort/wage or e/w .

Isocost lines for effort

The isocost line gives us all the combinations of wage and effort that yield a constant cost per unit of effort.

Wage (w) is the cost and effort (e) is what the firm receives in exchange for the wage. The cost of effort is w/e and represents the cost that the firm is trying to minimize.

Alternatively, we can think of this as the firm attempting to maximize the units of effort per wage. Effort per wage is the slope of isocost line of effort and represents a constant ratio of effort per dollar

The isocost lines slope upward because higher effort requires a higher wage. A steeper line means lower cost of effort and higher profits for employer.

The slope of isocost line is the marginal rate of substitution. Because each isocost line represents a constant cost per unit of effort, firms are indifferent between the different combinations of effort and wage on a given isocost line.

How is lower cost represented in this image? That is right, a lower cost per unit of effort is represented by a steeper line.

The profit maximizing firm wants to be on the steepest isocost line for effort which is where he minimizes his cost. The lowest wage is not the profit maximizing choice because of asymmetric info and incomplete contracts.

The firm faces a constraint, it cannot dictate the level of effort. How then does the firm determine what wage to offer?

Determining wages

The firm cannot dictate the level of effort. The level of effort for a given wage offer is given to us by the BRC. The BRC is the constraint and the cost is what we are trying to minimize. We have a function that we are trying to optimize and functions acting as a constraint, all that remains is the equilibrium condition. To maximize profits, the firm must minimize costs, but it faces a constraint.

Let's consider each of the points a, b, and c in turn. At point C, the MRT is not equal to the MRS. At this point, paying more would yield a lower wage-effort ratio. At point B, the cost is lower than at point C, but it is outside the feasible set. At point A, the firm is offering the wage which minimizes cost per unit of effort given the constraint of Maria's willingness to exert effort for a given wage offer. This is our efficiency wage equilibrium.

In equilibrium, the firm offered a wage and Maria responded with a level of effort that minimizes cost per unit of effort. The rent that Maria receives provides her an incentive to exert effort. And the rent that Maria receives represents the cost to Maria if she were to lose her job which enables the firm to exert power over her and bolster profits.

This game was between two players. What are the implications for the economy at large?

Involuntary unemployment

A very important implication from this model is to gain insight into the role of unemployment. Unemployment serves a purpose: it is the stick which keeps labor in line.

Unemployment serves to discipline labor, hence the name labor discipline model. What would happen to Maria's rent if unemployment approached zero?

The employment rent box would get narrower and narrower. As the box becomes narrower, her rent becomes smaller. The employer needs to generate a rent for the employee to respond with effort. As unemployment approaches zero, the employer must respond by offering a higher wage. It is rather easy to conceive that at some point wages cannot go any higher, it is not sustainable to offer an infinitely high wage.

It also becomes apparent from this model the importance of policy, specifically policy which affects the employment level or reservation option like unemployment benefits. Policy will affect profit and wages and as we will see in later units it will affect expenditure decisions which then feeds back into employment levels.

Factors shifting the equilibrium

The position of the best response curve depends on the reservation wage which determines the horizontal intercept.

If the employment rent changes, the best response curve will also change. If the employment rent increases, the best response curve will move left and both the wage and cost per unit of effort go down. If the employment rent decreases, the BRC will move right and both the wage and cost per unit of effort will increase.

Economic policy can change the unemployment benefit which would change the reservation wage and shift the BRC. Policy can also affect the unemployment rate which will affect the size of the rent and cause the BRC to move. If it is a shift or a rotation depends on if the reservation wage changes.

Imagine the unemployment benefit is determined a lump sum payment of \$100 regardless of how long you are unemployed. Then changing the unemployment rate will cause a shift of the BRC as the reservation wage which is understood as average earnings while unemployed would fluctuate with change in duration. Now imagine the unemployment benefit is \$50 a week for as long as you are unemployed, then a change in duration would cause the BRC to rotate; the reservation wage does not change but the rent does.

Principal agent models

This last section summarizes principle agent models which we will see again in a few weeks. The slides are self-explanatory and there is no more audio in this lecture. Peace out.