Unit 5. Property and Power: Mutual Gains and Conflict

A. Introduction

This is the second time we will consider how to model economic relationships and interactions. Unit 5 introduces us to the importance of institutions and power in affecting economic outcomes. In Unit 3 we looked at autonomous individual making decisions alone, then in Unit 4 we discussed the interaction between members of the economic community, and now we consider the importance of the legal and institutional setting in which these interactions occur.

In the bargaining model we develop, it becomes explicit that when there are mutual gains arising from an interaction there must be conflict over how the gains are distributed.

Institutions and power greatly affect the outcome of the conflict over distribution of the gains.

A few other important points to pick up on are the concepts of an economic allocations and how we measure the outcome of the interaction and inequality between the participating parties.

And let me emphasize one more time:

- when there are mutual gains arising from an interaction there must be conflict over how the gains are distributed.
- the share captured by each party depends on the institutional and legal setting in which the interaction occurs.

The context for this unit

The rules of the game matter. This point has been emphasized since the beginning of the semester. In unit 2, defining the rules of the game was introduced as one of the steps in the model building process; and last week, we saw, using game theory, how changing the rules can affect the outcome.

Institutions are the written and unwritten rules that govern what people do when they interact, and distribution of product created from that interaction.

Power represents an ability to get the things we want in opposition to the intention of others and is strongest when out opponents believe, contrary to reality, that what is best for their opponent is best for them. Power sets the terms of exchange and may impose costs on those who oppose the advantaged participant.

It is imperative to engage critically with the world around you and the information presented to you in this course. Ask yourself, what else matters for the outcome we are considering? How are we evaluating the outcome? And how can we improve the outcome?

This unit

When mutual gains arise from a n interaction, a conflict exists over the distribution of those gains. A key question we seek to answer this week is what determines who is advantaged and disadvantaged. We will introduce several ways to measure and evaluate outcomes of interactions like the Rawlsian veil of ignorance and pareto efficiency. We will conclude our discussion this week by considering policy to improve the outcomes.

B. Evaluating Outcomes

Pareto Efficiency

The outcome of an economic interaction is referred to as allocation. The allocation is pareto efficient if no one can be made better off without making someone else worse off.

WE can return to the concept of domination from unit 2. In this example though, we would consider the outcome (T,T) to be pareto dominated by allocation (I,I).

(I,I) pareto dominates (T,T).

With the exception of (T,T), the three other allocations are pareto efficient. This leaves an important question unanswered, which of the three pareto efficient allocations is preferable?

Pareto Efficiency: Caveats

Last slide we were left with the question about how to chose between competing pareto efficient allocations. Unfortunately, pareto efficiency does not allow us to make such a judgment. It is intended to be a value-free statement which is both a strength and shortcoming.

Pareto efficiency has nothing to do with fairness either. Imagine we have $100 to split, initially you have $1 and I have $99. Perhaps it would be deemed fairer if I gave you $49 so we ach had equal amounts. However, note that would make me worse off and thus is not a pareto improvement.

Fairness

If we care about fairness, which last week's games supported the conclusion that we do, then we need to consider how unequal the allocation is (substantive judgment) as well as how the allocation came about (procedural judgment). The substantive involves judging the outcome, while procedural considers how the outcome came about like for instance was one of the participants in an advantaged position.

What do we even mean by fairness? We turn to Rawls for an answer to that question. Take an impartial perspective and place equal weights on the outcomes of the participant. Next imagine a veil of ignorance, so that if you were to be placed in the outcome experienced by one of the participants you would be indifferent between which outcome you experienced.

Fairness and Economics

Without having to make a value statement, you can use economics to understand how the rules of the game advantage one member of society over another, the benefits and costs to individuals and society when moving between allocations, how policies promote or prevent achieving a given end.

In the next section, we will consider several economic interactions and evaluate the allocations.

C. Determining Allocations

Example: Angela the Farmer

Initially, Angela exists in isolation on her farm. Her decision involves the trade-off between producing more grain or having more free time. In this first example, Angela gets to keep everything she produces.

Given the state of technology and some assumptions about her production function we derive her feasible set. The frontier of the feasible set tells the rate at which Angela is constrained by when converting less free time into more grain: MRT.

Remember, to find the equilibrium we need to know the rate at which she is willing to give up free time for more grain: MRS; this rate is given to use by the slope of her indifference curves which represent all the possible combinations of grain and free time that yield a constant level of utility.

When the trade-off she is willing to make is equal to the trade-off constrained to make we have found the equilibrium: optimal allocation.

The image shows the optimal allocation for Angela in isolation.

Combined Feasible Set

Now along comes Bruno who has the power to claim some of what Angela produces even though he does not work himself.

The feasible set is the same as before, what is different now is that the product of Angel's labor is split between herself and Bruno. The image shows one possible allocation E that could result from this social interaction. The entire feasible set represents all the other possible allocations. Which allocation we arrive at depends on the rules of the game.

Feasible Allocations

The two agents are purely self-interested. However, we will assume that Angela faces a biological constraint- she needs some minimum subsistence level of grain to keep producing.

Any allocation above the biological constraint and below the technologically determined constraint is in the set of feasible allocations.

Coercion: Imposing Allocations by Force

If Bruno has the power to impose any allocation he desires, then the optimal solution is the allocation that maximizes his economic rent. This solution occurs at the allocation where the slope of Angela's biological constraint equals the slope of the technological constraint. MRS=MRT at point A on the feasible frontier where Angela receives her subsistence bundle of four bushels (denoted by point B) yielding six bushels for Bruno and where Angela must work for 11 hours.

Voluntary Exchange: Bargaining

Assume new institutions emerged, slavery is outlawed, and private property is protected. How will the outcome of the interaction change?

Let us assume Bruno owns the land and Angela can chose voluntarily to rent it or not. Angela owns her power to perform labor.

How the surplus that is created from this interaction is distributed will depend on the power of each agent which depends on the institutions governing the interaction.

She will participate in the exchange if she expects the outcome from the interaction to be better than her reservation option. We assume that she is ensured a subsistence bundle either from friends, family, or the government. A quick aside, if we did not assume Angela was ensured of a subsistence bundle, how would the outcome change?

The split offered by Bruno must leave Angela at least as well off as her subsistence bundle. This split would lie on the indifference curve which passes through her reservation option. All the allocations bounded by the reservation indifference curve and technological constraint constitute the economically feasible set.

Coercion vs. Bargaining

Under coercion, the optimal allocation, the one that maximized Bruno's rent, occurred where the slope of the biological constraint equaled the slope of the feasible frontier. When we changed the institutional setting, the joint surplus was maximized slope of the reservation indifference curve equaled the slope of the feasible frontier.

When both parties had to agree to the allocation, the total surplus is smaller; although, both the absolute value and share of the surplus going to Angela increased while the converse is true for Bruno.

The Pareto Efficiency Curve

Let us consider the scenario where Angela worked in isolation and where she paid rent to Bruno. In both scenarios, the entire product is distributed between Angela and Bruno and the MRS=MRT. This means that both allocations are pareto efficient.

If all of the grain produced was not distributed between them, then it would be possible to improve the situation of one without making the other worse off: you could have a pareto improvement by changing how much grain they consume. The second property means that there cannot be an improvement to the allocation by changing the amount of time Angela works.

If we connect all the possible pareto efficient outcomes we have the pareto efficiency curve.

Spend a moment and think about what it means if MRT > MRS.

Pareto-Efficient Bargaining

The pareto efficient curve contains all the pareto efficient allocations bounded by the two extremes, Angel gets everything or get her subsistence bundle.

Institutions and Policies: Legislation

Let us assume Angela and her fellow working-class brothers and sisters organize and pass some legislation which limits the working day to 4 hours and dictates minimum pay of 4.5 bushels.

Before the legislation, she worked 8 hours and received 4.5 bushels; this was determined as the optimal allocation given her reservation indifference curve was parallel to the feasible frontier. The new legislation puts her on the higher indifference curve passing through point F. The new allocation reduces the amount of grain received by Bruno and the number of hours worked by Angela.

At allocation F, the MRT is greater than the MRS. Is a pareto improvement possible? Yes, this is one of the two conditions stated earlier. There is a pareto improvement available by changing the amount of hours Angela works.

Allocation F is not on the pareto efficient curve; Angela would prefer any allocation on the curve between allocations C and G.

At point H, Bruno receives the same amount of grain as allocation F, but Angela ends up on a higher indifference curve: she works more but receives more than enough grain to compensate her for the lost free time. Moving rom F to H is a pareto improvement.

Angela the Farmer: Lessons Learned

What is the moral of this story?

Technically feasible allocations are those determined by constraints imposed by biology and technology. Contained within this set is the subset of economically feasible allocations which are determined by the institutional setting. The allocation we end up at is determined by the preferences and relative power of those involved in the interaction.

The more power a person has, the larger the share of surplus they can capture. Even if one person captures the entire surplus, because the entire surplus is captured it is pareto efficient. Remember, fairness is an entirely different question.

Here you can see a flow chart which shows the key factors determining which outcome is realized.

D. Institutions and Inequality

Measuring Inequality

Now we turn our attention to measuring the inequality of the observed outcome. This task is quite a bit more complicated when there are more than two people in the distribution.

The first measure we introduce is the Lorenz curve. The Lorenz curve shows the entire population lined up along the horizontal axis from the poorest to the richest. The height of the curve at any point on the horizontal axis indicates the fraction of total income received by the fraction of the population given by that point on the horizontal axis.

In the example presented here, the bottom 90% of the population own nothing, the top 10% own everything. It is a straight line up which tells us that amongst the top 10% there is perfect equality: each owns the same amount.

The second measure we introduce is the Gini coefficient. The Gini coefficient measures the area bounded by the 45-degree perfect equality line and the Lorenz curve. The smaller the Gini coefficient, the more equal the distribution.

Example: Pirate Ships and the British Navy

Arrgh matey. According to our measures of inequality and our revealed preference for equality, you would have been better off as a pirate than as a member of the royal navy.

Of course, being a pirate is way cooler too.

Addressing Inequality

Inequality is a problem, we can model it and measure it, but what do we do about it? Let us consider policy to address inequality.

In the image you can see the bottom 10% receives a minuscule share = 0.1% of market income. The bottom 50% receives less than 20% of market income.

Taxing market income and using it to fund transfers, can be used to reduce inequality in disposable income.

Example: Operation Barga

The image here shows the Gini coefficient and Lorenz curve for land ownership in West Bengal in 1973 prior to land reform. Much like our earlier example of Angela and Bruno, new legislation was passed which altered the relative bargaining power. The change in bargaining power affects the realized outcome.

Example: Operation Barga 2

After the reform, inequality declined greatly. Moreover, it was found that the ability to keep a larger share provided stronger incentives for work and investment which increased the size of the economic pie. However, it was not a pareto improvement as some people received less. But if the pie got larger and the share going to the richest declined, that indicates that the poorest members got an even larger slice. Not Pareto efficient, but was it fair?