

Model formulation
Assignment due Thursday November 18, in class

Land rental market in the context of weak property rights

General guidelines for model formulation

To conceptualize a problem and formulate a model is a very interesting and creative process, but it is difficult. We thus suggest that you work in teams, although at the end each of you should write down his/her model. A few recommendations:

1. The problem is purposefully not specified in details. This is because this is what you will have to face when you do your own research. You will therefore have to make yourself a certain number of complementary assumptions, choices for the specification, etc. This means that there is not one single way to conceptualize the problem into a model. To the extent that the arguments that you are giving to justify any assumption, simplification, choice of variable, choice of behavior are consistent with the context that is given to you and convincing, this is fine. In fact, the art of modeling is to write a model as simple as possible that captures the main features of the problem that you are addressing and illustrates the trade-off and heterogeneity that you want to show.

2. In the process of developing a model, it is better to write a model that is very (too) restrictive but is consistent and well specified, than a model that is complex, rich in features, but inconsistent. Hence start simple, and then try to relax and improve on the most outrageous assumptions that may qualitatively affect the model outcome. For example, in many cases, assuming risk neutrality or using a static or a two period model, etc. would not qualitatively affect the decision process, even though those assumptions are very unrealistic. In other case they are a crucial feature of the decision process. Only relax the assumptions that really matter.

3. You don't have to solve the problem. But be very clear on what is exogenous and what is endogenous to the problem, and for every endogenous variable, who is the deciding agent and what is the decision rule.

4. When writing error terms (or probability of an event) make sure to identify the source of the unknown element. Is it an unknown to the deciding agent (in which case, there is a true decision under uncertainty) or an unobservable to the econometrician?

The land rental market problem

1. The story in words

The idea is to build a model that illustrates the following pseudo facts: In the context of weak property rights, the land rental market is inhibited; some potentially available plots are not rented and landlords tend to restrict their choice of tenants to those with whom they have a special relationship of trust or they can better enforce their property rights. Despite those precautions, squatting still happens once in a while. And when this happens, the landlord sometimes gets its land back, but sometimes not.

2. Characterization of the land rental market

- Land markets are localized, and hence there is only a limited number of potential tenants and a limited number of potential plots to be rented out.
- We assume perfect information in the market on the plot characteristics and on potential landlords' and tenants' productive assets/capacity. We however assume that the landlord cannot fully anticipate whether a tenant will be squatting or not.

- We assume that landlords are in a situation of principals in a principal agent-framework, and that they choose their tenant.

3. Insecurity of property rights

- Whenever renting out a plot, a landlord faces the risk that the tenant may decide to try to squat on the land, i.e., not pay the rent and keep the land for him from then on.
- Squatting may fail, if the landlord is able to get his property right enforced.
- Any attempt to squat, whether successful or not, entails from then on a “social cost” for the tenant (due to loss of opportunities in contracts, trade, and social relationships).

4. The model

Write a model that formalizes the decision of the tenant on whether to squat or not, and that of a landlord on whether to rent his plot or not, and if he does, to whom. We suggest to write down the time line of the decisions and to proceed backward formulating first the agent’s and then the principal’s decision like in standard principal agent problems.

5. Conclusion

Conclude on what you expect the solution of the model to give. Suggest the remaining one or two major limitations/weaknesses of the model that would require improvement.