MICROECONOMICS: INFORMATION, DESIGN, AND INSTITUTIONS

Professor: Dr. Stefan Behringer
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COURSE DESCRIPTION

This is a course in intermediate Microeconomic theory with applications. It studies the design of institutions that optimally cope with fundamental, longstanding economic questions (allocation of private goods, public good provision, trade). Starting from a simple, institution-free description of each question, we try to understand the basic tensions at work, and derive institutions that optimally address these tensions. In the process, we introduce the important ideas of Social Choice, Game Theory, and Market Design. The course is divided into four parts:

1. **Social Choice, Efficiency and Welfare:** We discuss normative criteria to evaluate collective choices made by a society comprised of individuals with possibly conflicting preferences (e.g. unanimity, not ruling out any preferences, not being dictatorial) and show that it is impossible to create institutions leading to choices that always satisfy even a minimal list of criteria. Next we introduce the possibility of pecuniary transfers to compensate individuals for social choices that harm them. We show that, when they are acceptable (unlike a market for human organs may be), Pareto efficiency and utilitarianism are equivalent, and a natural notion of social welfare emerges that ranks possible social choices. We will eventually investigate some tools Welfare Economics provides for the evaluation of actual policy choices.

2. **Game Theory and Incentives:** With this natural notion of optimal social choices, the question becomes a positive one: How can such choices be implemented. The difficulty is that the social value of different choices can only be assessed from the preferences of individuals. But each individual is the only one to know her true preferences, and must therefore be incentivized to provide this information. Institutions can be understood as rules of a game in which individuals strategically report their preferences. Game Theory is the science of such strategic interactions, and we will introduce its basic ideas and some applications (e.g. competition between firms, penalty kicking, taxes, (high-frequency) trading, pollution abatement).

3. **Institutions as Mechanisms:** At this stage, we are equipped to look for institutions that lead to efficient social choices in spite of asymmetric information about

preferences. We will do so for three types of important economic problems: The allocation of private goods, the provision of public goods, and the organization of trade. We show that well designed auctions can solve the allocation problem. Using this as a starting point, we derive a general class of mechanisms that solve the incentive problem and lead to efficient social choices. They do so by using transfers that lead individuals to internalize the externality they exercise on others, and therefore align their incentives with social welfare. Such mechanisms however lead to budget deficits when applied to public good provision or trade. In fact, we show that efficiency cannot be achieved for these problems and we derive second-best solutions, that is, institutions that are optimal given the need to incentivize individuals. As the number of agents increases, we show that the inefficiency disappears, and that these second-best solutions come to resemble the ideal situation of perfectly competitive markets, thus providing support for the idea of market efficiency. For the public good problem, however, scaling is often of no use.

4. **Limits to Efficiency:** In the last part of the course, we examine other possible sources of economic inefficiency. We start by looking at monopolies and their pricing strategies. We explain first, second, and third-degree price discrimination. We explain how second degree-price discrimination can be understood as a mechanism designed to maximize profit rather than welfare. We also show how online information about consumers affects third-degree price discrimination, and use this to discuss the regulation of online data. Then we show how asymmetric information can destroy efficient trade even in competitive markets when they are subject to adverse selection and apply this idea to employment and insurance markets. Finally, we go back to auctions and the private good allocation problem, and show that a revenue-maximizing seller will optimally design auctions that distort efficiency.

Lectures (tentative)

1. Social Choice
2. Efficiency and Welfare Economics with money
3. Incentives and Game Theory with applications (2 to 3 lectures)
4. Efficient Auctions
5. Vickrey-Clarke-Groves mechanisms
6. Second-best Mechanisms, markets and large public goods
7. Adverse selection
8. Monopoly pricing and price discrimination
9. Profit maximizing auctions
10. Review Session