

## Public Economics

### Course Description

This course explores the role of government in the economy. In this course, we will consider the economic rationale for government intervention in the economy—in what situations is government intervention in private markets warranted? We will analyze the different approaches by which government correct market failures: their strengths, limitations and weaknesses. If time allows, we will discuss the successes, failures, and compromises inherent in government interventions in a variety of areas, such as: the education, environment, income redistribution, social security, savings, health care, the labor market, and tax policy.

### Course Schedule:

This course will meet ten times for 90 minutes each session, or five times for 3 hours each session. Office hours are to be arranged.

### Course Materials

Textbook: Public Finance (McGraw-Hill/Irwin), by Harvey Rosen, 6<sup>th</sup> edition.  
Class handouts

### Course Requirement:

*Alternative 1:* Final exam – in-class, closed note, closed book, open mind.

*Alternative 2:* Group project – the project will be done in groups of 3-5. The objective of the group project is to apply the analytical skills developed in class to a current issue of policy relevance. Anything related to government involvement in the economy is potentially appropriate. You are encouraged to contact with me about your topic, both in choosing a topic, and in doing your research. The deadline is August 31<sup>st</sup>, 2004.

### Approximate Calendar

Date	Section	Topic/readings	Discussion Questions
TBA	Section 1	Overview of basic concepts in economic analysis	
TBA	Section 2	The scope for government intervention	

TBA	Section 3	Market failures: imperfect competition	DQ-1: USA government vs. Microsoft
TBA	Section 4	Market failures: externalities	DQ-2: Reduce the pollution externality associated with driving
TBA	Section 5	Market failures: information failures	DQ-3: Homeowners Insurance vs. Poverty insurance
TBA	Section 6	Market failures: public goods	DQ-4: how to provide weather information
TBA	Section 7	Tax Policy & Regulation	DQ-5: A Fat tax
TBA	Section 8	Discussion Question Revisited	
TBA	Section 9	Case Study: Privatization in China's Education	
TBA	Section 10	Case Study: How USA introduce competition in telecommunication industry	

### **1. Overview of basic concepts in economic analysis.**

This session reviews the basic concepts in economic analysis: demand curve, supply curve, consumer surplus, producer surplus, elasticity, deadweight loss, budget constraint, indifference curve. For those who are familiar with these concepts, this is a good warm-up. For those who do not have much background in economics, this is a prerequisite preparation for further studies.

### **2. The Scope for Government Intervention**

We will consider the economic rationale for government intervention in the economy. That is, in what situations is government intervention in private markets warranted? First and second fundamental theorems of welfare economics are briefly discussed. The concepts of natural monopolies, externalities, public goods and information asymmetries are introduced.

### **3. Market Failures: Imperfect Competition/Monopoly Power**

In such sectors as electricity, water supply and so on, it is efficient to only have one monopolist to organize production because of the giant fixed costs. What is the efficient loss associated with this institutional arrangement? How to reduce the efficient loss? Is strong regulation the best way to tackle this problem?

### **4. Market Failures: The Case of Externalities**

Social losses will occur if social cost of production and private loss of production diverge significantly. A typical example is pollution. How to reduce the social loss of this kind? Can market mechanism play a role in this regard?

## **5. Market Failures: Information asymmetries**

Information asymmetry occurs when one party to a transaction has more or better information than the other party. In this section, typical situations under asymmetric information such like adverse selection and moral hazard and their implications for public sector will be discussed.

## **6. Market Failures: Public goods**

The consumptions of public goods are both non-rival and non-excludable. These two characteristics make it impossible for private market provides public goods. However, does this mean government has to directly produce public goods? How does private market help to organize the production of public goods?

## **7. Tax Policy & Regulation**

Tax and regulation is two most important government interventions in correcting market failures. But both of them are not free. They both lead to losses in social welfare. What are their strengths and weaknesses? How to manipulate these two tools to better serve public interests?

## **8. Discussion Question Revisited**

This section revisits the discussion questions. The first purpose is to review the concepts we have discussed. The second purpose is to show how to use the tools we have learned to analyze practical problems. It also serve as a makeup in case that we have no time to go into the details of these discussion questions in the previous classes.

## **9. Case Study One: Education Marketization in China**

Education is not “pure” public goods. Market mechanism could and should play an important role in providing educational services. However, the Education Marketization in China is not that successful: market hardly plays a role and public accountability faces challenges. How does this happen? What is the best way out of this prediction?

*Reading:* Haitao Yin, Education Marketization -- Competition Mechanism and Public Accountability — an Analysis of China’s Education Reforms.

## **10. Case study Two: How USA Introduces Competition in Telecommunication Industry**

Over the past 30 years, the US has initiated a number of regulatory initiatives to open segments of the telecommunications market to competition. Prof. Faulhaber develops a hypothesis regarding why such initiatives succeed or fail, based on a review these initiatives, and informally test the hypothesis. This session discusses how to successfully introduce competition in monopoly sector.

*Reading:* Gerald R. Faulhaber, Policy-induced Competition: the Telecommunication Experiments.

### **Discussion Questions**

*Discussion Question 1:* Microsoft has 90+% of Intel-based PC operating systems. In the “old” economy, there is no doubt that Microsoft has the so-called monopoly power. Department of Justice USA has a long well-known combat with Microsoft. Could the “new” economy justify Microsoft’s monopoly powers? What are the arguments for and against Microsoft’s monopoly powers?

*Reading:* Gilbert, Richard J. and Michael L. Katz, “An Economist’s Guide to U.S. v. Microsoft,” Journal of Economic Perspective, Vol. 15, Number 2 (Spring 2001), pp. 25-44.

Harmon, Amy. “U.S. vs. Microsoft: The Overview,” New York Times, November 2, 2002.

*Discussion Question 2:* Vehicle emissions have been the biggest source for air pollution.

Different approaches have been suggested to combat the pollution externalities associated with driving:

Tax vehicle emissions

Tax gasoline purchases

Create vehicle emissions standards

Grant a single firm the right to be the monopoly provider of gasoline

What are the strengths and weaknesses of different approaches?

*Discussion Question 3:* Homeowners Insurance VS. Poverty Insurance

Homeowners insurance pays out coverage in case that damages (fires, storms, etc) or losses (theft) happen to the homeowners’ property. Poverty Insurance pays out coverage in case that the insured’s income drops below some certain poverty line. Private homeowners insurance market works well, while private poverty insurance market never exists. Poverty insurance is usually offered by government in the form of social security. Why do all of these happen?

*Discussion Question 4:* How to provide weather information

ZhanHua is a small village in Eastern China. Its residents make a living by fishing, so reliable weather information is quite important for their safety and production. 12 families live in this small village, and each has the same marginal value from one more unit of weather information provision:  $WTP = 10 - 0.5W$  where  $W$  is the amount of weather information. Collecting weather information is quite expensive, with a marginal cost  $MC = 40 + 2W$ .

- A) Does weather information satisfy the definition of a pure public good? Explain.
- B) How much weather information will be provided in a purely private market for weather information?
- C) Suppose that the village council decides to provide weather information centrally (government provision). What is the socially optimal amount of weather information for the village to provide? How much should the village assess each family for providing this service?
- D) The village elders are charged with broad-based corruption, and the villagers decided that they cannot trust the village council with the direct provision of any public services. The villagers decide to hire a private firm to provide weather information. The village council gives

TWC Co. the willingness to pay schedule of all the families in the village and grants TWC Co. the power to assess all families a fee corresponding to their willingness to pay for the amount of weather information provided by TWC Co. How much weather information will TWC Co. provide and what price will it charge each of the families in the village? How does this compare with the socially efficient level of weather provision? [Hint: Calculate the total revenue function for TWC Co. and take the first derivative w.r.t.  $W$  to obtain TWC's marginal revenue function].

E) Now suppose that there are two companies willing to provide weather information to the village. TWC Co.'s marginal cost is  $40+2W$ . STORM Co. is relatively more efficient with a marginal cost of  $40+W$ . With no fixed costs, these marginal cost schedules imply a total cost function for TWC Co. of  $TC=40W+W^2$ , while the total cost function for STORM Co. is  $40W+0.5W^2$ . The government decides to auction off the right to be the exclusive provider of weather information under the terms in Part D. How much will each firm be willing to bid in this auction? Which firm will win the auction? Is this the efficient outcome?

F) How could the village council increase the social efficiency of weather provision in Parts D and Parts E?

*Discussion Question 5: A Fat Tax*

The fraction of the adult population in the U.S. deemed to be medically "obese" (Body Mass Index, or BMI, of 30 or higher) has more than doubled since 1976, from 14% to 31% of the population.

Newly elected Senator Schwarzenegger, running on a platform as the "Fat Terminator," has put a proposal before Congress to institute a national "Total Fat Reduction" program funded by a tax on fast food.

Suppose that fast food is produced in a competitive industry with both of the two major national fast food outlets, McDonalds and Kentucky Fried Chicken (KFC), facing the same marginal cost per fast food meal of  $MC=1+Q/25$  where  $Q$  indicates the number (in millions) of fast food meals produced.

Senator Derby of Kentucky, eager to obtain Senator Schwarzenegger's autograph for his bodybuilding teenaged son, has decided to back Senator Schwarzenegger's proposal but only if the tax used to fund the program is limited to fast food consumption at McDonalds. The willingness to pay for a McDonalds Value Meal is  $P=10-Q/20$ . Assume that there are no externalities in the production or consumption of fast food meals.

A) Show that in a market without any taxes, 100 million McDonalds Value Meals will be consumed at a price of \$5 per meal.

B) The Congressional Budget Office estimates that the cost of the "Total Fat Reduction" program will be \$126 million. Based on this cost estimate, Senator Schwarzenegger and Senator Derby form a coalition and propose a "Big Mac Tax" of \$1.26 for each McDonalds Value Meal sold. How much revenue will this tax generate, and will it be sufficient to fund the "Total Fat Reduction" program? If not, where did Senators Schwarzenegger and Derby go wrong? How large would the tax have to be to completely fund the program?

C) Who bears the burden of this tax? To answer this question, calculate the change in consumer and producer surplus that will result from the imposition of the tax, and express each as a share of the sum of the change in producer and consumer surplus. Explain why the relative burdens turn out the way that they do.

D) What is the excess burden or social cost associated with this tax? How does it compare to the total tax revenue that is collected?

E) Senator Croc from Illinois, an influential member of Congress, is outraged at the inequity of the "Big Mac Tax." He proposes instead to fund the "Total Fat Reduction" program with a tax on *all* fast food meals, not just those at McDonalds. Although Senator Croc is primarily interested in being reelected (McDonalds is headquartered in Oak Brook, Illinois), he claims that his tax will result in a lower total social cost (excess burden) than the Schwarzenegger/Derby tax. Discuss the validity of this claim.

F) Senator Libby Tarian is patently opposed to both tax proposals. She delivers an impassioned speech on the Senate floor, quoting her old college roommate Dr. Lynda Scott who now serves as the National Health Spokesperson in New Zealand where a similar tax has been proposed (see <http://www.scoop.co.nz/mason/stories/PA0306/S00475.htm>):

"This tax is patently ridiculous. If you eat any food in too high a quantity you will put on weight.

It is people's choice what they eat without Government interference. If the Government believes that people are eating too many burgers then regulation and taxation is not going to reduce consumption. Education and providing information to the public about healthy living, exercise and food consumption is the way to go. This proposal is not based on sound evidence. It is another example of this Government wanting to rule peoples' daily lives with an iron fist. It also singles out particular businesses and those who eat their food unfairly.”

Disregarding the funding needs for the “Total Fat Reduction” program, discuss the merits of differentially taxing fast food consumption. Should fast food consumption be taxed differently from other consumption goods? If so, should the tax be higher or lower, and why? Explain.