Name ____________________

Final Exam - Public Finance - 180.365

Fall, 2001

Answers

This exam consists of four parts. You must answer all components of all parts of the exam. If you run out of space, use the back of the previous page.

Part I (11 Points). Multiple Choice Questions.

Write the letter corresponding to the correct answer in the space to the left of the question.

c. 1. Research indicates that the most important factor determining whether a country is prosperous or not is

(a) Its geography.
(b) Its culture or majority religion.
(c) The nature and quality of its government and rule of law.
(d) Natural resources.

c. 2. Which of the following is *not* a normative statement?

(a) The military budget should increase at the same rate as GNP.
(b) Government should play a limited economic role, mainly ensuring that private contracts are enforced.
(c) Integrated schooling has increased the level of literacy among minority groups.
(d) A tax on imported oil should be used to reduce the government deficit.

d. 3. Criticisms of the social security system do not include which of the following?

(a) It reduces labor supply by inducing less work and early retirement.
(b) It reduces saving by displacing private retirement savings.
(c) It will eventually damage the economy as the number of recepients overwhelms the number of workers.
(d) It fails to provide any insurance against outliving your assets.

c. 4. The welfare loss from monopoly can be seen from the difference in equilibrium between

(a) marginal revenue and marginal benefit.
(b) marginal revenue and marginal cost.
(c) marginal cost and marginal benefit.
(d) supply and demand.

a. 5. Charging a toll on a crowded bridge can

(a) help to correct a negative externality.
(b) be a positive externality, because people don't wait so long once there is a toll.
(c) interfere with competitive efficiency.
(d) be a public good, since my paying the toll does not keep you from paying it too.

d. 6. If I would be willing to pay \$100 annually to avoid a federal tax on airline tickets that costs me \$90 every year,

   (a) I am not behaving in a utility-maximizing way.
   (b) my demand for flying must be totally inelastic.
   (c) the deadweight loss of the tax is exactly \$100.
   (d) I would fly more often when paying the \$100 lump sum than when paying the \$90 in taxes.

a. 7. There is a basic trade-off between efficiency and equity because

   (a) income redistribution tends to reduce incentives for efficient behavior.
   (b) people who are efficient do not care much abaout fairness.
   (c) Pareto improvements can only be made by sacrificing efficiency.
   (d) the economy can only achieve a Pareto efficient allocation by starting from an unequal allocation of resources.

d. 8. Suppose a 10 percent tax on yacht sales is imposed and yacht sales fall by 70 percent. The yacht tax

   (a) is clearly progressive because yachts are only purchased by rich people
   (b) is mostly borne by yacht consumers, not producers
   (c) imposes little excess burden because yachts are a luxury good and nobody really needs a yacht
   (d) is less efficient than a tax on labor income

d. 9. If the supply of a good is perfectly inelastic, economic theory says that the excess burden of a tax

   (a) will be borne equally by producers and consumers
   (b) will be borne entirely by consumers
   (c) will be borne entirely by producers
   (d) is zero

d. 10. Critics of globalization have a good point when they say that globalization

   (a) can hurt low-income people in rich countries
   (b) makes poor countries even poorer
   (c) prevents governments from carrying out desired social policies
   (d) pits rich corporations against poor people

c. 11. Statistical analyses of market data on labor supply do not support the proposition that

   (a) Married men have a low response to wage changes.
   (b) Married women have a much higher labor supply elasticity than men.
   (c) Lowering labor income taxes will increase tax revenues.
   (d) Elasticity of labor supply is greater for female-headed households.

Part II (24 points). Read the initial paragraph and then answer all of the following questions. Your answers will be judged based on how well you relate the question to our discussion of Social Security in class.

Six months ago, President Bush created a commission (dominated by pro-privatization politicians) to make recommendations about Social Security reform. The President told the commission it should only consider plans that proposed no tax increases, included the creation of 'individual accounts' into which people could divert some Social Security taxes, and did not involve benefit cuts for people who are currently retired or 'nearing retirement' (i.e. most of the Baby Boom). Last week, the commission released its final report, presenting three alternative reform plans. All three plans involve large infusions of money into the Social Security system from 'general revenues' (that is, infusions paid for by taxes other than Social Security taxes). Furthermore, the larger is the size of the individual accounts created, the larger are the required infusions into the system.

1. Explain why in a Pay As You Go Social Security system the diversion of some Social Security tax revenue into individual accounts requires the infusion of 'general revenues' into the system unless there are simultaneous cuts in benefits. Explain why larger transfers from general revenues are needed when more payroll taxes are diverted into individual accounts.

   Answer:

   In a PAYG system, the benefits of the current elderly are paid by taxes on current workers. If some of the taxes paid by current workers are diverted, there won't be enough revenue pay the benefits of the elderly. Therefore, to bring the system into balance either new revenues must be allocated to it (infusions from general revenues), or there must be cuts in current benefits. Obviously, the larger is the diversion of payroll taxes, the larger is the shortfall in revenues to pay for the benefits of the elderly, and therefore the larger is the required infusion of general revenues.

2. Using generational accounting ideas, explain the consequences of making a transition from a pay-as-you-go Social Security system to a 'fully funded' system in the course of a single generation. Use the results to suggest why, despite being dominated by privatization supporters, even the commission's most conservative plan did not come anywhere close to proposing a full privatization of Social Security.

   Answer:

   The bottom line is that if the transition from PAYG to Fully Funded Social Security is made in a single generation, then the transition generation will have to pay for the retirement of two generations: the retirement of the people who are old when it is young, and its own retirement. This is hugely expensive to the transition generation, and likely to be extremely unpopular.

   A generational accounting exercise shows that the costs for the transition generation are extremely high. This point is only reinforced if the transition generation is also a 'baby bust' generation that is smaller than its preceeding generation.

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3. The commission claimed that it had complied with Bush's prohibition on tax increases because it did not propose changing the Social Security tax rate, and it did not propose specific new other taxes to raise the money it proposed transferring into Social Security. Discuss how these infusions of money would affect the generational accounts of the generations who pay the taxes that support the infusions. Does this satisfy the spirit of the idea that the reform should not involve tax increases?

    Answer:

    The generational accounting framework calculates each generation's total net payments and benefits from Social Security, regardless of how those contributions are labelled. Since 'general revenues' come from taxes, it is obvious that the commission's plan to pay for Social Security reform by transferring general revenues into Social Security violates the spirit of Bush's requirement that the plans should involve no new taxes.

Part III. True/False/Uncertain Questions (20 points) Decide whether the following statements are True, False, or Uncertain. *Explain your reasoning.* Your score will be based mainly on the quality of your explanation, rather than just on whether you get the True, False, Uncertain part right.

1. The argument that free public health insurance should be provided because 'health care is a right, not a privilege' is based on utilitarian reasoning.

   Answer:
   False. The utilitarian approach says public policy should aim for the greatest good for the greatest number. The only way to argue for 'rights' within the utilitarian framework is to say that if we give people certain rights they will be happier - 'procedural utilitarianism.' But arguments about public policy based on a claim that this or that is a 'right,' with no further discussion, cannot be evaluated in the utilitarian framework. The utilitarian approach would be to ask whether on the average people are made better off by a given policy (like universal health insurance).

2. Standard public finance theory suggests that patent rights on drugs must be protected because such rights guarantee Pareto efficiency in the drug market.

   Answer:
   False. In fact, by allowing the owner of the patent to charge a price for the drug in excess of its marginal cost of production, patents directly lead to Pareto inefficiency. Nonetheless, unless the government takes over the entire business of developing new drugs, patent protection almost certainly makes society better off because without patent rights drug companies would have no incentive to do the research and testing necessary to develop new drugs.

3. In an industry where there is a monopoly supplier, the economic incidence of a tax always falls fully on consumers because the monopoly has no competition and can therefore charge whatever price it likes.

   Answer:
   False. Even when there is a monopoly, the incidence of a tax depends on the elasticity of demand. In particular, if demand is highly elastic, the monopoly has little ability to raise the price (otherwise it will lose all its customers), and therefore the producer bears most of a tax.

4. Consider two goods, A and B, with the same elasticity of demand e, the same price, P, and the same initial quantity purchased q. The theory of excess burden implies that if a given amount of revenue $X must be raised from taxing these two goods, that revenue can be raised with less excess burden by taxing both of the goods at small, equal rates rather than imposing a heavy tax on one of them and no tax on the other.

   Answer:
   True. The size of excess burden rises with the *square* of the tax rate, which implies that doubling any given tax quadruples the excess burden. Therefore, in the situation described, two small taxes will raise the same amount of taxes with less excess burden than one heavy tax.

Part IV (45 points). Short discussion questions. In a few sentences, discuss each of the following.

1. Austria has a history of strong hostility to nuclear power, and over the last twenty years the Austrians have shut down all of the reactors in Austria. In November 2000, a nuclear reactor located on the Czech side of the border between the Czech Republic and Austria was turned on for the first time, despite strong popular and political protests by Austrian citizens and the Austrian government. Use the theory of welfare economics to analyze this situation, and explain what the Coase Theorem suggests is the problem and the solution.

   Answer:

   The Austrians are presumably worried about externalities from the Czech nuclear plant. Externalities could include radioactive emissions from the plant, radioactive toxic waste, or the possibility of a nuclear accident like Chernobyl that could release a large amount of radioactive waste into Austria.

   The theory of welfare economics would argue that the outcome of building the plant may be inefficient because the Czechs are imposing an externality on the Austrians by putting at risk a resource (radiation-free air) that the Autrians believe they have a right to. The Coase Theorem says that if enforceable property rights are instituted, then bargaining among the parties will produce an efficient outcome. For example, if there were an international court to which the Austrians could bring a case and have their property rights to clean air enforced, the Czechs would have to modify the plant to the Austrians' liking, or abandon it altogether.

2. Consider a reform of the Medicare system in which people would be required to contribute a certain fraction of their wages into a Medical Savings Account in which the money would accumulate at interest, with the proceeds to be used at retirement to purchase medical insurance for the remainder of life. What effect would establishing such accounts have on the generational accounts of generations born after the new system is fully in place?

   Answer:

   The existing Medicare system is exactly like a Pay As You Go Social Security system: taxes on current workers are used to pay benefits to current retirees. The system described in the question is like a fully-funded Social Security system. Since a PAYG Social Security system reduces the generational accounts of all generations after it is created, but a fully funded Social Security system leaves generational accounts unaffected, moving from the PAYG Medicare to the funded Medicare system would improve the generational accounts of future generations.

3. In 1993, Serbian politician Zelijko Raznatovic stated, "We are fighting for our faith, the Serbian Orthodox Church. We are fighting for a united Serbian state. This party will believe in God and Serbia." Discuss whether this statement is consistent with the individualistic or the organic conception of society. (You must define both conceptions and explain why the statement fits one or the other).

   Answer:

   In the individualistic conception of society, the purpose of government is to achieve the well-being or happiness of the people in the society. In the organic conception, the goals of the state do not need to be related to well-being of individuals in that state; there is something that is claimed to be 'more important' than the well-being of individuals. This statement clearly falls under the organic conception of society, in that the aims stated are not about achieving happiness, but rather about achieving a religious or nationalistic goal which is presumably more important than happiness.

4. Explain why most taxes impose an excess burden, but lump-sum taxes do not. What is the main disadvantage of lump-sum taxes?

Answer:

Excess burden arises when a tax changes the effective relative prices of goods and people adjust their consumption of the goods in response. Because lump sum taxes do not change any relative prices, they impose no excess burden. However, lump sum taxes are highly regressive, because rich and poor people have to pay the same dollar amount of tax. Utilitarian theory implies that the disutility caused by a given payment is much greater for low-income than for high-income people, so lump sum taxes may reduce social welfare even if they are perfectly efficient in terms of causing no excess burden.

5. In the wake of the September 11 attacks and the slowing economy, political sentiment shifted in favor of the Congress passing some kind of "stimulus" package to encourage consumers and businesses to spend more in the short run. One component of the bill passed in the House of Representatives involved rebates to corporations for some taxes (the "AMT" tax) they had paid over the past 10 years. This bill was criticized on two grounds: First, that it would benefit rich corporations and not people, and, second, that it was a one-time giveaway that would not change companies' incentives to spend more money today. Briefly discuss these two criticisms using the terms and tools of public finance. You will not get full credit unless you explain the relationship (if any) of the first argument to utilitarianism, and of the second argument to the incentive effects of lump sum taxes.

    Answer:

    The proposition that the corporate tax cut would benefit "rich corporations" is meaningless in economic terms; what matters in the end is how a tax policy affects *people*. It is true, however, that rich people are more likely to own corporate stock; therefore, it is likely to be true that the "AMT" rebates would mainly benefit rich people. To the extent to which this is true, one can criticize this tax measure as being a regressive measure that gives money to the rich but not to the rest of society, which is regressive and violates the utilitarian principe that welfare is improved by taking from the rich and giving to the poor.

    The relationship of the AMT rebate to lump sum taxes is that an AMT rebate is a lump sum rebate, which is like a lump sum tax with a negative sign. The whole distinction between lump sum taxes (or rebates) and other kinds of taxes is that lump sums do not affect incentives. Thus, public finance theory suggests that the idea that the AMT rebate would spur new spending by corporations is very questionable. Another way to put this is to say that corporations should decide whether to pursue an investment based on whether it will yield a profit or not. Rebating *past* AMT's has no effect on whether a *future* investment will pay off.

6. Discuss three reasons why there might be market failure in insurance markets, and give a hypothetical example for at least two of the three reasons.

    Answer:

    Adverse selection, moral hazard, and 'stupidity' are the three main reasons mentioned in class for the failure of insurance markets. An example of adverse selection would be offering AIDS insurance. Only people likely to develop AIDS would buy the insurance, which means it would be extremely expensive, which means that it would be unprofitable, which means it will not be offered. An example of moral hazard was the case where you use your auto insurance to pay for the repair of a minor scrape which you would not have had repaired if you had to pay out of your own pocket. An example of 'stupidity' preventing optimality would be some situation where people do not have a good ability to estimate the risks facing them. For example, if homeowners do not know how likely it is that their house will be damaged by a tornado, then they may not buy the right amount of tornado insurance.

7. A few years ago Congress passed a law allowing private Health Maintenance Organizations (HMO's) to take care of Medicare recipients by offering them different coverage than Medicare offers. For example,

Medicare does not cover extended nursing home stays, nor does it pay for prescription drugs. However, Congress insisted that participants in Medicare HMO's should have the option to switch from one HMO to another whenever they wanted. Recently, in response to financial problems at many Medicare HMOs, Congress amended the law to require participants to stay with the same HMO for at least a year after signing on. What do you think the problem was (in terms of the theory of insurance), and how would the change in the law help address it?

Answer:

This is a situation where adverse selection problems should have been anticipated. For example, if you learn that you will need to have an extended stay in a nursing home, you could just switch to an HMO that paid for extended nursing home stays. Or if your doctor prescribed a course of treatment with a very expensive drug, you could just switch to an HMO with generous prescription drug coverage. Thus, the HMOs that offered generous drug coverage would find itself mainly with participants with extremely expensive drug bills, leading to cost overruns.

The amendment to the bill tries to reduce the adverse selection problem by preventing people from switching between plans frequently. For example, if your doctor prescribes an expensive course of drug treatment that starts now and lasts for less than a year, you can no longer switch to another HMO to shift the cost to them.

8. Explain the sense in which insurance is a 'free lunch,' and provide an example of how insurance can improve expected utility.

Answer:

Insurance can be a 'free lunch' *ex ante*, because with the same total amount of expected resources in the economy in some future period, everyone can be made better off today if the risks that they face can be shared with others. For example, if we know that 100,000 houses will burn down next year but we don't know *whose* houses they will be, having fire insurance can make everyone happier today.

9. Show how a gasoline tax of 10 cents per gallon collected from sellers affects the market equilibrium for gasoline (Hint: the vertical axis should show the price received by the seller after the tax has been paid). Assume that the demand curve for gasoline is downward sloping and supply is perfectly elastic at the world after-tax price. Show the excess burden of the tax on your diagram. What is the incidence of the tax between buyers and sellers? Now redo the analysis except assume that the tax is paid by the buyers rather than the sellers (Hint: This means that the vertical axis should reflect the price paid by buyers). In particular, compare the economic incidence of the tax in the two cases.

Answer:

Since the tax is collected from the sellers, from their point of view they perceive a lower demand for their product at any given price they receive. Hence the effect will be as shown in figure 1.

At any given after-tax price, the effective demand curve they are facing falls, by an amount equal to the size of the tax. Excess burden in this case is the triangle surrounding the letter "A". Because supply is perfectly elastic at the world price, the burden of the tax falls entirely on buyers.

When the tax is collected from the buyers, the figure changes to Figure 2.

For any given pre-tax price they were willing to pay, the supply received would be lower. The new equilibrium would again result in an excess burden of a triangle surrounding the letter A, and the excess burden is the same size as when the sellers paid the tax, and the buyers continue to bear the entire burden, so economic incidence is the same regardless who pays the tax.

Figure 1: Gasoline Tax on Sellers

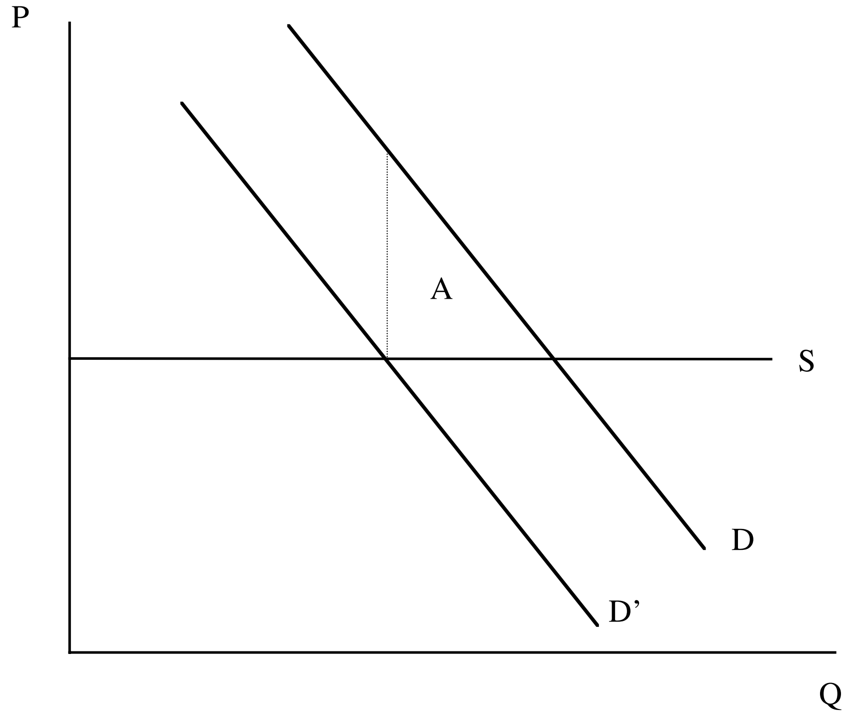

Figure 2: Gasoline Tax on Buyers