Final Exam
Public Finance - 180.365
Fall, 2005
Answers

1 Multiple Choice - Circle The Correct Letter

Correct answer indicated by ⇒

1. Sulfur dioxide emissions are the major cause of acid rain. Which of the following statements is not true:
   (a) Tradable permits that give polluters the right to emit certain amounts of pollution were first tried on a large scale starting with sulfur dioxide permits in the U.S. in the 1990s
   (b) ⇒Permits are the most efficient way to control pollution when the marginal damage caused by the pollution is constant and easy to calculate but the marginal cost of reducing pollution is unknown
   (c) Tradable permits for sulfur dioxide have proven a much cheaper way to reduce emissions than the command-and-control approach was projected to have been
   (d) A large portion of the environmental benefits of recent environmental regulations has come from a sharp reduction in the problem of acid rain

2. Which of the following is not a normative statement?
   (a) The goal of society should be to achieve the greatest good for the greatest number
   (b) ⇒The most efficient way to reduce emission of global warming gasses is through a system of tradable permits
   (c) A policy which hurts a few people a little bit, and helps a lot of people a lot, is a policy that should be pursued
   (d) The government should have no role in promoting morality
   (e) A society that guarantees individual rights is better than one that puts the interests of the state above the interests of individuals

3. Which of the following factors is essential for a country to experience long-term economic prosperity
   (a) Abundant natural resources
   (b) A democratic government
   (c) ⇒A firm foundation of the rule of law
   (d) A high national saving rate
   (e) A good climate

4. In the early 1990s, upon the collapse of the government of Siad Barre, the country of Somalia degenerated into a situation of tribal and clan and even within-clan warfare, which resulted in a widespread humanitarian disaster, including a famine. The philosopher we have discussed whose analysis of society is closest to this situation is
   (a) John Rawls
   (b) ⇒Thomas Hobbes
   (c) Robert Nozick
   (d) Jeremy Bentham
   (e) Immanuel Kant

5. "Freedom of the press, freedom of speech, and freedom of religion should be treated as inalienable rights because societies which establish these rights end up as healthier and happier." This statement is most compatible with which of the following philosophical points of view?
   (a) Pure Utilitarianism
   (b) Pure Libertarianism
   (c) ⇒Instrumental Libertarianism
   (d) The Organic Conception of the State
   (e) Procedural Justice

6. There are three forms of health care provided by the government: ____________ is provided for the poor, ____________ is provided for the elderly, and ____________ exists for children whose parents do not have medical insurance
   (a) HMO; Medicare; CHIPs
   (b) CHIPs; HMO; Medicare
   (c) Medicare; SSI; CHIPs
   (d) ⇒Medicaid; Medicare; CHIPs
   (e) CHIPs; Medicare; Medicaid

7. Policy analysis based on an additive utilitarian social welfare function with equal weights assumes that
   (a) No person is more important than any other in determining overall social well being
   (b) My happiness or unhappiness has no effect on you
   (c) Utility can be measured easily enough to base policy on it
   (d) Pareto improvements are unambiguously good
   (e) ⇒All of the above

8. Which of the following is *not* an assumption used in class for reaching the conclusion, using utilitarian reasoning, that income should be divided equally:
   (a) Everybody has the same utility function
   (b) There is a fixed amount of income to be divided
   (c) Marginal utility is a diminishing function of income
   (d) ⇒Some people are more productive than others
   (e) Income is the only thing that matters for happiness

9. Which of the following statements about income inequality is not true?
   (a) The fraction of income received by the middle 3 quintiles has declined since the late 60s
   (b) ⇒The poverty rate has increased sharply since the late 60s
   (c) After tax income is distributed more unequally in the U.S. than in Europe
   (d) High income individuals pay a much larger proportion of their incomes in taxes than do low income individuals
   (e) The bulk of the Bush tax cuts has gone to high-income households

10. According to the *Economist*, which of the following is *not* true of globalization
    (a) It is good for individuals
    (b) It is good for poor countries
    (c) ⇒Governments have little power to stop or interfere with it
    (d) Business interests often fight it
    (e) Corporations' main interest is in making profits, whatever they might say

11. According to the arguments presented in lecture, globalization
    (a) Enhances distributive justice
    (b) Enhances procedural justice
    (c) Hurts the incomes of low-income workers in rich countries
    (d) Improves the purchasing power of low-income workers in rich countries
    (e) ⇒All of the above

12. If the exact same medication sells for different prices in different countries, this proves
    (a) Social welfare would be higher if drug makers had to sell their products at marginal cost
    (b) ⇒The market for this medication is Pareto inefficient
    (c) Government has intervened in the market where the price is lower
    (d) All of (a)-(c)
    (e) None of (a)-(c)

13. The ‘marriage penalty’ in the existing tax code:
    (a) ⇒Cannot be eliminated if we want to tax all households based on their total household income and want that tax system to be progressive
    (b) Creates a bias in favor of the ‘traditional family’ in which one spouse stays home to take care of the kids, over the ‘modern family’ where both spouses work
    (c) Cannot be eliminated by allowing individual members of a married couple to file taxes as though they were still single
    (d) All of (a)-(c)
    (e) None of (a)-(c)
14. The incidence of a tax depends on
    (a) The elasticity of demand in the market
    (b) The market structure (competition, monopoply)
    (c) The production function for the good
    (d) ⇒All of (a)-(c)
    (e) None of (a)-(c)
15. Suppose someone discovers a set of 50 Picasso prints in their attic, and before the prints can be sold Congress passes a law that says that the buyer of all Picasso artworks must pay the government $10,000 for every artwork they buy. The person who found the prints hates art and so auctions them off anyway. According to the theory of tax incidence, which of the following is true?
    (a) The statutory incidence of the Picasso tax is on the buyer
    (b) Economic incidence of the Picasso tax is on the seller
    (c) The pretax purchase price of the artworks goes down by exactly $10,000
    (d) ⇒All of (a)-(c)
    (e) None of (a)-(c)
16. Which method can help in obtaining a welfare improvement if externalites exist?
    (a) Pigouvian taxes
    (b) regulation
    (c) assigning property rights and permitting bargaining
    (d) ⇒all of the above
17. Statutory incidence of a tax deals with
    (a) the amount of revenue left over after taxes.
    (b) the amount of taxes paid after accounting for inflation.
    (c) ⇒the person(s) legally responsible for paying the tax.
    (d) the amount of tax revenue generated after a tax is imposed.

(e) none of the above.

18. If the proceeds from a Pigouvian tax are used to ______________ income tax rates, then efficiency ______________ in both markets.
    (a) increase; increases
    (b) reduce; reduces
    (c) increase; reduces
    (d) ⇒reduce; increases
    (e) none of the above

19. "For goods that are unrelated in consumption, efficiency requires that tax rates be inversely proportional to elasticities." This is the definition of
    (a) the benefits-received principle.
    (b) ⇒the Ramsey Rule.
    (c) the second best principle.
    (d) the inverse elasticity rule.
    (e) horizontal equity.

20. According to the New York Times column by Paul Krugman "Health Economics 101,"
    (a) A belief in social justice ensures that there are few people who are denied essential care because they can't afford it
    (b) Big tax subsidies to employer-provided health coverage explain why most Americans receive their health coverage through their employers
    (c) Employment-based health coverage is in rapid decline
    (d) In any given year, a small fraction of the population accounts for the bulk of medical expenses
    (e) ⇒All of (a)-(d)

21. A tax on "bad foods" that make people fat
    (a) ⇒Would decrease economic efficiency if all assumptions necessary for the First Theorem of Welfare Economics hold true
    (b) Would be progressive if rich people spend a lower fraction of their income on unhealthy foods
    (c) According to standard economic theory, would be more efficient than simply requiring foods to have complete labeling about their nutritional content
    (d) Cannot be justified in a utilitarian framework because someone else being fat imposes no costs on me

22. In the economic analysis of the market for new drugs, it is critical to take into account
    (a) Inefficiency from monopoly power granted by patents
    (b) Inequity generated by drugmakers charging more than a medication costs to make
    (c) Incentives for innovation by inventing new drugs
    (d) Incentives for exploitation of market power
    (e) ⇒All of the above

23. According to a required reading by Michael Kinsley,
    (a) The Social Security Trust Fund is an important tool in preparing for the retirement of the Baby Boom generation
    (b) Social Security is basically a Ponzi scheme that benefits old people at the expense of young people
    (c) The debate about Social Security is fundamentally unimportant in the big scheme of things
    (d) ⇒Creation of individual accounts is irrelevant to fixing the problems of Social Security

24. The looming budget problems of Social Security mostly reflect the fact that
    (a) Social Security taxes have been invested poorly
    (b) The Social Security Trust Fund is a fraud
    (c) Individuals have not had power to determine how their Social Security taxes would be invested
    (d) ⇒Baby Boomers had fewer kids than their parents

25. Consider a proposal for scientific research that will cost \$$y$ and is projected to yield economic benefits of \$$x$. Economic theory suggests that
    (a) This is an example of wasteful government spending and should be abolished
    (b) Funding the project is worthwhile if \$$x > y$
    (c) Cannot be justified under an individualistic conception of society
    (d) ⇒Needs to take into account not just direct costs and benfits, but also the excess burden of taxation and the overall social benefits of greater knowledge
    (e) If an invention is useful to society, the market will invent it without the need for government subsidies

2 Brief Discussion Questions

1. The government of France places strong restrictions on the ability of French television stations to broadcast American TV shows and movies. The government justifies these restrictions by saying that it has a responsibility to encourage and protect "French culture." Does this argument fit better under the individualistic or the organic theory of government? Explain, and provide a brief definition of the two theories of government.

   Answer:

   In the individualistic theory of government, the purpose of the government is to maximize the overall happiness of individuals. In this view of government, it is hard to justify preventing people from doing things they enjoy, so long as that enjoyment does not hurt others. Thus the individualistic philosophy would not justify preventing people from watching television shows they enjoy.

   Note that an individualistic view is *not* the same as libertarianism and does not necessarily assume that there are inviolable 'individual rights' or 'natural rights.' For instance, in utilitarianism, the government could do something that might violate 'individual rights' if doing so increased the overall happiness of individuals in society as a whole.

   The organic theory of government says that society has goals that are more important than individual happiness, and that the government has the responsibility to determine the goals of society as a whole, and has the right to pursue those social goals even if pursuing them makes many individuals unhappy. Thus this government policy is clearly an example of an organic theory of government.

2. In the Telecommunications Act of 1996, a substantial tax was added to long-distance telephone calls to fund a national program for connecting every school in America to the internet. Empirical studies have shown that long-distance telephone calls are highly price elastic. Discuss whether the excess burden imposed by this tax is large or small. Discuss the equity considerations that might justify a program to connect all schools to the internet. Do these equity justifications imply that a program to connect schools to the internet should be funded by a long-distance telephone tax?

   Answer:

   We learned in class that the formula for excess burden is given by $(1/2)\eta P_0 \tau^2$ where P_0 is the original price of the good, τ is the tax rate, and η is the price elasticity of the good. The question states that η is large and τ is 'substantial,' from which you can deduce that the excess burden of this tax is likely to be very large.

   A program to connect all schools in America to the internet could be justified in a variety of ways, but the simplest is to note that schools in rich districts are probably already mostly connected, so that most of the schools where the program might make a difference are schools in poor districts. Hence such a program will be progressive in that it will help the poor more than the rich. One could also make more complicated, but still plausible, arguments that having internet access is essential for providing people training so that they can become productive members of the workforce. Hence the public benefits (in terms of higher labor tax revenues in the future from more-productive workers) might exceed the costs of such a program today.

There is no logical relationship between telephone taxes and school internet access. Hence, given that the excess burden of telephone taxes is very large, it seems probable that there were better ways to fund this program (if it needed to be funded) than via telephone taxes.

3. Explain why the excess burden of taxation is minimized by taxing commodities like insulin, AIDS drugs, and other items that certain consumers have little choice but to purchase. Does this imply that taxes actually *should* be high on these products? Why or why not?

   Answer:

   The excess burden imposed by a tax measures the magnitude of the economic distortion produced by that tax, and in particular highlights the loss of consumer surplus caused by the purchases that *fail* to occur because the price of the good after-tax is higher than the consumer's willingness to pay for it.

   Because people who need insulin, AIDS drugs, etc. will not reduce their consumption of these goods much in response to a price increase, the 'excess burden' of such taxes is low because taxes do not distort behavior very much.

   However, taxes on such items are likely to be perceived as 'unfair' precisely because the affected consumers have little choice about whether to pay or not. Imposing a tax on such goods is almost like imposing a lump-sum tax *only on consumers who have health problems* because others who do not demand the taxed commodity will escape with no increase in their taxes. Hence the feature that makes taxes on these items have a low excess burden is the same feature that makes the tax seem unfair. If the government were able to impose lump-sum taxes, then if anything it might prefer to give lump-sum *transfers* to people unlucky enough to have AIDS or diabetes, and certainly would not choose to impose lump-sum taxes only on them.

4. In 1984, the state Supreme Court declared that South Carolina's 20% admissions tax on X-rated movies was unconstitutional. Theater owners sought a refund of all past ticket taxes paid. The state said the tax was paid by theater-goers and only they could seek refunds. Suppose you were appointed to decide who deserved the refund. What features of the market would you need to know about? How might the answer be different today? (Hint: very few people had VCRs over most of the period when the tax was in force).

   Answer:

   Incidence depends on the elasticity of demand versus supply. Since elasticity of supply is high (it's easy to open another adult theater), economic theory suggests that most of the burden ot the tax was borne by the consumers, because (since VCR's and internet porn were not widely available) they had no alternatives.

5. Under current law, employer-provided health insurance is not counted as part of taxable income in the United States. Discuss the likely effects of eliminating this tax exemption on 1) the quantity of health insurance purchased; 2) the excess burden of the tax code.

   Answer:

   > Under current law, health care is subsidized relative to other goods. Eliminating the subsidy by making health insurance premiums taxable would reduce the amount of health care purchased, for two reasons: First, health care would be more expensive relative to other goods, and therefore people would buy less of it and more of the other goods (the subsitution effect); and, second, after-tax incomes would go down and therefore people would purchase less of all goods, including health care.

6. For technological reasons, there is a limited number of possible television channels available to serve any single community. In the past, the right to broadcast on one of these channels in a given area was given away free. Recently, however, the government has begun to auction off broadcast rights on a channel-by-channel basis. According to the Coase Theorem, how should the switch from free distribution to an auction affect the nature of the television progamming? What would a utilitarian analysis say about the wisdom of the switch?

   Answer:

   > The Coase Theorem says that if clear property rights exist or are established, then any resource will be used for its profit-maximizing purpose regardless of who owns it. Thus a switch from free property rights to an auction of property rights should not affect programming content.
   >
   > Assuming that the Coase Theorem is right and there is no change in programming, the only effect of the switch would be to transfer income from the broadcasters to the government. If the government then distributed the money to consumers with a higher marginal utility than the owners of the broadcast companies, the switch would be welfare-enhancing.

3 Social Insurance Question

Answer the following questions about the reading by Austan Goolsbee at the end of the exam.

1. Define moral hazard and explain why either of the two scenarios described in the sentences preceding footnote 3 and 4 are examples of moral hazard.

   Answer:

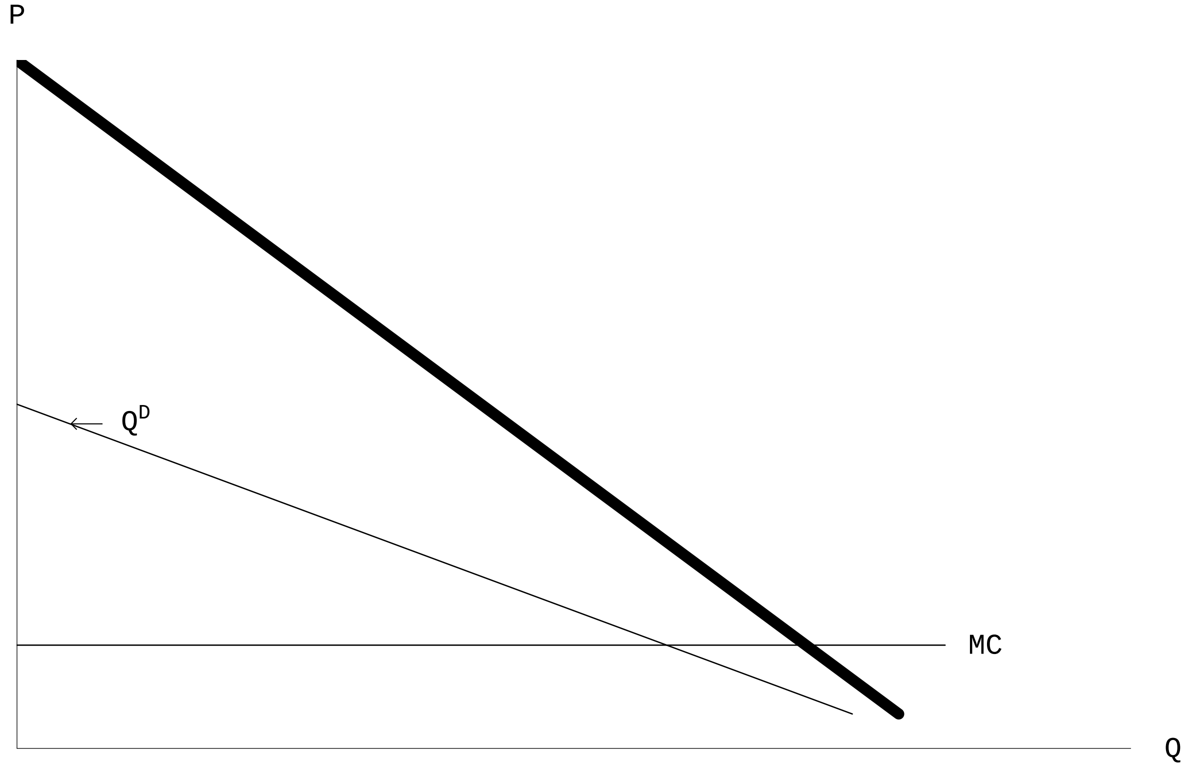
   > Moral hazard exists when the existence of insurance causes people to behave differently than they would without the insurance. "Grandpa" going on a "Lipitor spree" means that he is buying and using more Lipitor than he would have in the absence of the subsidy. The corporation charging a higher price is also a change in behavior as the result of the subsidy. So both are examples of moral hazard.

2. Medicare is essentially a Pay As You Go transfer program: Taxes on young people pay for benefits for old people. Consider an economy that initially had no Medicare or Social Security or government programs of any kind, and has no population growth or productivity growth. Use the Generational Accounting framework to calculate the effects of the introduction of Medicare at date t, supposing the Medicare system is expected to remain the same size (when young, everyone pays τ in taxes) forever after. How is this exercise relevant to the expansion of an already-existing Medicare program?

   Answer:

   > The analysis of PAYG Medicare from the standpoint of generational accounting is exactly the same as the analysis of PAYG Social Security. See the handouts on Social Security for detailed answers. Your answer should have showed that the generation that is old at the time Medicare is introduced has an improvement in its generational account, while all subsequent generations experience a deterioration in their accounts. You should have said that the expansion of an already-existing Medicare program has the same effect as the introduction of a Medicare program: The generation that is old at the date of the expansion wins, subsequent generations lose (in terms of their generational accounts).

Figure for Analyzing Medicare Subsidy



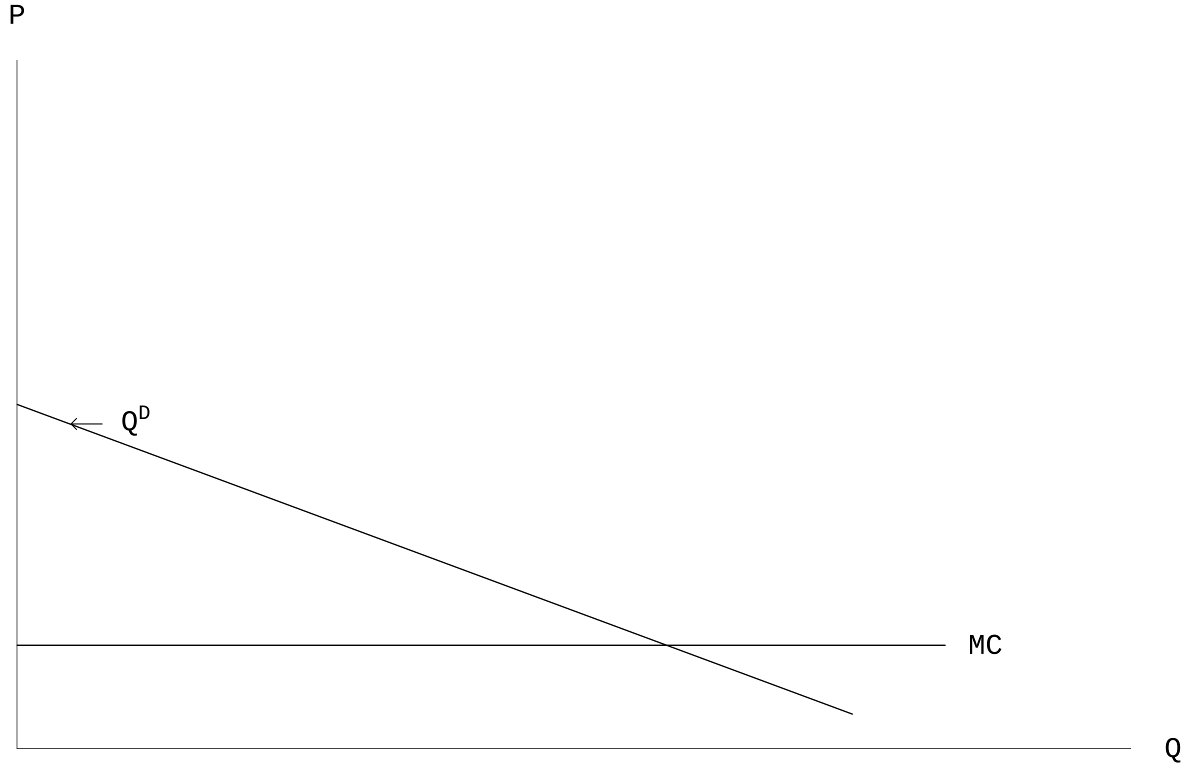


Figure for Analyzing Medicare Transfer

3. Suppose Medicare works by providing an *ad valorem* subsidy of size s to the price of drugs. Call $P^C = P/(1+s)$ the price paid by the consumer, where P is the price received by the producer, and suppose the demand function is given by $Q^D = Y - P_C = Y - P/(1+s)$. For example, if the Medicare subsidy is $s = 1.0$ then the price the consumer pays is equal to half the price the producer receives, $P_C = P/(1+1.0)$.

   Explain why the effect of the subsidy, from the standpoint of a company that has a patent on a drug, is to change the effective demand curve (demand as a function of price charged) in the manner shown in the top figure above (the thick line is demand after the subsidy has been set up). From the company's point of view, what does the subsidy do to the elasticity of demand? Is this a good or bad thing from the company's point of view?

   Answer:

   The effect is to rotate the demand curve clockwise around the point $\{Y, 0\}$, because at price of zero quantity remains unchanged. But to get credit for a correct answer, you needed only to point out that the new demand curve is higher and steeper than the old one (in other words, demand is higher everywhere and more price inelastic). This is a very good thing from the company's point of view, since monopoly profits are higher when the elasticity of demand is lower.

4. Next, supposing that the company can produce unlimited quantities of the drug at marginal cost MC, show on the diagram a) the socially efficient price and quantity (label them P_0 and Q_0); b) the price P_1, quantity Q_1, and profits that will exist in the private market before the Medicare subsidy is in place; c) the price P_2, quantity Q_2, and profits after the Medicare subsidy is in place; d) the deadweight loss in each of the two circumstances.

   Finally, calculate the total amount of government spending on the subsidy program.

   Answer:

   (a) The socially efficient outcome is at the intersection of the original (thin) demand curve and the marginal cost curve, because this is the point at which the willingness to pay of the last consumer equals the cost of producing one more dose of the drug

   (b) The price, quantity, and profits before Medicare are found by the standard method of analyzing a monopoly: Construct a downward-sloping marginal revenue curve, find the Q_1 at which MR intersects with MC, and charge the price on the demand curve at that Q. If P_1 is the price, then profits will be $Q_1(P_1 - MC)$.

   (c) The price, quantity, and profits after Medicare are also found by the standard method of analyzing a monopoly: Construct a downward-sloping marginal revenue curve (which will be much steeper than before), find the Q_2 at which MR intersects with MC, and charge the price on the demand curve at that Q. If P_2 is the price, then profits will be $Q_2(P_2 - MC)$, which will be much higher.

   (d) Deadweight loss is given by the triangles reflecting the difference between actual price and marginal cost, as in the text and in class.

   (e) Government spending will be given by the area $Q_2 * (P_2 * 0.50)$.

5. Suppose that instead of subsidizing the price of drugs, Congress instead decides to spend the same amount of money as the subsidy would cost, but will spend that money by making a lump sum payment to everyone eligible for Medicare; that is, every year, every elderly person (regardless of their spending on drugs) gets a check for, say, $5000. Suppose the effect of this is simply to shift upward the level of spending on each particular drug, but not to make people less sensitive to the price of drugs. Draw the appropriate modified demand curve on the second diagram, and do the same analysis (parts (a)-(d)) as above.

   Answer:

   The lump sum payment has the effect of shifting the level of the demand curve upward, so that at any price the quantity demanded shifts to the right by the same dollar amount. However, because this is a lump sum subsidy, the slope of the demand curve remains unchanged, and therefore the slope of the marginal demand curve is also unchanged. The equilibrium price and quantity will be higher than without the transfer, as will the deadweight loss.

6. Discuss the equity consequences of the two programs across elderly people, given the fact that different people need different drugs, some of which are more expensive than others. Can the second version of the program (with the lump sum transfers) properly be called medical insurance?

   Answer:

   While the deadweight loss from the "transfer" version of Medicare is likely to be less than from the "subsidy" version, there is no sense in which the "transfer" version provides *insurance*. In this context, insurance would mean that people with larger medical expenses get larger payments, but the whole point of lump sum payments is that they are independent of the amount of spending. Thus the second program is just a transfer program and provides no insurance. That is also its drawback in equity terms: It seems inherently more fair to help out people with big medical expenses than to give the same amount of money to everyone (because, in more rigorous terms, the marginal utility of income is likely to be higher for people with large medical spending needs).

It's Not Your Grandpa's Moral Hazard Anymore

By Austan Goolsbee, http://www.slate.com/id/2131897/
Posted Thursday, Dec. 8, 2005, at 4:20 PM ET

To the despair of almost every informed economist, by New Year's Day, Medicare recipients who want coverage for 2006 will have chosen a prescription drug plan. Even the former chairman of the president's Council of Economic Advisers, R. Glenn Hubbard, says that the costs of the prescription drug benefit are unsustainable in the long term, and perhaps even in the next five years.[1] Meanwhile, a health-care program that many economists love, the Flexible Savings Account, is also approaching a New Year's deadline. By Jan. 1, anyone with an FSA - a tax-free spending account for health care - must spend the money already accumulated in that account or else lose it.

Economists feel differently about the Medicare drug benefit and FSAs because the two policies represent opposing views of the health market. FSAs were designed to address what economists call the moral-hazard problem: If you subsidize people's expenses for something, they will increase the amount they want to spend on it.[2] To contain costs in health care, economists generally argue, we should raise the direct costs that people pay for medicine so they'll feel that they are spending their own money and have more incentive to be frugal. (In return for tax breaks, FSA's required people to pay their medical expenses directly from their FSA account). But the new Medicare benefit ignores economics and embodies a political idea: that as a society we should subsidize the expenses of the elderly. Problem is, the more drugs people can get for free, the more drugs they will take - regardless of how much they really need them - and spending tends to spiral out of control. In other words, FSAs were meant to solve the problems created by programs like the Medicare drug benefit.

But under the new Medicare benefit, the moral hazard problem has morphed into something even more pernicious. The new fear isn't that costs will skyrocket as grandpa goes on a Medicare-financed Lipitor buying spree.[3] It's that Medicare spending will skyrocket because Pfizer jacks up Lipitor's price. The moral-hazard problem is more and more about corporations rather than individuals.[4]

The evidence shows that companies are particularly likely to raise prices when the government is footing the bill. Economists Mark Duggan at the University of Maryland and Fiona Scott Morton at Yale studied the prices of the top 200 drugs in the United States from 1997 to 2002. They found that drug makers gamed the government procurement rules that forbid companies from billing Medicaid more for a drug than they bill private consumers. When private-sector demand for a drug is small compared with the demand of Medicaid patients, drug companies massively inflate the price of the drug for private buyers. Sure, they lose some business from that part of the market. But they more than make up for that loss by being able to bill the government at a vastly higher price for the Medicaid patients.

As Medicare Part D converts the moral-hazard problem for medical expenses into a corporate rather than individual matter, the solution that economists currently favor - FSA's - will fail to rein in costs, because they change the incentives of individuals, not companies.

So, as Jan. 1 approaches, we should certainly worry about the potential escalation in drug spending from the new Medicare benefit. But don't think the problem can be solved by forcing Medicare recipients to pay into Flexible Savings Accounts. It's not your grandpa's moral hazard anymore.

Footnotes

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