

Midterm ECON 104

RULES: No notes or other source materials are permitted. All such items must remain on the floor. You may use only: pens, pencils, rulers, erasers, calculators and watches. Calculators are not required, and calculators with alphanumeric memories are not permitted. Approximate calculations are fine—just write down your calculation. Be sure to carefully write down all assumptions that you use to answer the question.

Write your **NAME** and **SECTION NUMBER** (or Tutorial Leader) on the front page of your exam booklet. These are short-answer questions. Bullet points are fine. **No looking, no copying, no cheating. All such behaviour will result in a zero score for the exam.**

1. Short Questions (2 points each, totaling 12 points)

- a. In BC, the tax rate on personal income above \$10,000 is about 20%. Suppose you have reported earnings of \$9500 so far in 2012. Suppose that someone offers you \$1000 in exchange for no work at all (this someone is very nice), and that they and you would report the income to Canada Revenue Agency. Should you accept the money? Why or why not?

i. Yes. Only income above 10k is taxed at that rate, so the tax burden will be \$100, leaving \$900 in net income gain.

- b. Define "pareto improvement" (aka: "improvement"). Give a numerical example of 2 situations, each with 3 people, where one is a pareto improvement over the other.

i. Pairwise comparison of situations. One situation is a pareto improvement over another if one person is better off, and nobody is worse off, in that situation.

ii.

	A	B
1	1	1
2	1	2
3	1	1

B is a pareto improvement over A

- c. Define "efficient". Give a numerical example of 3 situations, each with 3 people, where 2 of the situations are efficient and 1 of the situations is not efficient. Say which of the situations are efficient.

i. Efficiency compares one situation to all other feasible situations. A situation is efficient if there are no pareto improvements available.

ii.

	A	B	C
1	1	1	2
2	1	2	1
3	1	1	1

iii. B and C are efficient

- d. Define "deficit". Suppose the Government of BC had \$40 billion in debt at the beginning of fiscal year 2011/12. Suppose also that they collect \$43 billion in revenue and spend \$45 billion in fiscal year 2011/2012. What was the deficit for 2011/12? What is the provincial debt at the beginning of fiscal year 2012/13?

i. Deficit=expenditure-revenue=45-43=\$2 billion

ii. Debt=last year's debt+deficit=40+2=\$42 billion

- e. Define "negative externality". Give an example of one.

i. Negative externality: trade or production has a negative impact on someone outside the trade.

ii. Water pollution by frackers hurts river fishermen.

- f. Measured as a proportion of GDP, how big was the government sector in Canada in 1900, and how big is it currently? For the latter, you may choose any year since 1990. You may choose any definition of government that you prefer. Be specific. You get the 2 points if you are within 10 percentage points for both

answers.

- i. **Using social expenditure as the definition of government (as in Lindert), about 0% in 1900; about 30% in 1990. Alternate definitions include total government spending, about 2% in 1900, about 50% in 1990s/2000s.**

2. The Undercover Economist (4 points)

- a. What does Harford mean when he says that in competitive markets, "Things are going to the right people"?
 - i. **People who want stuff most are willing to pay most for them. So, they will get them in open voluntary trade. People who can produce stuff cheapest will be willing to sell for the lowest price. So, they will be the traders in open voluntary trade. We don't have a problem wherein people have the wrong stuff, in the sense that some shuffling of stuff might make everyone better off.**
- b. Why does Harford use the phrase "the world of truth" to describe perfect (aka: simple) markets?
 - i. **The price obtained in a simple (aka: competitive) market is equal to the value of the last unit of the good purchased to its buyer. If the price was higher, then that buyer wouldn't have purchased it. If the price was lower, then that or some other buyer would have wanted to buy some more. Further, the price obtained in a simple (aka: competitive) market is equal to the cost of the last unit of the good produced to its seller. If the price was higher, then that seller would have wanted to sell more. If the price was lower, then that or some other seller would not have wanted to sell it. Thus, the value to the buyer equals the cost to the seller (for the last unit sold).**

3. Market Failures (4 points)

- a. Identify **two** types of market failure, give an example of each, and describe how the coercive power of the state may be used to correct each of them.
 - i. **Any 2 from the notes on the First Fundamental Theorem in "Efficiency and Trade". 1 point for each correctly described market failure with its example; 1 point for each state correction.**

4. Voluntary Trade (4 points)

- a. Why does voluntary trade yield only pareto improvements (aka: improvements)?
 - i. **Nobody would engage voluntarily in trade that made them worse off. Trade won't happen unless at least 1 person has something to gain. The combination of these conditions yields a pareto improvement whenever voluntary trade occurs.**
- b. In the presence of an externality, voluntary trade yields pareto improvements, but does not yield efficiency. Why?
 - i. **The fact that we do voluntary trade, which yields pareto improvements, does not imply that the end of voluntary trade means the end of available pareto improvements. (The First Theorem says when it does.)**
 - ii. **When there is an externality, someone is left out of the trade. If we imagine what would have resulted from trade including that excluded party, and re-arranged goods as would have resulted from that trade, then we have attained a pareto improvement. The presence of an externality implies the existence of such an excluded party, and therefore implies the existence of the pareto improvement, and therefore implies inefficiency.**

5. Hidden Knowledge (6 points)

- a. Define "hidden knowledge". Give an example.
 - i. **Hidden knowledge: one of the parties in the trade knows something that the other party wants to know because it matters to how much they value the trade. But, the party with the hidden knowledge does not have an incentive to truthfully reveal it. An example is miracle drug sellers telling you how great their miracle drug is.**
- b. Say why hidden knowledge may lead to inefficiency.

i. Hidden knowledge may lead to market power for one player, and/or, as in insurance markets, may lead to disappearing markets.

c. How can the power of the state allow us to correct a hidden knowledge problem? Why can't a firm solve a selection/hidden knowledge problem?

i. Social insurance is mandatory single-policy public monopolist insurance. The state can make it mandatory, but a firm cannot.

6. CO2 (6 points)

a. What is a 'carbon tax'? What is 'cap and trade'?

i. Carbon tax: tax each unit of carbon dioxide as it is put into the atmosphere. Could be a sales tax as in BC, or levied on producers as in (if the Proposition passes) California.

ii. Cap and trade: emitting a ton of CO2 requires a coupon/permit. The government issues a fixed number of coupons. It may auction them off, give them away, or whatever. The coupons are tradeable in a market.

b. In what ways are they similar? In what ways are they different?

i. If the market price of the coupons is above zero, then cap and trade is equivalent to a carbon tax at that price in the following sense. Total emissions is the same under either carbon pricing regime (as long as monitoring is perfect).

c. Environmentalists sometimes complain that 'cap and trade' encourages pollution? Why might they believe this? Is it reasonable?

i. Cap and trade will result in a pollution level equal to the number of coupons released. Thus, if we release a lot of coupons we get a lot of pollution. However, this is not reasonable because we get to choose the amount of coupons. If we are producing too much pollution, we can just decrease the amount of coupons.