

ECON 2001

Winter, 2010

Prof. F. R. Woolley

Assignment 1

Due Monday January 25th, by 3:30 in the Economics Department Drop Box.

*Please feel free to work with others on this assignment, but write up your answers **on your own and in your own words**. Violating Carleton's academic integrity policy can have serious consequences.*

1. Endowments and budget constraints. Please read the summary of Radford's account of life in a prisoner of war camp (originally published in *Economica*, 1945) at the end of the assignment and then answer the following questions. It looks like a lot, but once you've done it all, you should have five little diagrams (two of which look exactly the same), and a bunch of two to five section explanations.
 - a. Read the sections reprinted below under "essential facts about the POW camps". People in the prisoner of war camps had endowments. Where did they come from? What were they? You may find the lecture notes (end chapter 2/start chapter 3) helpful (5 marks).
 - b. Now let's simplify and focus on just two goods, jam and meat. Draw a prisoner's jam/meat endowment point. Radford doesn't tell you exactly how much a prisoner received in jam and meat, but try and estimate from the image at the end of this assignment or the lecture note images (if you get stuck here, go on to part (c)) (5 marks).
 - c. On your diagram from part (b), draw the prisoner's budget constraint. You don't know exactly how much jam and meat are worth, so either draw it in abstract terms ($p_{jam} * jam + p_{meat} * meat = \text{value of endowment}$) or make up prices (5 marks).
 - d. Take your diagram from part (c). Use indifference curves to show that trading jam and meat can often make a prisoner better off (Hint: what indifference curve is he on if he doesn't trade? If he does?). (10 marks).
 - e. Read the paragraph starting "the unity of the market" and the section "barriers to trade." Relative prices often differed in different parts of the camp. How and why? (5 marks).
 - f. Now re-draw your budget constraint from part (d). Clearly identify the prisoner's consumption bundle after trading jam and meat within his own group. Now imagine that your prisoner is a meat-eating American who, like Barack Obama, understands Urdu. Suppose your prisoner bribes a guard to get access to the "Indian" part of the camp. Show how this will change his/her budget constraint, using the information about the relative prices in the Indian and Anglo sections of the camp contained in the article (5 marks).
 - g. Use indifference curves to show that the prisoner is better off if he is able to get access to the Indian section of the camp (5 marks).
 - h. Show on your diagram that maximum amount of meat that a prisoner would be prepared to pay to a guard to get access to the Indian section of the camp (5 marks – warning, this is really hard, read ahead to equivalent and compensating variation).
 - i. Now re-draw your budget constraint from part (c). Read the section "The August 1944 cuts..." What happened in August 1944? How did Radford expect the August 1944 cuts to affect prisoners' budget constraints? Relative prices? Illustrate on your diagram. (5 marks).

- j. Chocolate is a luxury good and bread is not. Bread is an essential good and chocolate is not. Explain what these terms mean. Illustrate using your diagram from part (i), by showing how optimal choices change when income changes. (10 marks).
 - k. Now try to put your analysis in part (j) in supply and demand terms. What happened to the supply of chocolate and of bread towards the end of the war? Show by drawing supply curves for bread and chocolate (5 marks).
 - l. According to Radford, how did the August 1944 cuts actually affect the relative prices of bread and chocolate? Explain why prices changed the way they did by showing, on your diagram from part (k), what happened to the bread demand curve and the chocolate demand curve. Use the ideas in part (j). (5 marks).
 - m. Read the section Limits on Trade. Why did the prisoners try to prevent people from trading away bread? Use an indifference curve budget constraint analysis to show that, in the simple framework of this course, preventing people from trading away their bread makes them worse off (5 marks).
 - n. (Thinking ahead question) How might you want to expand the simple framework of this course so that it can explain why, for example, it might be a good idea to prevent people from trading away bread? What's missing from our models? (5 marks)
2. Perfect substitutes. We've had several examples of perfect substitutes so far this term – Amanda's timbits and doughnuts, Anna's Roosters and Tim Horton's coffee.
- a. Think of two goods that you consider perfect substitutes. Give examples of some equally preferred consumption bundles (e.g. (0 doughnuts, 6 timbits) and (1 doughnut, 0 timbits)). Explain why these goods are perfect substitutes as far as you're concerned. (5 marks: marks will be given for originality).
 - b. What is your marginal rate of substitution between the two goods? Explain (5 marks).
 - c. You can write down a utility function for two goods that are perfect substitutes using the formula:
 $U(x_1, x_2) = (MRS)x_1 + x_2$ where MRS = the marginal rate of substitution.
 Write down your utility function. Plot some of your indifference curves. Verify that your utility function works using your equally preferred consumption bundles from part (a) (10 marks).

The following extracts are direct quotes from Radford's *Economica* article "The Economic Organization of a POW Camp." It's available on-line at <http://www.albany.edu/~mirer/eco110/pow.html>. I've tried to explain words you might not know in square brackets.

Essential facts about the POW camps:

The camps of which the writer had experience were Oflags [camps for officers, not regular soldiers] and consequently the economy was not complicated by payments for work by the detaining power [Germany or Italy]. They consisted normally of between 1,200 and 2,500 people, housed in a number of separate but intercommunicating bungalows, one company of 200 or so to a building. Each company formed a group within the main organisation and inside the company the room and the messing syndicate, [which was] a voluntary and spontaneous group who fed together, formed the constituent units.

Between individuals there was active trading in all consumer goods and in some services. Most trading was for food against cigarettes or other foodstuffs, but cigarettes rose from the status of a normal commodity to that of currency [money]. RMk.s [Reichmarks, the currency of Nazi Germany] existed but

had no circulation save for gambling debts, as few articles could be purchased with them from the canteen [small shop selling food etc].

Our supplies consisted of rations provided by the detaining power [the Germans] and (principally) the contents of Red Cross food parcels -- tinned [canned] milk, jam, butter, biscuits [cookies or crackers], bully [canned beef, e.g. spam], chocolate, sugar, etc., and cigarettes. So far the supplies to each person were equal and regular. Private parcels of clothing, toilet requisites and cigarettes were also received, and here equality ceased owing to the different numbers dispatched and the vagaries of the post. All these articles were the subject of trade and exchange....

...

Bread was issued on Thursday and Monday, four and three days' rations respectively, and by Wednesday and Sunday night it had risen at least one cigarette per ration, from seven to eight, by supertime. One man always saved a ration to sell then at the peak price: his offer of "bread now" stood out on the board among a number of "bread Monday's" fetching one or two less, or not selling at all-and he always smoked on Sunday night.

Evolution of the market:

Very soon after capture people realised that it was both undesirable and unnecessary, in view of the limited size and the equality of supplies, to give away or to accept gifts of cigarettes or food. "Goodwill" developed into trading as a more equitable means of maximizing individual satisfaction.

We reached a transit camp in Italy about a fortnight after capture and received a Red Cross food parcel each a week later. At once exchanges, already established, multiplied in volume. Starting with simple direct barter, such as a non-smoker giving a smoker friend his cigarette issue in exchange for a chocolate ration, more complex exchanges soon became an accepted custom. Stories circulated of a padre [priest or chaplain] who started off round the camp with a tin [can] of cheese and five cigarettes and returned to his bed with a complete [Red Cross] parcel in addition to his original cheese and cigarettes ; the market was not yet perfect. Within a week or two, as the volume of trade grew, rough scales of exchange values came into existence. Sikhs, who had at first exchanged tinned beef for practically any other foodstuff, began to insist on jam and margarine. It was realised that a tin of jam was worth 4 lb. of margarine plus something else ; that a cigarette issue was worth several chocolate issues: and a tin of diced carrots was worth practically nothing.

In this camp we did not visit other bungalows very much and prices varied from place to place ; hence the germ of truth in the story of the itinerant priest. By the end of a month, when we reached our permanent camp, there was a lively trade in all commodities and their relative values were well known, and expressed not in terms of one another-one didn't quote bully [canned meat] in terms of sugar-but in terms of cigarettes. The cigarette became the standard of value. In the permanent camp people started by wandering through the bungalows calling their offers-"cheese for seven" (cigarettes)-and the hours after parcel issue were Bedlam. The inconveniences of this system soon led to its replacement by an Exchange and Mart notice board in every bungalow, where under the headings "name", "room number", "wanted" and "offered" sales and wants were advertised. When a deal went through, it was crossed off the board. The public and semi-permanent records of transactions led to cigarette prices being well known and thus tending to equality throughout the camp, although there were always opportunities for an astute trader to make a profit from arbitrage. With this development everyone, including non-smokers, was willing to sell for cigarettes, using them to buy at another time and place. Cigarettes became the normal currency, though, of course, barter was never extinguished.

The unity of the market and the prevalence of a single price varied directly with the general level of organisation and comfort in the camp. A transit camp was always chaotic and uncomfortable: people were overcrowded, no one knew where anyone else was living, and few took the trouble to find out. Organisation was too slender to include an Exchange and Mart board, and private advertisements were the most that appeared. Consequently a transit camp was not one market but many. The price of a tin of salmon is known to have varied by two cigarettes in 20 between one end of a hut and the other. Despite a high level of organisation in Italy, that market was morcellated in this manner at the first transit camp we reached after our removal to Germany in the autumn of 1943. In this camp-Stalag VIIA at Moosburg in Bavaria-there were up to 50,000 prisoners of all nationalities. French, Russians, Italians and Jugo-Slavs [Yugoslavians] were free to move about within the camp : British and Americans were confined to their compounds, although a few cigarettes given to a sentry would always procure permission for one or two men to visit other compounds. The people who first visited the highly organised French trading centre, with its stalls and known prices, found coffee extract-relatively cheap among the tea-drinking English-commanding a fancy price in biscuits or cigarettes, and some enterprising people made small fortunes that way. (Incidentally we found out later that much of the coffee went " over the wire " and sold for phenomenal prices at black market cafes in Munich : some of the French prisoners were said to have made substantial sums in RMk.s. This has one of the few occasions on which our normally closed economy came into contact with other economic worlds.)

Barriers to trade:

One man capitalised his knowledge of Urdu by buying meat from the Sikhs and selling butter and jam in return : as his operations became better known more and more people entered this trade, prices in the Indian Wing approximated more nearly to those elsewhere, though to the end a " contact " among the Indians was valuable, as linguistic difficulties prevented the trade from being quite free.

Limits on trade:

Public opinion on the subject of trading was vocal if confused and changeable, and generalizations as to its direction are difficult and dangerous. A tiny minority held that all trading was undesirable as it engendered an unsavoury atmosphere; occasional frauds and sharp practices were cited as proof. Certain forms of trading were more generally condemned; trade with the Germans was criticized by many. Red Cross toilet articles, which were in short supply and only issued in cases of actual need, were excluded from trade by law and opinion working in unshakable harmony. At one time, when there had been several cases of malnutrition reported among the more devoted smokers, no trade in German rations was permitted, as the victims became an additional burden on the depleted food reserves of the Hospital. But while certain activities were condemned as anti-social, trade itself was practiced, and its utility appreciated, by almost everyone in the camp.

The August 1944 cuts...

In August, 1944, the supplies of parcels and cigarettes were both halved. Since both sides of the equation were changed in the same degree, changes in prices were not anticipated. But this was not the case : the non-monetary demand for cigarettes was less elastic than the demand for food, and food prices fell a little. More important however were the changes in the price structure. German margarine and jam, hitherto valueless owing to adequate supplies of Canadian butter and marmalade, acquired a

new value. Chocolate, popular and a certain seller, and sugar, fell. Bread rose; several standing contracts of bread for cigarettes were broken, especially when the bread ration was reduced a few weeks later

...

The economic organisation described was both elaborate and smooth-working in the summer of 1944. Then came the August cuts and deflation. Prices fell, rallied with deliveries of cigarette parcels in September and December, and fell again. In January, 1945, supplies of Red Cross cigarettes ran out : and prices slumped still further: in February the supplies of food parcels were exhausted and the depression became a blizzard. Food, itself scarce, was almost given away in to meet the non-monetary demand for cigarettes. Laundries ceased to operate, or worked for £s [British pounds] or RMk.s: food and cigarettes sold for fancy prices in £s, hitherto unheard of..... The...Exchange and Mart notices were full of unaccepted offers for cigarettes. Barter increased in volume, becoming a larger proportion of a smaller volume of trade. This, the first serious and prolonged food shortage in the writer's experience, caused the price structure to change again, partly because German rations were not easily divisible. A margarine ration gradually sank in value until it exchanged directly for a treacle [sweet syrup, like corn syrup or molasses] ration. Sugar slumped sadly. Only bread retained its value. ... A few fractional parcel and cigarette issues, such as one-sixth of a parcel and twelve cigarettes each, led to momentary price recoveries and feverish trade, especially when they coincided with good news from the Western Front, but the general position remained unaltered .By April, 1945, chaos had replaced order in the economic sphere : sales were difficult, prices lacked stability.

Economics has been defined as the science of distributing limited means among unlimited and competing ends. On 12th April, with the arrival of elements of the 30th U.S. Infantry Division, the ushering in of an age of plenty demonstrated the hypothesis that with infinite means economic organisation and activity would be redundant, as every want could be satisfied without effort.

FOOD PARCELS

ONE PER WEEK PER MAN

RED



CROSS

BRITISH

Condensed Milk	1 can
Meat Roll	1 can
Meat & Vegetable	1 can
Vegetable or Bacon	1 can
Sardines	1 can
Choco-4 oz.	1 can
Margarine or Butter	1 box
Biscuits	1 pkg.
Eggs-Dry	1 can
Oatmeal	1 can
Cocoa	1 can
Tea-2 oz.	1 box
Dried Fruit or Pudding	1 can
Sugar-4 oz.	1 box
Chocolate	1 bar
Soap	1 bar

AMERICAN

Powdered Milk-16oz.	1 can
Spam	1 can
Cornd Beef	1 can
Liver Paste	1 can
Salmon	1 can
Cheese	1 can
Margarine-16 oz.	1 can
Biscuits-8-stallon	
Nescafe Coffee-4 oz.	1 can
Jam or Orange Proc.	1 can
Prunes or Raisins	1 can
Sugar-box.	1 box
Chocolate-4oz.	2 bars
Soap	2 bars
Cigarettes	5 pkts.

CANADIAN

Powdered Milk	1 can
Spam	1 can
Cornd Beef	1 can
Salmon	1 can
Cheese-8 oz.	1 can
Butter-16 oz.	1 can
Biscuits-each	1 box
Coffee-ground-8 oz.	1 bag
Jam	1 can
Prunes-8 oz.	1 box
Raisins-8 oz.	1 box
Sugar-8 oz.	1 bag
Chocolate-5 oz.	1 bar
Soap	1 bar

REICH ISSUE

WEEKLY RATION

Army Bread-1 loaf	2100 grams	Soup-Oatmeal, Barley or Pea	1 tin
Vegetables-Potatoes	400 grams	Cheese	46 grams
Other Seasonal	?	Sugar	175 grams
Jam	175 grams	Marm	215 grams
Must		Salt	
Flour--can secutin			