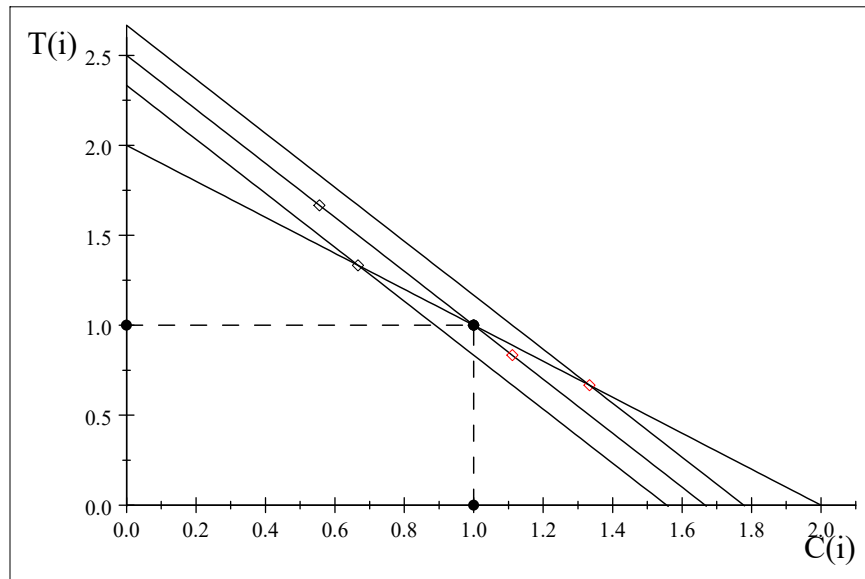


Exam 1 2018 Int Econ

60 points total

Part 1: Andy and Bob



Andy black pts, Bobby red pts

Consider the above figure that depicts the two POW's, Andy and Bob. They each receive an endowment of one (1) unit of coffee and one (1) unit of tea. The five points depicted on the graph are:

$$\overbrace{\left(\frac{5}{9}, \frac{5}{3}\right)}^{\#1}; \overbrace{\left(\frac{6}{9}, \frac{12}{9}\right)}^{\#2}; \overbrace{(1, 1)}^{\#3}; \overbrace{\left(\frac{10}{9}, \frac{5}{6}\right)}^{\#4}; \overbrace{\left(\frac{12}{9}, \frac{6}{9}\right)}^{\#5}.$$

The four downward-sloping lines are budget constraints. We label them according to the height of their vertical intercepts: Line A has the lowest vertical intercept, line B the second lowest, line C the third lowest, and line D the highest. Line A has a slope of minus 1 (-1), while lines B, C, and D have slopes of minus one-and-a-half (-1.5).

The scenario depicted in this figure is a comparison of autarky and free trade. Points #1 and #2 are most-preferred pairs of coffee and tea for Andy while points #4 and #5 are most preferred pairs of coffee and tea for Bob.

10 points each for the following four questions.

1. Explain why line A must represent the autarkic budget constraint for both Andy and Bob.

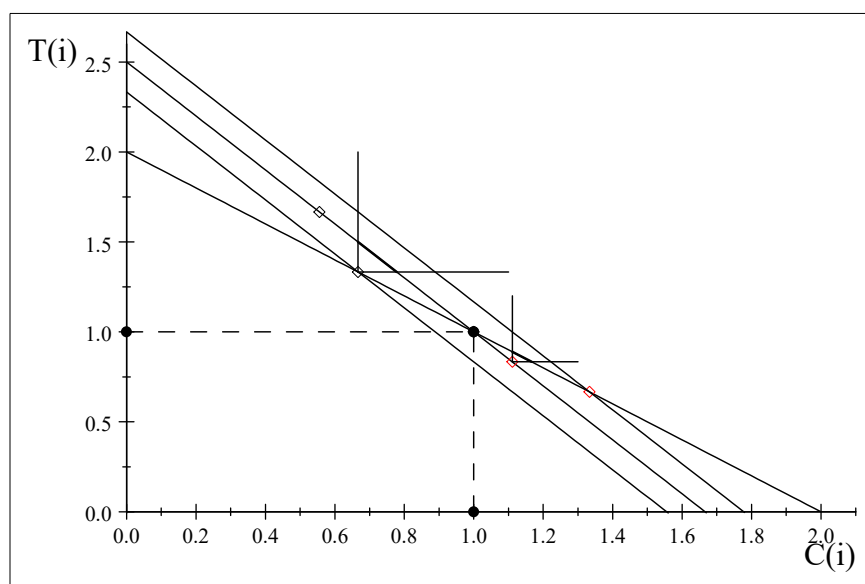
A: Line A. Along line A (which goes through the endowment point), Andy's preferred choice is  $\left(\frac{6}{9}, \frac{12}{9}\right)$  while Bob's is  $\left(\frac{12}{9}, \frac{6}{9}\right)$ . Hence, market or aggregate demand for coffee is  $\frac{18}{9} = 2$ , which equals total supply. (Total

demand for tea is also two (2), which also equals total supply). In other words,  $ED=0$  in this case.

2. Now consider the case in which Andy and Bob each receive their endowment of (1, 1), but their camp trades with the French camp, and the free-trade relative price of coffee is 1.5, that is,  $p_{FT} = 1.5$ . Explain why line C represents the budget constraint for both Andy and Bob.

3. Point #1 and point #4 represent the most-preferred choices of Andy and Bob in this free-trade scenario in which they both get the endowment of (1, 1). Make the argument that in this scenario Andy is better off than he was in autarky and Bob is worse off.

Answer



Andy black pts, Bobby red pts

Answer: Andy preferred #2 in autarky. With free trade, his budget constraint is line C. He could choose any point along line C, some of which (depicted by the thick line segment on line C northeast of #2) consist of more of both coffee and tea. So Andy *could* pick a coffee-tea pair that is more preferred than #2. He might pick a point like #1, which has less coffee and more tea than #2, but we know—because he picked it—that it must be preferred to any of the points in the thick line segment northeast of #2, which are in turn preferred to #2. Andy must be better off.

Bob: His most-preferred point in free trade is #4. The thick line segment along line A northeast of #4 shows pairs of coffee and tea that Bob could have picked in autarky, and any of them would be more preferred than #4 (more is better). So any point he picked in autarky—such as #5—must be more preferred than any of the points in the thick line segment northeast of #4. Hence, #5 must be more preferred than #4. Bob loses.

4. Now imagine that Andy and Bob had traded in autarky and had gotten

their preferred amounts of coffee and tea, but before consuming anything they were allowed to trade in the "world" economy at  $p_{FT} = 1.5$ . This is depicted in the above diagrams by depicting lined B and D going through their autarkic equilibrium consumption points, respectively, but with slope  $p_{FT} = 1.5$ . Make the argument that both Andy and Bob must be better off in this new free-trade scenario than they would have been in autarky.

## Part 2 20 points

Our S and M model had the following outcomes:

Autarky:

Prices, wages, and resource allocation

$$P_V = 2, P_C = 1, \frac{P_C}{P_V} \equiv p; p_a = .5;$$

$$w = 9, L_V = 4, L_C = 4; \frac{w}{P_V} = 4.5; \frac{w}{P_C} = 9$$

Output

$$C_a^S = 42.8, V_a^S = 26$$

Profits

$$\Pi_V^{EJ} = 26 - 4.5 \times 4 = 8;$$

$$\Pi_C^{LW} = 42.8 - 9 \times 4 = 6.8;$$

$$\Pi_V^{LW} = p \times 6.8 = 3.4$$

Demand and consumption

$$C_l^d = \frac{2.25}{p}; C_{EJ}^d = \frac{2}{p}; C_{LW}^d = \frac{1.4}{p}; C^d = \frac{21.4}{p};$$

$i$	$C_{i,a}^d$	$V_{i,a}^d$
$l$	4.5	2.25
$L = 8l$	36	18
$EJ$	4	6
$LW$	2.8	2

Free trade

Prices, allocations, output, demand

$$P_V = 2; P_C = 1.6, p_{FT} = .8$$

$$\begin{aligned}
C_{FT}^S &= 51, V_{FT}^S = 21; \\
L_{C,FT} &= 5; L_{V,FT} = 3; \\
\frac{w}{P_V} &= 6; \frac{w}{P_C} = 7.5; \\
\Pi_{EJ,FT}^V &= 3 \text{ units vino}; \\
\Pi_{LW,FT}^C &= 13.5 \text{ units cloth}; \\
\Pi_{LW,FT}^V &= 10.8 \text{ units vino} \\
C_l^d &= \frac{2.25}{p}; C_{EJ}^d = \frac{2}{p}; C_{LW}^d = \frac{1.4}{p}; C^d = \frac{21.4}{p}; \\
C_{l,FT}^d &= 2.8125; C_{EJ,FT}^d = 2.5; C_{LW,FT}^d = 1.75; C_{FT}^d = 26.75. \\
V_{L,FT}^d &= 30; V_{EJ,FT}^d = 1; V_{LW,FT}^d = 9.4; V_{FT}^d = 40.4.
\end{aligned}$$

To help, let's organize the key information as follows:

$$\begin{aligned}
C_a^S &= 42.8, V_a^S = 26; \\
C_{FT}^S &= 51, V_{FT}^S = 21;
\end{aligned}$$

$i$	$C_{i,a}^d$	$V_{i,a}^d$	$C_{i,FT}^d$	$V_{i,FT}^d$
$l$	4.5	2.25	2.8125	3.75
$L = 8l$	36	18	22.5	30
$EJ$	4	6	2.5	1
$LW$	2.8	2	1.75	9.4

Because the relative price of cloth went up, we know EJ is worse off and LW better off. Describe, i.e., compute, an allocation of the production of cloth and wine that takes place under free trade that will insure that everyone is better off in free trade with  $p = .8$  than they were in autarky. Diagrams of the budget constraints would probably be a useful rhetorical technique.