Review 2019

"Real" International Trade (where money and nominal prices don't appear)

Tastes, reources, technology, and autarkic equilibrium

1. We assume rational people know what they want, know the constraints they face in getting what they want, and have strategies for getting what they want that is consistent with the constraints they face.

a. Knowing what they want:

i. Individuals can make pair-wise comparisons over any two (2) bundles of things, and decide which bundle they prefer, or whether they are indifferent to the two bundles. We use only two (2) goods/services in a bundle (why only two?), usually symbolized by C and T, representing the quantity per unit of time of each good/service.

ii. More is better.

iii. Transitivity.

iv. There is more, but not necessary for what we do.

v. **Attenzione**! Key is the assumption that prices are not something that affects your preferences (an obvious simplification, but super useful).

b. Constraints:

i. Resources.

A. For the endowment economy, resources are exogenously given bundles, i.e., $(\overline{C}_i, \overline{T}_i)$.

B. For teh economy with production, we assume people have an exogenous amount of time, e.g., eight (8) hours per day, that they can allocate to different productive activitites.

ii. The market: we assume people (within a country) buy and sell everything in a market in which everyone faces the same price, and an imaginary friend, the Walrasian auctioneer, calls out prices until an equilibrium price is reached at which point everyone carries out their plans for buying and selling (there are other mechanisms in the world other than markets, but we don't go there in this class).

c. Technology: for this class, we assume individuals can transform their exogenous amount of time into outputs of products. This is captured in the concept of the individual Production Possibility Frontier.

2. Implications:

a. Budget constraints. From the concept that expenditure equals income, we get:

i. The equation:

$$T_i = \overbrace{T_i^S + pC_i^S}^{\frac{Y_i}{P_T}} - pC_i,\ p \equiv \frac{P_C}{P_T}.$$

This tells us all the pairs (C_i, T_i) that an individual *could* choose, for any exogenous (to her or him) relative price p. Nota Bene: once you know $T_i^S,\ C_i^S,$ and p, you know what all those pairs are.

ii. The diagrammatic depiction. Slope equals minus p, intercepts tell you "real" income measured in T (vertical intercept) or real income measured in C (horizontal intercept).

iii. In the Endowment Economy, (C_i^S, T_i^S) are the exogenous endowments $(\overline{C}_i, \overline{T}_i)$. With production, they are chosen from all those pairs of C_i and T_i that are on the individual's PPF:

$$T_i^S = T_i^{S\max} - \alpha C_i^S,$$

where α is some number representing the opportunity cost in terms of T of the individual producing more C.

iv. **Guarda**! Any budget constraint must include the pair (C_i^S, T_i^S).

b. Supply: given a relative price p (assumed exogenous to the individual), an individual can determine her or his most-useful pair (C_i^S, T_i^S). Nota Bene: for the endowment economy, there is no choice (see 2.a.iii above).

c. Demand: given a relative price p (assumed exogenous to the individual), which determines her or his most-useful pair (C_i^S, T_i^S), an individual can determine her or his most preferred (and feasible, i.e., on the budget constraint) quantity of the good to consume. Expressed in diagram-friendly fashion:

$$p^d = f(C_i).$$

We assume they slope down.

d. Equilibrium: individuals have plans that depend on *relative prices* about (C_i^S, T_i^S) and (C_i, T_i) (the amounts of C and T he or she wants to consume). Thus the total demand for C , which is just the sum of the individual demands, and total supply of C, which is just the sum of all the individual supplies, are each functions of p, the *relative price*. Our imaginary friend the Walrasian auctioneer keeps trying different relative prices until she finds one at which total demand equals total supply.

i. This determines the equilibrium p.

ii. Knowing this p, one can go back and figure out each individual's amounts of production and consumption.

3. **Nota bene**! The exogenous components here are specifications of tastes, resources and technology. The solution tells us

a. What the relative price is that clears the market;

b. What things are produced and consumed by which individuals at that price.

Trade

Cause

If autarkic relative prices differ across two different countries, e.g., $p_a < p_a^*$, arbitageurs can make a profit by buying where the relative price is cheep and selling where the relative price is dear.

Effects (consequences)

1. This process drives up the relative price where it was low, drives down the relative price where it was high. In a "trading" equilibrium, the relative price in each country has changed vis a vis autarky.

2. This different "trade" relative price affects all the individuals in each economy.

3. Likely outcome: some people within each country are hurt, some helped.

4. Theorem: if the economy is perfectly competitive (no market power, not non-pecuniary externalities, no public goods problems), then there exist a redistribution of resources within a country such that, if this redistribution could be carried out costlessly, then free trade would make everyone better off than they were in autarky.

How we evaluate your mastery

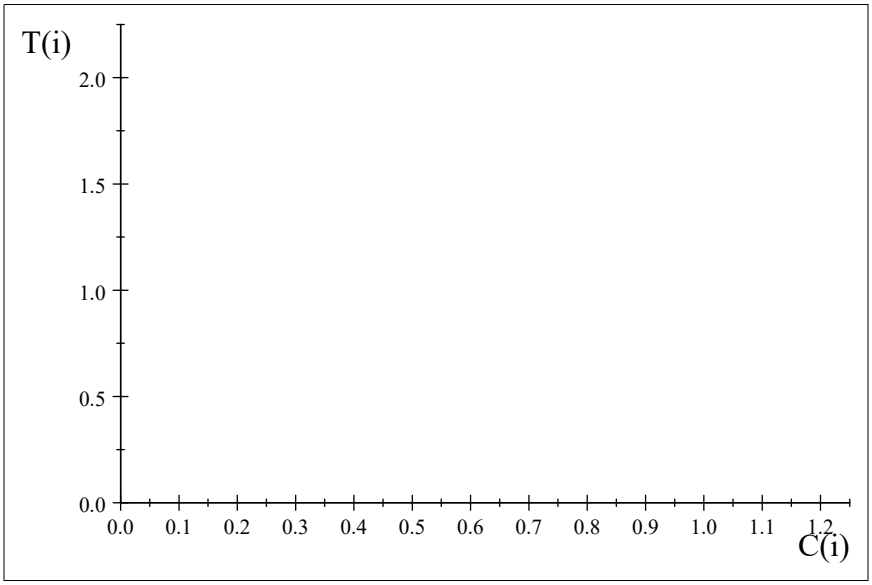
The following problem is a good test of mastery of the basics.

Alex and Henry

In one economy (the "British" economy), there are two citizens, **A**lex, and **H**enry. Each works a unit of time, e.g., 8 hours, per day is one (1) unit. Each can allocate her unit of work time as finely as desired between two activities: producing *T*empranillo wine (T) or *C*oconuts. The individual PPF's for these two citizens are given as:

$$T_A^S = 1 - C_A^S;$$
$$T_H^S = 2 - 2C_H^S;$$

1. Draw a schematic diagram that depicts these two individual PPF's, with T_i^S on the vertical axis.



2. What is the oportunity cost for Alex of producing an extra amount of coconuts? That is, how much Tempranillo does Alex give up to produce an extra unit of coconuts?

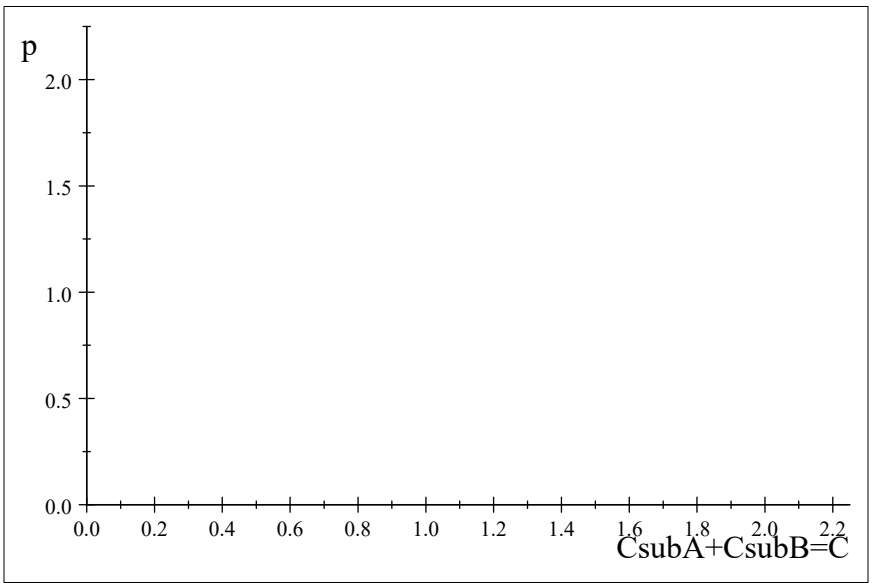
3. What is the oportunity cost for Henry of producing an extra amount of coconuts? That is, how much Tempranillo does Henry give up to produce an extra unit of coconuts?

4. Fill in the following chart that describes the inverse supply functions for Alex, Henry, and the Alex/Henry joint economy. Note: the expression $C \in [a, b]$ means: C could be any value from a to b, e.g., from 6 to 12, including the value of a and the value of b.

p	C_A^S	C_H^S	C^S
$p < 1$			
$p = 1$	$C_A^S \in [,]$		$C^S \in [,]$
$1 < p < 2$			
$p = 2$		$C_H^S \in [,]$	$C^S \in [,]$
$p > 2$			

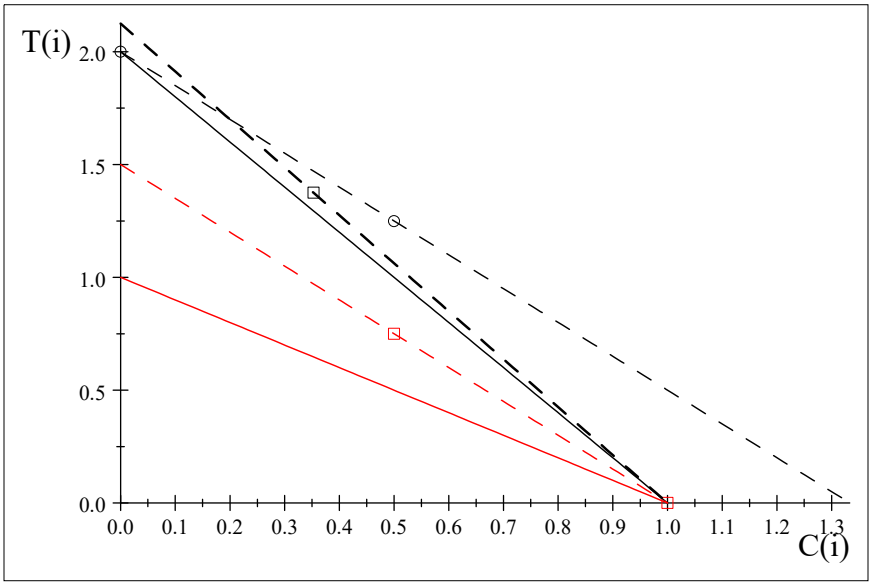
5. Draw a schematic diagram of the Alex/Henry joint economy inverse supply function.

Answer:



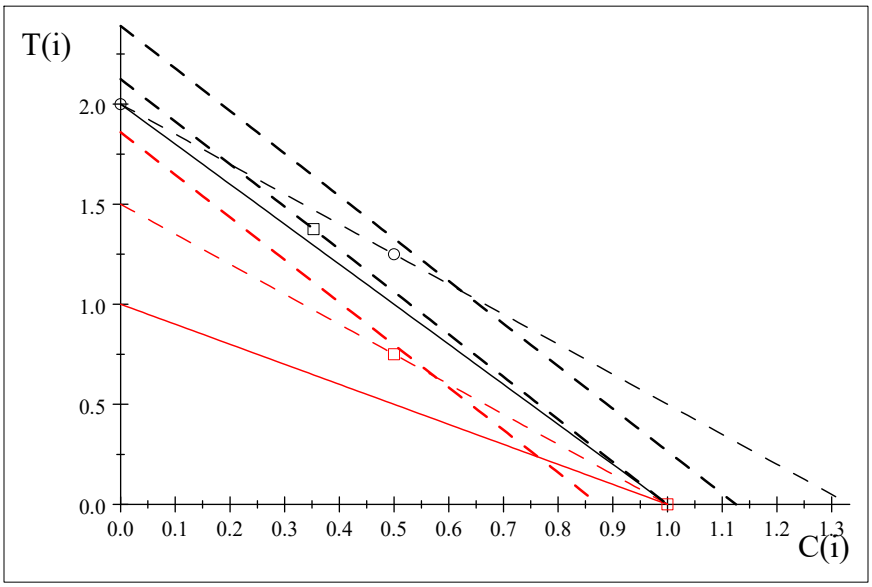
6. Assume demand is such that $p_a = 1.5$. How much C does Alex produce in autarky? How much C does Henry produce?

7. Consider the following diagram, which depicts individual PPF's as solid lines and individual budget constraints in autarky as dotted lines. Imagine free trade with another country increases the relative price of T to $2\frac{1}{8}$. This changes the budget constraint for Henry (and Alex as well). The thicker black dotted line represents Henry's budget constraint with this new free trade price. The square point on this thicker new dotted line represents Henry's most-preferred choice of C and T given this new circumstance. Make the argument that Henry is worse off under free trade.



8. Make the argument that Alex is better off under free trade.

9. Under free trade, both Alex and Henry specialize in producing coconuts. Suppose that, after producing their coconuts but before trading them in the world market, Alex gives Henry one-eighth ($\frac{1}{8}$) of a coconut. Their new budget constraints are as depicted below. Make the argument that with this redistribution, both Alex and Henry would be better off under free trade than under autarky.



Free trade with compensation

Macro

1. Important concepts: short-run versus long-run, fully-employed resources

versus under-employed resources.

2. Demand for money, supply of money, money market equilibrium.

a. Demand:

i. Bridge the gap between payments and receipts

ii. Implication:

$$L^d = kP_I \times \overline{Y},$$

$$P_I = \sum_{j=1}^{j=n} \alpha_j P_j;$$

$$e.g.,\ P_I = \alpha P_C + (1-\alpha)P_T$$

b. Supply: floating exchange rates:

$$L^S = \overline{L}.$$

c. Equilibrium:

$$P_I = \frac{\overline{L}}{k\overline{Y}}.$$

3. Determination of nominal prices:

$$\frac{P_C}{P_T} = \theta, \rightarrow P_C = \theta P_T;$$

$$P_I = \alpha\theta P_T + (1-\alpha)P_T$$

$$P_I = (\alpha\theta + 1 - \alpha)P_T;$$

$$P_T = \frac{\frac{\overline{L}}{k\overline{Y}}}{1-\alpha(1-\theta)}.$$

$$P_C = \frac{\theta\frac{\overline{L}}{k\overline{Y}}}{1-\alpha(1-\theta)}.$$

4. Determination of E, which is domestic-currency price of a unit of foreign exchange:

a. Foreign country:

$$P_{IF} = \frac{\overline{L}_F}{k_F\overline{Y}_F};$$

$$P_{IF} = \alpha_F P_{CF} + (1-\alpha_F)P_{TF};$$

$$P_{TF} = \frac{\frac{\overline{L}_F}{k_F\overline{Y}_F}}{1-\alpha_F(1-\theta_F)};$$

$$P_{CF} = \frac{\theta_F\frac{\overline{L}_F}{k_F\overline{Y}_F}}{1-\alpha_F(1-\theta_F)}$$

b. Free trade, LOOP:

$$\theta = \theta_F;$$
$$E = \frac{P_T}{P_{TF}};$$
$$E = \frac{(1-\alpha_F(1-\theta_F))\left(\frac{\bar{L}}{k\bar{Y}}\right)}{(1-\alpha(1-\theta))\left(\frac{\bar{L}}{k\bar{Y}}\right)}.$$

Policy

1. Concentrated interests and diffused costs: Smoot-Hawley, sugar, mohair, endless list.

2. The innovation that moves trade issues to: Concentrated interests and concentrated costs: RTAA, GATT, WTO

3. Immigration:

a. Winners and losers

b. Protecting something valuable: how best to allocate scarce resources?

i. Visa overstay?

ii. Wall?

iii. Foreign aid/CAFTA,NAFTA?

iv. How much to spend? This is analogous to the "guns versus butter" debate.

4. Tariffs and $TBS(TBD)$:

$$S - I = TBS.$$

Evaluation:

Imagine the country of Roberto–which consists of one person, namely Roberto. Roberto is happy with his level of assets–the euro's he has stashed in his mattress–and with his capital stock–which is his level of education. That means that over the next year he will not save or invest.

Roberto runs a bilateral trade surplus with the country of CET of 1000 euro–he sells his teaching services to residents of CET. He runs bilateral trade deficits of 500 euros with the country of Carraia and of 500 euros with the country of Cacio e Pepe. CET, Carraia, Caci e Pepe, and Roberto are the only countries in the world.

Roberto now thinks he is no longer fitting in his clothing, so decides to impose a quota on his imports from Carraia, limiting himself to only 250 euro worth of gelato. What happens to his bilateral trade balances, and his overall trade balance vis a vis

ROW?