

**Economics 164**  
Problem Set 1

1. Suppose that the world is composed of two countries, A and B. Country A is endowed with two goods, 4 units of tuna and 4 units of milk. Country B is also endowed with two goods, 6 units of tuna and 2 units of milk. Suppose that social welfare in each country can be represented by the same set of (well-behaved and) homothetic preferences.
  - a). Show that, if the citizens of A and B are allowed to trade freely with each other, country B will export tuna to country A in exchange for imports of milk from country A.
  - b). Show that each country gains according to its social welfare function.
  - c). Show that, in autarky, countries are not positioned on the contract curve, but that free trade brings them to a point on the contract curve. Interpret this finding.
  
2. Suppose that the world is composed of two countries, A and B. Country A is endowed with two goods, tuna and milk, and populated by two citizens, one a tuna fisherman and the other a dairy farmer. Country A's tuna fisherman is endowed with 3 units of tuna and 1 unit of milk. Country A's dairy farmer is endowed with 3 units of milk and 1 unit of tuna. Country B is also endowed with two goods, tuna and milk, and populated by two citizens. But each of B's citizens is both a tuna fisherman and a dairy farmer, and each of B's citizens is endowed with 3 units of tuna and 1 unit of milk. All (4) citizens in the world share the same set of (well-behaved and) homothetic preferences.
  - a). Show that, in autarky, A's tuna fisherman will sell tuna to A's dairy farmer in exchange for milk. Briefly explain why.
  - b). Show that, in autarky, B's citizens do not trade with each other. Briefly explain why.
  - c). Show that, if the citizens of A and B are allowed to trade freely with each other, country B will export tuna to country A in exchange for imports of milk from country A.
  - d). Show that both citizens in country B gain from this trade.
  - e). Show that A's dairy farmer gains from this trade, but that A's tuna fisherman loses from this trade. Why is this so?
  - f). Illustrate a redistribution scheme that would (i) leave unchanged the utility that each of A's citizens achieves in autarky, but (ii) ensure that each of A's citizens would share in the gains from trade.
  - g). In light of your answers in (e) and (f), comment briefly on the role of redistribution in interpreting the finding discussed in 1. c).