A Note on the Comparative Advantage under Monopoly

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1. Introduction

Recent development in trade theories shows us that there are some of exceptions in the conventional comparative advantage theory that the commodity which has a lower relative price in an autarkic equilibrium is exported and the other commodity is imported. The factors which bring the exceptional case are the existence of various distortions and the existence of many goods.[1] The distortions contain Marshallian externalities and imperfect competitions.[2]

This paper focuses on the compatative advantage in the economy where one of the two sectors is under monopoly in the domestic market.[3] Recently, Fukushima and Hatta (1985) shows that, in the economy where a monopoly sector exists in the domestic market, each country will not export the commodity whose autarkic relative price in one country is lower than that in the other, neither will the equilibrium terms of trade lie in the range spanded by the autarkic price ratios of the two counties. On the other hand, Casas (1989) states that, using a partial equilibrium analysis, the commodity of monopoly sector in the home country, whose autarkic ralative price in the home country is higher than that in the foreign country, will be imported by the home country if there are no differences in preferences and technologies between the two countries other than the market structures.

This note shows that the conventional comparative advantage theory holds under the condition that there are no inferior goods, even if a monopoly sector exists in a two-country, two-commodity world where both countries have the same perferences, technologies and endowments. That is, the assertion by Casas (1989) cannot be extended to a general equilibrium model of two commodities without the normality condition. Furthermore, the counter-example of Fukushima and Hatta (1985) cannot be obtained in a trade model between the similar countries with satisfying the normality condition.

2. The analysis

There are two countries in the world, which we call the home country and the foreign country. Two commodities are produced in each country. The preferences, the technologies and the factor endowments are the same between the two countries. The difference lies in the market structures between the two countries.

In the home country, the first commodity is produced under monopoly before and after the opening of trade, although the second commodity is produced prefectly competitively. Thus, in the home country, the following relation holds[4]:

$$\frac{MC_1}{MC_2} < \frac{P_1}{P_2}$$

where MC_i is the marginal cost of the ith sector and P_i is the producer's (or consumer's) price of the ith good in the home country. This implies that the price line whose slope is equal to the relative price of the first good is steeper than the slope of the tangent line to the production possibility frontier in the home country.

On the other hand, both markets are prerectly competitive in the foreign country. That is, the following equation holds:

$$\frac{MC_1^*}{MC_2^*}=\frac{P_1^*}{P_2^*}$$

where MC_i^* is the marginal cost of the ith sector and P_i^* is the producer's (or consumer's) price of the ith good in the foreign country. This equation implies that the price line is tangent to the production possibility frontier in the foreign country.

We call the economy described above *the monopoly-economy* in the following analysis.

First we obtain the proposition on the autarkic relathve price in the monopoly-economy.

PROPOSITION 1.

If there are no inferior goods in the monopoly-economy, the autarkic relative price of the monopoly sector in the home country is higher than that in the foreign country.

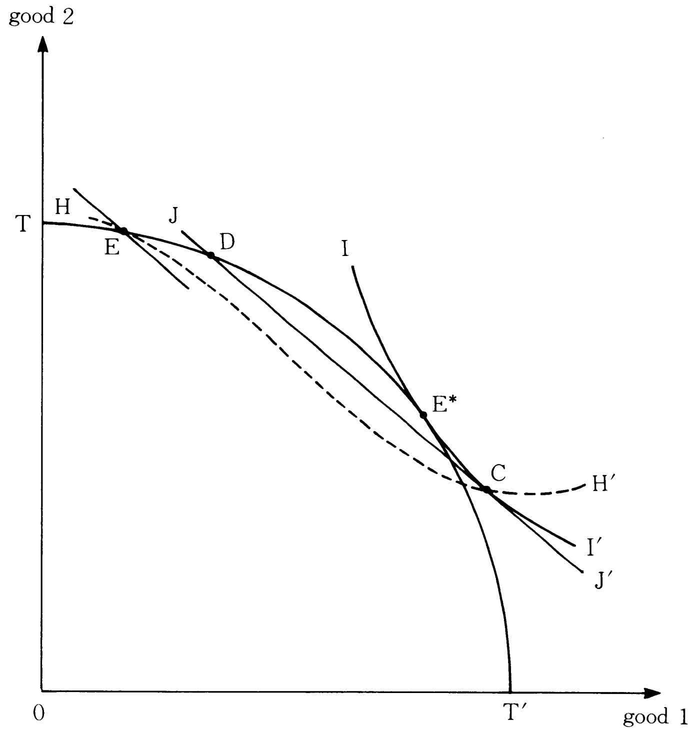
PROOF.

The curve TT′ is the common production possibility frontier curve in Figure 1. The curve II′ represents the social indifference curve and the point E* is the autarkic equilibrium of the foreign country.

Suppose that the autarkic relative price of the monopoly sector in the home country were lower than, or equal to, that in the foreign country. Let us draw the tangent line JJ′ to the indifference curve II′ whose slope is equal to the aurakic relative price of the monopoly sector in the home country. The point D is the intersecting point of the transformation curve TT′ and the tangent line JJ′.

The autarkic equilibrium of the home country must lie on the half cruve from T to D. If not, the indifference curves must intersect. Let the autarkic equilibrium is represented by the point E. Then, since the

Figure 1.



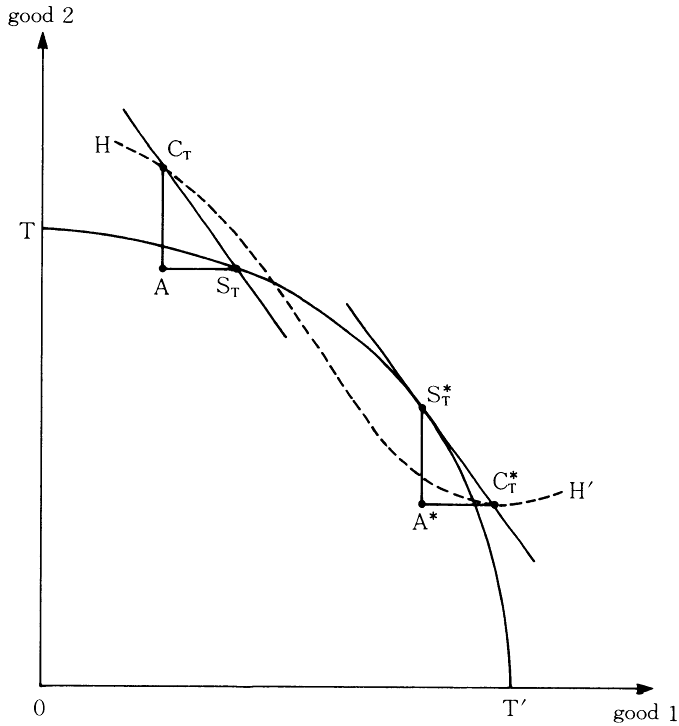
income expantion path, which is the dotted line HH′, goes through the points E and C, it is obvious that the second commodity is an inferior good in this case. This is a contradiction. Q. E. D.

Next we obtain the comparative advantage theory in the monopoly-economy.

PROPOSITION 2.

If there are no inferior goods in the monopoly-economy, each country exports the commodity whose relative price is lower in the autarkic equilibrium, and imports the other commodity.

Figure 2.



PROOF.

From proposition 1, all we have to do is to show that the home country imports the first commodity which is produced under monopoly.

Suppose that the home country exported the first commodity in the trade equilibrium. Then, the foreign country must import the first commodity. Let the production point and the consumption point of the foreign country in the trade equilibrium be represented by the points S_T^* and C_T^*, respectively. Then, the production point and the consumption point of the home country in the trade equilibrium will be the points S_T and C_T, respectively, where the triangle C_TS_TA is congruent with the triangle $S_T^*C_T^*A^*$.

Then, since the income expansion path, which is the dotted line HH′, goes through the points C_T and C_T^*, it is obvious that the second commodity is an inferior good. This is a contradiction. Q. E. D.

3. Conclusion

In general, the existence of monopoly gives rise to the counter-example of conventional comparative advantage theory even in a two-country, two-commodity world. However, we demonstrate that the conventional comparative advantage theory holds in spite of the existence of monopoly in the domestic market under the conditions that (1) two countries share the same preferences, technologies and endowments of factors of production except that one of the two products is produced under monopoly in one country, and (2) there are no inferior goods in both countries.

Our propositions can be extended to the case where two commodities are produced under monopoly in both countries that share the same preferences, technologies and endowments. Thus, the results we have obtained relies on the similarity of the trading countries. In general, however, it is possible that the paradoxical trade occurs between different countries with monopoly.

Footnotes

1) See Drabicki and Takayama (1979).

2) There are a lot of articles that discuss trade theories with Marshallian externalities and imperfect competitions. These are surveyed by Helpman (1984).

3) We consider the homogeneous products which are produced under monopoly or perfect competition. In the framework, Melvin and Warne (1973) and Markusen (1981) discuss the trade theories, but the comparative advantage theory is hardly analysed.

4) We assume that Giffen paradox never occurs. If there is a Giffen good, the price elasticity of demand become negative, which reverses the following inequality. In the porpositions we will obtain later, we assume that there are no inferior goods. The assumption excludes the possibility of Giffen paradox.

References

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