Tariffs, Export Quotas and Price Fluctuations

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It has been known in the literature that growth leads to a larger domestic price fluctuation under import quotas than under tariffs. This paper intends to show that the above proposition does not hold between tariffs and export quotas. Growth can lead to a larger domestic price fluctuation under tariffs than under export quotas if the country concerned is a large country and the foreign demand for imports is inelastic. (*JEL* Classification: F13)

The differences between tariffs and import quotas in their economic effects have been extensively discussed in the literature. One of them is that tariffs and import quotas are nonequivalent in the presence of growth (Bhagwati and Srinivasan 1983; Melvin 1995; Pelcovits 1976). With a given tariff or an import quota, a change in import demand due to growth will change the amount of imports under the tariff but will change the domestic price of the import good under the import quota. In other words, growth leads to a larger domestic price fluctuation under import quotas than under tariffs.

The purpose of this paper is to show that the above proposition does not hold between tariffs[1] and export quotas. It will be shown that growth can lead to a larger domestic price fluctuation under tariffs than under export quotas if the country concerned is a large country and the foreign demand for imports is inelastic.

The offer curve approach (Meade 1952) will be used in this study in contrast to the partial equilibrium approach used in the previous studies. It is assumed that neither the exportable good nor the importable

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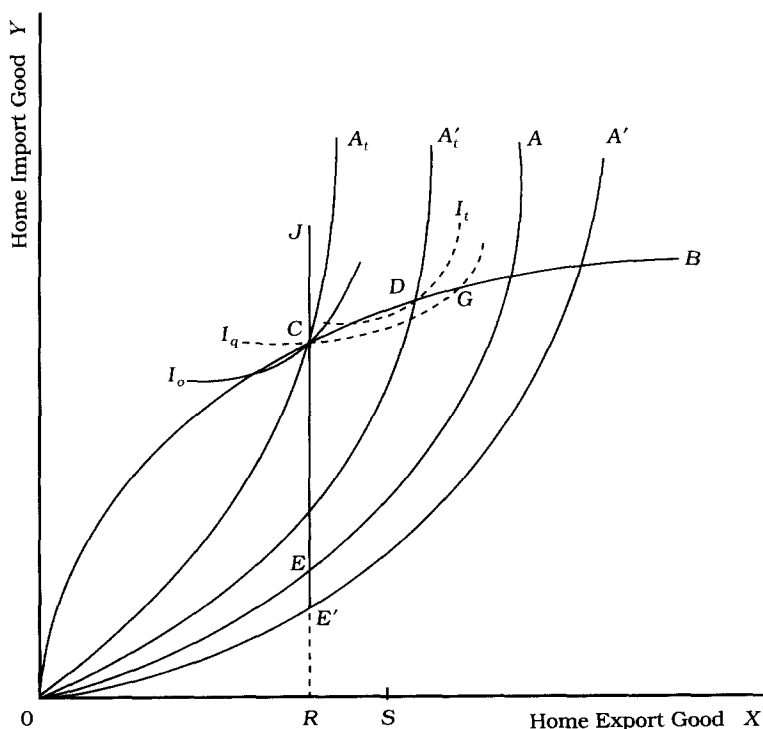[1]Tariffs in this study mean export tariffs. See Lerner (1936).

FIGURE 1

good is an inferior good.

The vertical axis and horizontal axis in Figure 1 measure the home import good Y and home export good X, respectively. OA is the free trade offer curve of the home country A. OB is the foreign offer curve (Assume that the foreign demand for imports is elastic.)

Suppose that country A imposes a tariff. The tariff-distorted offer curve OA_t intersects OB at C. Point C is the trade equilibrium point after the tariff.[2] The welfare of country A is represented by the trade indifference curve I_o and the domestic price ratio is measured by the slope of I_o at C.

Next suppose that country A imposes the static-equivalent export quota OR, which is the amount of exports under the tariff. Country A's offer curve after the export quota is OEJ, which also intersects OB at C. Like the tariff case, country A's welfare is represented by the trade

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[2]The outcome will not be different if country A initially imposes the optimum tariff.

indifference curve I_o[3] and the domestic price ratio is measured by the slope of I_o at C.

Now assume that country A's export supply is increased due to a change in technology or a change in factor endowments. The free trade offer curve shifts from OA to OA'. This means that given any international price ratio, country A would like to export more good X and import more good Y. OA'_t is the tariff-distorted offer curve after the increase in export supply. Point D will be the new trade equilibrium point under the tariff. The amount of exports is increased from OR to OS after the increase in export supply. The welfare of country A is represented by the dotted trade indifference curve I_t[4] and the domestic price ratio is measured by the slope of I_t at D. The slope of I_t at D is less than the slope of I_o at C.[5]

However, under the static-equivalent export quota, the amount of exports remains the same as OR after the increase in export supply (The new offer curve is $OE'J$, which intersects OB at C.). The welfare of country A is represented by the dotted trade indifference curve I_q and the domestic price ratio is measured by the slope of I_q at C.[6]

The slope of I_q at C is less than the slope of I_t at D, which in turn is less than the slope of I_o at C. This means that after the increase in

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[3]It is assumed that the government of country A raises export quota revenues by selling export licenses through competitive auctions. Then, like tariff revenues, export quota revenues are redistributed to the private sector in the form of lump-sum transfers. It is also assumed that the export quota always remains binding.

[4]The dotted trade indifference curves represent the new trade indifference curves after the increase in export supply. They are derived with a new production possibility curve after growth.

[5]On the one hand, the tariff rate is the same before and after the increase in export supply. On the other hand, the international price line OD (not drawn) after the increase in export supply is flatter than the international price line OC (not drawn) before the increase in export supply. Therefore, the slope of I_t at D is less than the slope of I_o at C.

[6]A point can be noted here. I_q could lie below, above or coincide with I_t. If OA'_t intersects OB at G (the intersection point between I_q and OB), then I_q coincides with I_t. If OA'_t intersects OB at a point above G, then I_q lies above I_t. On the one hand, after the increase in export supply, country A increases its exports from OR to OS under the tariff. Country A is better off from exporting more because the price of the exportable good X is higher abroad than at home. On the other hand, the terms of trade deteriorate under the tariff as country A expands its exports. Due to these conflicting forces, the tariff and the static equivalent export quota can not be ranked from a welfare standpoint.
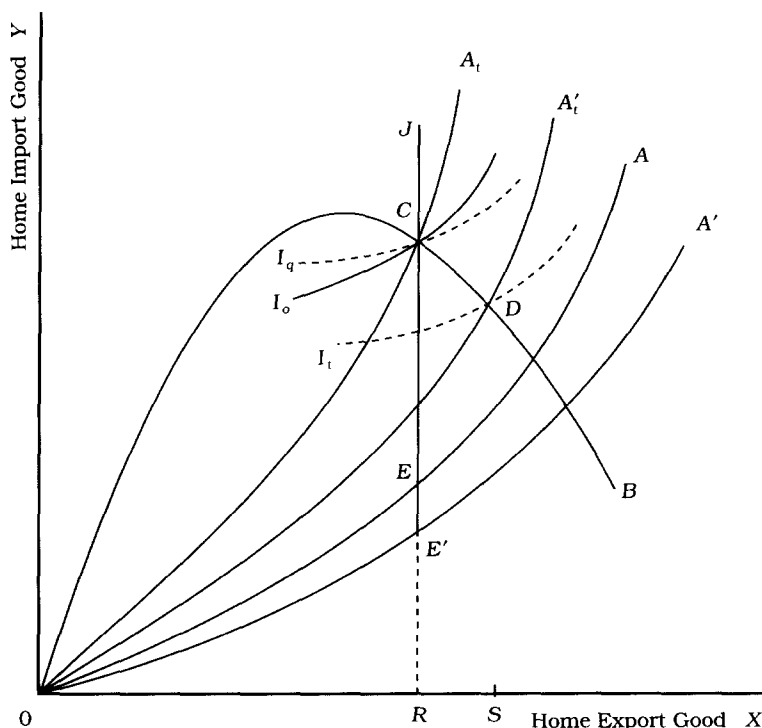
FIGURE 2

export supply, the domestic relative price of the exportable good X will decrease more under the export quota than under the tariff.

The above analysis can be applied to the case where there is a decrease in export supply. In this case, country A's domestic relative price of the exportable good will increase under both the tariff and the export quota. However, it will increase more under the export quota than under the tariff.

This shows that changes in export supply in a large country, which faces an elastic foreign demand for imports, will lead to a larger domestic price fluctuation under export quotas than under tariffs.

Now examine the case where country A is a large country and the foreign demand for imports is inelastic. In Figure 2, country A initially reaches point C by imposing a tariff or the static-equivalent export quota OR. The welfare of country A is represented by the trade indifference curve I_o and the domestic price ratio is measured by the slope of I_o at C under both the tariff and the static-equivalent export quota.

Now suppose that there is an increase in export supply. After the

increase in export supply, the free trade offer curve will shift from *OA* to *OA′*, and the tariff-distorted offer curve will shift from *OA_t* *OA′_t*. Country *A* will reach the new trade equilibrium point *D* under the tariff. However, it will remain at *C* under the export quota.

After the increase in export supply, the domestic price ratio is measured by the slope of the dotted trade indifference curve I_t at *D* under the tariff whereas it is measured by the slope of the dotted trade indifference curve I_q at *C* under the export quota.[7] Both the slope of I_t at *D* and the slope of I_q at *C* are less than the slope of I_o at *C*, which measures the domestic price ratio before the increase in export supply.[8] In other words, like the case where the foreign demand for imports is elastic, the domestic relative price of the exportable good *X* is lowered under both the tariff and the export quota after the increase in export supply.

However, unlike the case where the foreign demand for imports is elastic, the slope of I_t at *D* can be less than the slope of I_q at *C*. The increase in export supply in a large country will cause its terms of trade to deteriorate under the tariff. The terms-of-trade effect is, however, relatively larger when it faces an inelastic foreign demand for imports. Therefore, in this case, the domestic relative price of the exportable good *X* can be lowered more under the tariff than under the export quota.

This above analysis can be applied to the situation in which there is a decrease in export supply. In this case, the domestic relative price of the exportable good *X* will rise under both the tariff and the export quota. However, it can rise more under the tariff than under the export quota.

This shows that changes in export supply in a large country, which faces an inelastic foreign demand for imports, can lead to a larger domestic price fluctuation under tariffs than under export quotas.

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[7] A point can be seen here. Since I_q lies above I_t, the tariff is inferior to the static-equivalent export quota from a welfare standpoint. As country *A*'s export supply increases, its exports will expand and the terms of trade will deteriorate under the tariff. When country *A* faces an inelastic foreign demand for imports, the loss from the deterioration in the terms of trade more than offsets the gain from the expansion in exports.

[8] On the one hand, the tariff rate is the same before and after the increase in export supply. On the other hand, the international price line *OD* (not drawn) after the increase in export supply is flatter than the international price *OC* (not drawn) before the increase in export supply. Therefore, the slope of I_t at *D* is less than the slope of I_o at *C*.

In conclusion, it has been known in the literature that growth leads to a larger domestic price fluctuation under import quotas than under tariffs. However, this paper shows that this proposition does not hold between tariffs and export quotas. Shocks to export supply can lead to a larger domestic price fluctuation under tariffs than under export quotas if the country concerned is a large country and the foreign demand for imports is inelastic.

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References

Bhagwati, Jagdish N., and Srinivasan, T.N. *Lectures on International Trade.* MIT Press, 1983, 119-25.

Lerner, A.P. "The Symmetry between Import and Export Taxes." *Economica* (August 1936): 306-13.

Meade, James E., *A Geometry of International Trade.* London: George Allen and Unwin, 1952.

Melvin, James R. *et al. International Trade.* McGraw-Hill, 1995, 268-77.

Pelcovits, Michael D. "Quotas and Tariffs." *Journal of International Economics* 6(4)(November 1976): 363-70.