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APENDICE

TASAS DE DESEMPLEO

	Estructural	Cíclico	Total
1961	5.9	0.69	6.6
1962	4.4	0.75	5.2
1963	2.8	2.2	5.0
1964	3.1	2.2	5.3
1965	4.3	1.1	5.4
1966	4.4	2.4	6.8
1967	3.2	2.3	5.5
1968	3.2	1.8	5.0
1969	2.6	1.5	4.1
1970	3.0	1.5	4.5
1971	4.2	-0.9	3.3
1972	-0.01	3.2	3.3
1973	2.9	1.8	4.7
1974	5.7	4.0	9.7
1975	1.52	-0.3	1.49
1976	1.29	-1.7	12.7
1977	11.8	-0.1	11.8
1978	12.7	1.4	14.1
1979	11.2	2.4	13.6
1980	10.3	-0.06	10.4
1981	9.1	2.2	11.3
1982	9.6	10.6	19.6
1983	10.6	4.0	14.6
1984	9.2	4.7	13.9
1985	7.9	4.1	12.0
1986	8.4	.4	8.8
1987	7.1	.8	7.9
1988	6.0	.3	6.3

A NOTE ON OPTIMUM POLICY CHOICE UNDER IMPERFECT DOMESTIC MARKET CONDITIONS AND DIFFERENTIATED INTERNATIONAL GOODS

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Abstract:

This note derives the optimal industrial and trade policy for a two-good, one-factor small economy. The first good is an homogeneous commodity. For the second good we assume that the domestic and the foreign versions are imperfect substitutes. We also assume that the country is a price taker in international markets except for the fact that it faces a downward sloping export demand for the differentiated good. Within this framework we first show the existence of welfare-improving active commercial policies, and then we prove that the optimal intervention is an anti-trust policy. These results imply that (i) once the appropriate policy intervention is enacted free trade becomes optimal, and (ii) free trade does not eliminate the need for anti-trust regulation.

1. Introduction

This note derives the optimal industrial and trade policy within the framework of a small-country, two-good, one-factor model. The first good is an homogeneous commodity. For the second good we assume that domestic and the foreign versions are imperfect substitutes. We also assume that the domestic differentiated good does not enjoy general acceptance in the world and that the good is consumed in a few other countries only, which share characteristics with home. Consequently these few other countries form the relevant market for the domestic differentiated good.

Let us assume that the model represents a less developed country. Think of the first good as a basic commodity while of the second as technologically advanced manufac-

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tures, then it is reasonable to assume that for the second good the foreign and the domestic versions are imperfect substitutes [see for instance Rodrik (1988)], this is Armington's (1969) assumption¹. As a matter of fact, this assumption is found in most Computable General Equilibrium models for trade policy analysis in developing countries [see for instance de Melo (1988)]. Thus our model incorporates a stylized fact found in many developing countries².

The basic good is produced under constant returns to scale and perfectly competitive conditions. Manufactures are supplied by a single domestic firm. Perhaps it would be more appealing to assume that manufactures are produced by an oligopoly instead of a monopoly, but we chose the latter assumption in order to keep the model simple and transparent.

Our model is a simplification of Flam and Helpman (1987). These authors, however, do not derive the optimal policy. Here we have sacrificed generality to facilitate the derivation of the optimal policy.

Throughout this note our perspective is that of the home country. We assume that the home country's objective function is to maximize the national welfare. We also assume that the domestic government, which acts as a Stackelberg leader vis a vis the home firm, is restricted to the enactment of specific taxes and subsidies. The reason for the last assumption is the tractability that linearity lends to the problem.

This note shows that in the framework of the above model free trade is not optimal. In fact, welfare-enhancing active commercial policies are found. On the other hand, commercial policies are shown to be at best partial substitutes for antitrust policies, and free trade is shown to be optimal only when the domestic distortion has been corrected through antitrust regulation. This result — which is the Bhagwati-Johnson first best argument for our model — underscores the fact that even in open economy settings there is a role for antitrust regulation.

The rest of the note is organized as follows. Section two introduces the model. The third section analyzes how an export subsidy rise affects resource allocation and welfare. Section four examines the effects tariff changes. Section five analyzes the effects of changes in the production subsidy. The sixth section derives the optimal government policy. The last section brings a few final remarks.

2. The Model

The basic good, which is homogeneous and produced under constant returns to scale and perfectly competitive conditions, is chosen as the numeraire. Manufactures are produced at home by a single domestic firm.

We assume that in the home country there is a representative consumer, who inelastically supplies L units of labor — the sole productive factor. Her tastes are given by the following utility function.

$$u(q, q^*, m) = u^1(q, q^*) + u^2(m) \quad (1)$$

where q designates domestic sales of home manufactures; q^* , consumption of its international substitute; and m , consumption of the homogeneous good.

In the remainder of this note we assume that the derivative of u^2 is equal to one for any value of m . This is the standard assumption that allow for a partial equilibrium

analysis in a general equilibrium model. Thus the domestic demands for domestic and imported manufactures depend on relative prices only, consequently

$$q = f(p, p^*) \quad f_1 \leq 0, f_2 \geq 0 \quad (2)$$

$$q^* = g(p, p^*) \quad g_1 \geq 0, g_2 \leq 0 \quad (3)$$

where p (p^*) designates the home price of domestic (imported) manufactures in terms of the basic good.

Market segmentation is assumed. Transportation costs and a tariff barrier in the foreign country justifies this assumption. Capital letters are used to denote the foreign market. Then the inverse export demand curve faced by the domestic monopoly is written $P = D(Q)$, where Q indicates exports of manufactures; and P , its price in foreign markets.

Furthermore, in order to keep the problem simple we assume that international manufactures are elastically supplied at a given price p^w . Thus

$$p^* = p^w + t \quad (4)$$

The set of policies available to the home government are a tariff on manufactures (t), a subsidy on exports of manufactures (e), and a production subsidy on manufactures for domestic consumption (s). Then the monopolist's maximization problem is

$$\text{Max}_{q, Q} (p+t)q + (P+e)Q - c(q+Q) \quad (5)$$

$$\text{s.t. } q, Q \geq 0$$

where c designates the cost function of the domestic monopoly. In what follows $p = d(q, p^*)$ indicates the domestic inverse demand curve faced by the monopolist. Thus the first order conditions are

$$s + p + qd_q = c' \quad (6)$$

$$P + e + QD_Q = c' \quad (7)$$

Total differentiation of the system consisting of equations (6) and (7) results in

$$\begin{bmatrix} x & -c'' \\ -c'' & y \end{bmatrix} \begin{bmatrix} dq \\ dQ \end{bmatrix} = \begin{bmatrix} -1 & -2 & 0 \\ 0 & 0 & -1 \end{bmatrix} \begin{bmatrix} ds \\ dt \\ de \end{bmatrix} \quad (8)$$

where $x = (2d_{11} + qd_{11} - c'')$, $y = (2D_{11} + QD_{11} - c'')$, and $z = d_2 + qd_{12}$ ³. Hence the stability conditions are $x \leq 0$, $y \leq 0$ and $\delta = xy - (c'')^2 \geq 0$. In what follows we assume that the stability conditions are satisfied. We also assume that z is positive.

Now we turn to the welfare changes induced by policy reforms. Throughout this note v designates the indirect utility function of the representative consumer, thus her utility is given by.

$$u = v(pq + PQ - c(q+Q) + tq^* + wL, p, p^*) \quad (9)$$

where w denotes the wage rate in terms of basic goods, and L the fixed supply of labor. Thus the welfare change due to a policy reform is given by

$$du = \left\{ (p-c')dq + tdq^* - edQ \right\} v_1 \quad (10)$$

Following Rodrik (1988), note that each of the three terms in equation (10) corresponds to a particular source of market imperfection. The first relates to a domestic market imperfection. The domestic price of the home good exceeds its marginal production cost, an output expansion therefore raises welfare. The second term is related to the import restriction and states the well known desirability of expanding imports of protected goods. The third term relates to the obvious distortion of subsidizing sales in a foreign market, and it establishes that there is a gain to be made from reducing subsidized exports.

3. An Export Subsidy

We initially focus on policy reforms in which a single policy instrument is changed. First we examine how a marginal rise in the export subsidy affects welfare. Applying Cramer's rule we calculate from (8) the effects of the subsidy change on prices and sales. These effects are summarized in the following equations.

$$dQ/de = -x/\delta \quad (11)$$

$$dq/de = -c''/\delta \quad (12)$$

$$dp/de = -d_1 c''/\delta \quad (13)$$

$$dq^*/de = -g_1(dp/de) \quad (14)$$

As expected an increase in the export subsidy level raises exports of manufactures. Now results in the home market depend on whether the domestic monopoly has increasing returns to scale or not. If the home firm has increasing returns to scale, then the help it receives in the foreign market spills over into further advantage in the home market. Consequently, a marginal rise in the export subsidy (i) expands sales of domestic manufactures, (ii) lowers the price of domestic manufactures, and (iii) reduces imports of manufactures. If the home firm shows increasing marginal costs, the opposite results hold.

Assume increasing returns to scale in the home firm and a policy-free environment in the home country, it follows from (10) that a marginal rise in the export subsidy benefits the home country. Thus when the domestic monopoly shows scale economies small export subsidies are welfare-improving. On the other hand, if the home country has decreasing returns to scale, then small taxes on exports are welfare-improving. Observe that the appropriate sign of a welfare-improving policy depends on whether the home firm has increasing returns to scale or not.

4. Tariff

We now examine how changes in the tariff affect the resource allocation. The effects of a marginal change in t are given by

$$dq/dt = -zy/\delta \quad (15)$$

$$dq^*/dt = g_1(dp/dt) + g_2 \quad (16)$$

$$dp/dt = d_1(dq/dt) + d_2 \quad (17)$$

$$dQ/dt = -zc''/\delta \quad (18)$$

The effects of a marginal increase in the tariff are quite intuitive. It expands domestic sales of home manufactures and lowers imports of its foreign substitute⁴. The direct effect of the tariff increase is to raise the domestic price of home manufactures; however, if the home monopoly shows strong scale economies then the output expansion could induce a significant fall of the home firm's marginal costs and thereby a decrease on the domestic price of home manufactures.

The effect on exports depends on the home firm scale economies. If the home monopoly has increasing returns to scale, then a marginal tariff increase brings about an expansion of exports. On the other hand, if the home firm has decreasing returns to scale, the opposite results hold. Note that when the home firm shows increasing returns to scale, then tariffs are export promoting. This is Krugman's (1984) protection as export promotion result.

From (10) it follows that if initially there is no government intervention, that is if s, t and e are all equal to zero, then a marginal increase in the tariff raises the economy's welfare. Accordingly small tariffs are welfare-improving.

5. Production Subsidy

We now examine how a marginal change in the production subsidy on manufactures sold in the home market affects the resource allocation. These effects are given by

$$dq/ds = y/\delta \quad (19)$$

$$dq^*/ds = g_1(dp/ds) \quad (20)$$

$$dp/ds = d_1(dq/ds) \quad (21)$$

$$dQ/ds = c''/\delta \quad (22)$$

Results are highly intuitive. A marginal increase in the production subsidy given to the domestic manufacturer raises the sales of this good, lowers sales of the imported substitute, and reduces the domestic price of the subsidized good. Now, if the home firm shows increasing returns to scale then the advantage given by the marginal increase in the production subsidy in the home market spills over into the foreign market, raising exports of manufactures. On the other hand, if the home firm presents decreasing returns to scale, then exports fall.

From (10) it follows that if initially t, s and e are all equal to zero, then a marginal increase in the consumption subsidy raises the welfare of the home country. Thus there are welfare-enhancing consumption subsidies.

6. Optimum Policy

We have shown the existence of welfare-improving active commercial policies. However, from equation (10) it follows that the government's first best policy is just a production subsidy that sets the domestic price of home manufactures on a par with its marginal cost. In fact at $t = 0$, $e = 0$, and $p = c'$, the derivatives dW/dt , dW/de , and dW/ds are all equal to zero. Thus the first order optimality conditions are satisfied. The second order conditions are also satisfied. Here instead of deriving the second order conditions, we provide an intuition of the result stating that when the domestic market distortion is taken care of, there is no role for commercial policies—in which case free trade is optimal. If $e = 0$ and $p = c'$, then $dW/dt = tdq^*/dt$. Now dq^*/dt is negative, thus when $e = 0$ and $p = c'$ the optimal policy is $t = 0$. If $t = 0$, and $p = c'$, then $dW/de = -edQ/de$. Now dQ/de is positive, thus when $t = 0$ and $p = c'$ the optimal policy is $e = 0$.

7. Final Remarks

This paper shows that commercial policies are at best imperfect substitutes for anti-trust policies. Given this result, in addition to many others pointing in the same direction, one has to wonder why commercial policies are so often proposed to tackle market distortions. Two common answers are that trade policies are easy to implement and that in most cases they reduce the public deficit. Also, as many authors have stressed, the popularity of trade interventionism among policy-makers comes from the fact that the benefits resulting from active commercial policies are accrued to a few while their costs are widely spread within the economy, so that those affected by the policy are less prone to complain.

The above reasons explain the popularity of trade interventionism among practical people, but not necessarily among theoreticians. Other explanations thus need to be found. In this direction we might mention the public-good aspect of tariff-seeking behavior [Rodrik (1986)]. When this aspect is brought into consideration the superiority of direct subsidies over tariffs in correcting domestic market distortions becomes less obvious. We believe, however, that there is more than that to the popularity of commercial policies. For some reason, which we make no attempt to explain here, trade protectionism is the policy instrument par excellence in the literature on economic development. This implies that active commercial policies are commonly perceived as progressive, while the appropriate policies are neglected. For instance, if a given industry is protected through a production subsidy, this would probably be seen as a transfer to the rich, whereas a tariff providing the same level of protection is likely to be perceived as a progressive policy.

This paper also dispels another commonly held view stating that free trade is a cure for all domestic market distortions. In fact, if domestically produced goods are substitutes of internationally traded goods, and we have argued that this is the case for developing countries, then free trade is not a complete discipline for domestic producers.

This paper also illustrates two by now well known results in the literature on strategic trade. One is the sensitivity of policy recommendations to both model specification and parameter choice (Eaton and Grossman (1986) is the obvious reference in this case). The other is Krugman's (1984) export promotion as result of protection. The result is obtained when the home firm has increasing returns to scale: it disappears, however, when the domestic distortion is taken care of through an appropriate commercial policy.

Notes

- 1 This argument also has resemblance with Linder's (1971) hypothesis.
- 2 Think of Mexico which exports cars to other Latin American countries. These cars are not perfect substitutes of, for instance, Japanese cars.
- 3 The derivative d_2 is positive because $d_2 = -f_2/f_1$. Now assuming linear demand curves, $d_1 z$ equals zero and $z \geq 0$.
- 4 From the demand for the foreign good it follows that $dq^*/dt = (g_1/f_1)(dq/dt - f_2) + E_2$. Rearranging terms $dq^*/dt = (g_1/f_1) dq/dt + (g_2f_1 - g_1f_2)$. Normality in consumption, in conjunction with the assumption that both goods are substitute, ensure that $f_1E_2 \geq E_1f_2$, consequently dq^*/dt is negative.

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