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PIER Working Paper 06-014

“Selling ‘Protection for Sale’ ”

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<http://ssrn.com/abstract=907077>

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This paper was presented at the Symposium on International Trade in Honor of Ronald W. Jones, held at the City University of Hong Kong. It is forthcoming in the
ASIA-PACIFIC JOURNAL OF ACCOUNTING AND ECONOMICS.

First version: May 8, 2006
This printing: June 1, 2006

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Abstract: The Received Theory of trade policy, based solely on terms-of-trade externalities between national governments, has become the conventional wisdom among international trade theorists. But it displays two puzzles that render that theory inconsistent with reality. Significant empirical work, however, supports aspects of the Grossman-Helpman Protection-for-Sale model, a subset of the Received Theory. This paper shows that a simple formulation of the political economy of protection, that dispenses with terms-of-trade externalities, predicts the properties that the empirical work has confirmed, and is free of the counterfactual implications of the Received Theory. The implication is that, despite its claims to the contrary, the empirical literature offers no real support for the Protection-for-Sale model or, therefore, for the Received Theory.

Keywords: The Protection-for-Sale model, the Received Theory, the Terms-of-Trade Puzzle, the Export-Subsidy-Transfer Puzzle

JEL Classification Codes: F02, F13

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THE RECEIVED THEORY of trade policy and trade agreements, which thoroughly dominates trade theorists' approach to these problems, assigns a central role to the terms of trade and to trade-tax revenue. The deservedly influential work of Bagwell and Staiger (1999, 2002) excellently elucidates the implications of this approach for trade agreements.

A subset¹ of the Received Theory emphasizes political economy. Grossman and Helpman (1994, 1995, 2002) expound its most widely used component: the "Protection-for-Sale" model. The current state of the Received Theory is therefore conveniently described in two recent books by Bagwell and Staiger (2002) and Grossman and Helpman (2002).

However, the relevance of the Received Theory should be very much up in the air. While theory suggests that it is dramatically inconsistent with reality,² a significant empirical literature claims to have found support for the Grossman-Helpman Protection-for-Sale subset of the Received Theory. In this paper I attempt to resolve this conundrum.

¹See Hillman (1982, 1990), Hillman, Long, and Moser (1995), and Hillman and Moser (1996). Surveys of the literature on the political economy of trade policy may be found in Hillman (1989), Magee (1994), Nelson (1988) and Rodrik (1995).

²See Ethier (2002).

I. Introduction

The central premise of the Received Theory is that trade agreements arise *solely* because countries with market power are concerned, to at least *some* degree, with the fact that trade barriers, imposed for *whatever* reason, can move the terms of trade in their favor. As pointed out in Ethier (2004), this is inconsistent with actual multilateral trade agreements, which do *not* prevent countries from trying to influence their terms of trade. I refer to this discrepancy as the *Terms-of-Trade Puzzle*.

Nothing in the GATT prevents a country from implementing export taxes. In their schedules of negotiated concessions, countries have bound their import taxes: They have *not*, with very rare exception, bound export taxes. For over four decades, successive GATT rounds have produced trade agreements that do not prevent terms-of-trade manipulation while trade theorists have produced theories of trade agreements in which such prevention is the sole object.³ To summarize:

(i) Actual trade agreements do not prevent countries from manipulating their terms of trade with export taxes; (ii) industrial countries nevertheless do not, by and large, implement such taxes.

If the interests of owners of factors specific to export sectors are sufficiently important, governments will not wish to tax exports, so the Terms-of-Trade Puzzle disappears. But this just introduces a new problem, the Export-Subsidy-Transfer Puzzle:

In equilibrium, exporting nations will (i) offer large export subsidies, which will (ii) be incompletely countervailed by importing nations, who (iii) would not implement actual countervailing-duty laws (complete countervailing).

Thus the Received Theory necessarily implies dramatically counterfactual equilibria. Furthermore, the source of these counterfactual predictions is exactly the distinguishing

³Although the Received Theory assigns the central role to terms-of-trade considerations, they are ignored virtually without exception by trade lawyers and policymakers. See Regan (2004) for an argument that neither the public rhetoric of trade, nor the specific provisions of trade agreements, nor the full range of policy behavior of countries, is well explained by terms-of-trade considerations.

feature of the Received Theory: the central role played by the terms of trade and/or by trade tax revenue [Ethier (2002)].

At the same time, the Grossman-Helpman variant (2002) of the Received Theory has received considerable empirical attention [Goldberg and Maggi (1999), Gawande and Bandyopadhyay (2000), Mitra, Thomakos, and Ulubaşoğlu (2002), and McCallum (2004)]. These papers have been uniformly supportive of the Protection-for-Sale theory, but in a highly selective way. They have not investigated the predictions that reflect the central presumptions of the Received Theory (import subsidies for all politically unorganized import-competing sectors and export taxes for all politically unorganized export sectors). But they have given powerful evidence that, in politically organized import-competing sectors, protection is negatively related to the import-penetration ratio, presumably reflecting the tug between sectoral special interests and consumer surplus central to most political-economy approaches to trade policy. Also in such sectors, protection appears to be negatively related to the domestic elasticity of import demand. Furthermore, this literature argues persuasively that distinguishing between politically organized and unorganized sectors is crucial to understanding this dependence.

This paper offers a simple model of trade policy as a tug between sectoral interests and consumer surplus. The model contains no explicit microeconomic analysis, to make it consistent with alternative political-economy approaches. But it is not consistent with the Received Theory or, therefore, with the Protection-for-Sale model. The model is free of the counterfactual predictions of the Received Theory while generating the predictions that have been supported by the empirical literature. Thus it suggests the following resolution of the conundrum: Despite claims to the contrary, the empirical literature offers no real support for the Protection-for-Sale model in particular, or for the Received Theory more generally.

II. The Model: Economics

Assume two countries (*Home* and *Foreign*), two factors (*Kapital* and *Labor*), and $N + 1$ traded goods ($0, 1, \dots, N$). Good 0 is a numéraire good, produced by labor alone. Goods 1 to N are produced by capital and labor, with capital specific to each of these sectors. *H* imports goods 1 to n and exports goods $n + 1$ to N .

Ownership of each specific factor is distributed uniformly over a fraction of the set of capitalists, with each capitalist owning some of only one of the specific factors. Choose units so that a unit of good θ is produced by a unit of labor. Thus, assuming good θ is actually produced, the wage $w = 1$.

Preferences in each country can be summarized by the utility function, where c_i denotes consumption of good i , $U = c_0 + u_1(c_1) + \dots + u_N(c_N)$. This implies demand functions $d_i = d_i(Q_i)$, $i = 1, \dots, N$, where Q_i denotes the relative price of good i in terms of good θ . Residual income is all spent on the numéraire good θ . I assume that endowments in both countries are such that each both produces and consumes good θ .

Each country may tax or subsidize either imports or exports. For H , let Q_i and P_i denote, respectively, the domestic and international relative price (in terms of the numéraire) of good i , and τ_i one plus the *ad-valorem* trade tax t_i . Thus $Q_i = \tau_i P_i$ for $i = 1, \dots, n$, and $Q_j = P_j / \tau_j$ for $j = n + 1, \dots, N$. Analogous F variables will be distinguished by asterisks.

International trade

Equilibrium in the world market for good i , $i = 1 \dots n$, is represented by

$$M_i(\tau_i P_i) = X_i^*(P_i / \tau_i^*),$$

where M_i and X_i^* respectively denote H import demand and

F export supply. H 's import tax and F 's export tax thus determine P_i , independently of other sectors. This in turn implies the following.

$$\frac{\tau_i dP_i}{P_i dt_i} = - \frac{e_i}{e_i + f_i^*}$$

and

$$\frac{\tau_i dQ_i}{Q_i dt_i} = \frac{\tau_i dP_i}{P_i dt_i} + 1 = \frac{f_i^*}{e_i + f_i^*}$$

$$\text{where } e_i \equiv -\frac{\tau_i P_i M_i'}{M_i} > 0 \text{ and } f_i^* \equiv \frac{P_i X_i'}{\tau_i^* X_i^*} > 0 .$$

Similarly, equilibrium in the world market for goods $n + 1$ to N can be represented by $M_j^*(\tau_j^* P_j) = X_j(P_j / \tau_j)$. Thus,

$$\frac{\tau_j dP_j}{P_j dt_j} = \frac{f_j}{f_j + e_j^*}$$

and

$$\frac{\tau_j dQ_j}{Q_j dt_j} = \frac{\tau_j dP_j}{P_j dt_j} - 1 = -\frac{e_j^*}{f_j + e_j^*}.$$

H imports of goods $1 \dots n$ need not equal in value H exports of goods $n + 1 \dots N$: Trade balance is reached with a net exchange of good 0 .

III. The Model: Policy Formation

I now introduce the political-economy side of the model. My intent is to present a reduced-form model of policy formation consistent with alternative political-economy approaches.

Lobbies

I assume that the owners of each specific factor i potentially organize a lobby to bargain with the government over t_i . Nobody lobbies for policy regarding the numéraire good. The sectors differ in the abilities of the associated factor owners to organize as well as in the abilities of those that do organize to bring pressure to bear on the government [Olson (1965)].

If a sector does not organize, and so does not lobby, the government leaves trade policy unchanged at its existing level, which, for convenience, I assume to be free trade. Organized sectors elicit a government response. In this response, the government wishes to increase the specific-factor income $\pi_i(Q_i)$ of the associated lobby, but is also reluctant to reduce the consumer surplus $S_i(Q_i) \equiv u_i(c_i(Q_i)) - Q_i d_i(Q_i)$.

W_i denotes the objective function of the government if sector i is organized, and, thus, does lobby.

$$W_i(t_i)_i = (\delta_i + 1) \pi_i(Q_i) + s_i(Q_i). \quad (1)$$

Here, $\delta_i \geq 0$ denotes the importance the government attaches to the welfare of the lobby. The government wishes to drive W_i as high as possible, but is constrained in this by a desire not to drive consumer surplus too low:

$$S_i(Q) \geq \frac{1}{\varepsilon_i}. \quad (2)$$

The parameters δ_i and ε_i both reflect the political influence of the i lobby: Higher values imply more influence. For simplicity I assume that they are always consistent in the sense that,

$$\delta_i > \delta_j \text{ if and only if } \varepsilon_i > \varepsilon_j. \quad (A1)$$

Number each countries imports in decreasing order of political influence, and likewise for each country's exports.

Policy choice

Differentiating (1) yields, for each import-competing sector (the sector subscript i is omitted):

$$\frac{t}{Q} \frac{dW}{dt} = \left[\delta \frac{x}{M} - 1 \right] M \frac{f^*}{e + f^*} \quad (3)$$

where x denotes domestic production. If the term in brackets on the right-hand side is positive, a tariff is called for. This will be more likely the greater the degree δ of political influence possessed by that sector's lobby. For a given degree of influence, this will be more likely the smaller the import penetration ratio M/x . If the term in brackets is negative, the sector's organized interest group lacks the power to influence policy: Thus it will not lobby and the government will not depart from free trade.

If dW/dt is indeed positive, the government will impose a tariff. Doing so will both increase x and reduce M : dW/dt will remain positive. Thus the government will raise t until (2) binds. Thus, other things equal, the greater the degree ε of political influence, the greater the tariff t and the lower the import penetration ratio M/x .

Next, from (2),

$$\frac{\varepsilon}{t} \frac{dt}{d\varepsilon} = \frac{d}{S} \frac{f^*}{e + f^*}.$$

More political influence ε implies a higher tariff t , but how much higher is negatively related to the import elasticity e .

Proposition 1 *A sectoral import-competing interest group is more likely to lobby the lower the import penetration ratio. For those that do lobby, the tariff will be positively related to the degree of political influence, and negatively related to the import penetration ratio and to the elasticity of import demand.*

Remark 1 *This simple model predicts just those properties that empirical investigations of the Grossman-Helpman model have supported.*

Turning to export sectors, we have

$$\frac{t}{Q} \frac{dW}{dt} = \left[-\delta \frac{x}{X} - 1 \right] X \frac{e^*}{e^* + f} < 0. \quad (4)$$

Thus the government will wish to subsidize the exports of all politically-organized sectors. If it does so, the resulting increase in the domestic relative price will reduce domestic demand, so that X/x will rise with the subsidy. From (2),

$$\frac{\varepsilon}{t} \frac{dt}{d\varepsilon} = - \frac{d}{S} \frac{e^*}{e^* + f}$$

Thus an increase in sectoral influence will increase the subsidy the government is willing to offer, and it will increase it more the smaller is the domestic export elasticity f .

Proposition 2 *The government will be willing to subsidize the exports of all organized export sectors. The government's desired subsidy will be positively related to the degree of political influence, and negatively related to the export-production ratio and to the elasticity of export demand.*

IV. The Non-Cooperative Equilibrium

Next, consider the non-cooperative, trade-policy, equilibrium between H and F . Because of the partial-equilibrium structure of the model, the various sectors can be analyzed independently. So look at good l , which H imports and F exports, and whose respective specific factor owners are organized and sufficiently potent to influence policy in each country. Then by Propositions 1 and 2, the H government wishes to tax imports of good l , and the F government wishes to subsidize its export. Figure 1 below shows the relevant policy plane.

Best responses

Let Q_1^A solve $S_1(Q_1^A) = 1/\varepsilon_1$. In Figure 1 below, A shows the value of τ_l that will cause

$Q_1 = Q_1^A$ when $\tau_1^* = 1$, that is, it denotes H 's best response to $\tau_1^* = 1$. In like manner, B denotes F 's best response to $\tau_1 = 1$.

The φ locus depicts all those combinations of τ_1 and τ_1^* implying the same value of Q_1 as at A . Thus φ is the locus of solutions to

$$M_1(Q_1^A) = X_1^* \left(\frac{Q_1^A}{\tau_1 \tau_1^*} \right),$$

so that φ is a rectangular hyperbola. Since Q_1^* is uniquely related to Q_1 via the market-clearing condition for good I , it too is constant along φ .

Now, suppose F were to depart from A by imposing an export subsidy $dt_1^* < 0$. Then an increase in the H tariff of $dt_1 = -\tau_1 dt_1^*$ will hold Q_1 and Q_1^* unchanged: We move upwards and to the left along φ . This will maintain the initial situation except that F pays an export subsidy which H taxes away with an equivalent increase in its tariff. This countervailing increase in its tariff constitutes a beneficial H response to F 's adoption of an export subsidy.

Equilibrium

In like manner, φ^F depicts the iso-domestic-price locus corresponding to free trade ($\tau_1 \tau_1^* = 1$), and φ^* , which is F 's best-response curve, that corresponding to B . Since these three loci (all rectangular hyperbolae) correspond to different values of the domestic prices, they cannot intersect. Moving northwest along any one of these loci leaves all demands and supplies unchanged: The only effect is to shift trade-tax revenue from F to H .

As φ and φ^* are distinct rectangular hyperbolae, they do not intersect. There is no Nash equilibrium in t_1 and t_1^* alone!

An equilibrium can be obtained if we slightly enlarge each country's set of policy instruments. Suppose that, in addition to setting its trade taxes or subsidies, each country can decide whether to implement, or not to implement, a countervailing-duty law. Such a law would mandate that imports of goods receiving a foreign export subsidy would be subject to a matching tariff, in addition to whatever trade tax or subsidy the importing country might otherwise wish to implement.

If H , for example, were to implement such a law and also to set τ equal to the value that would cause $Q_1 = Q_1^A$ when $\tau_1^* = 1$, those actions would credibly commit H to be on φ .

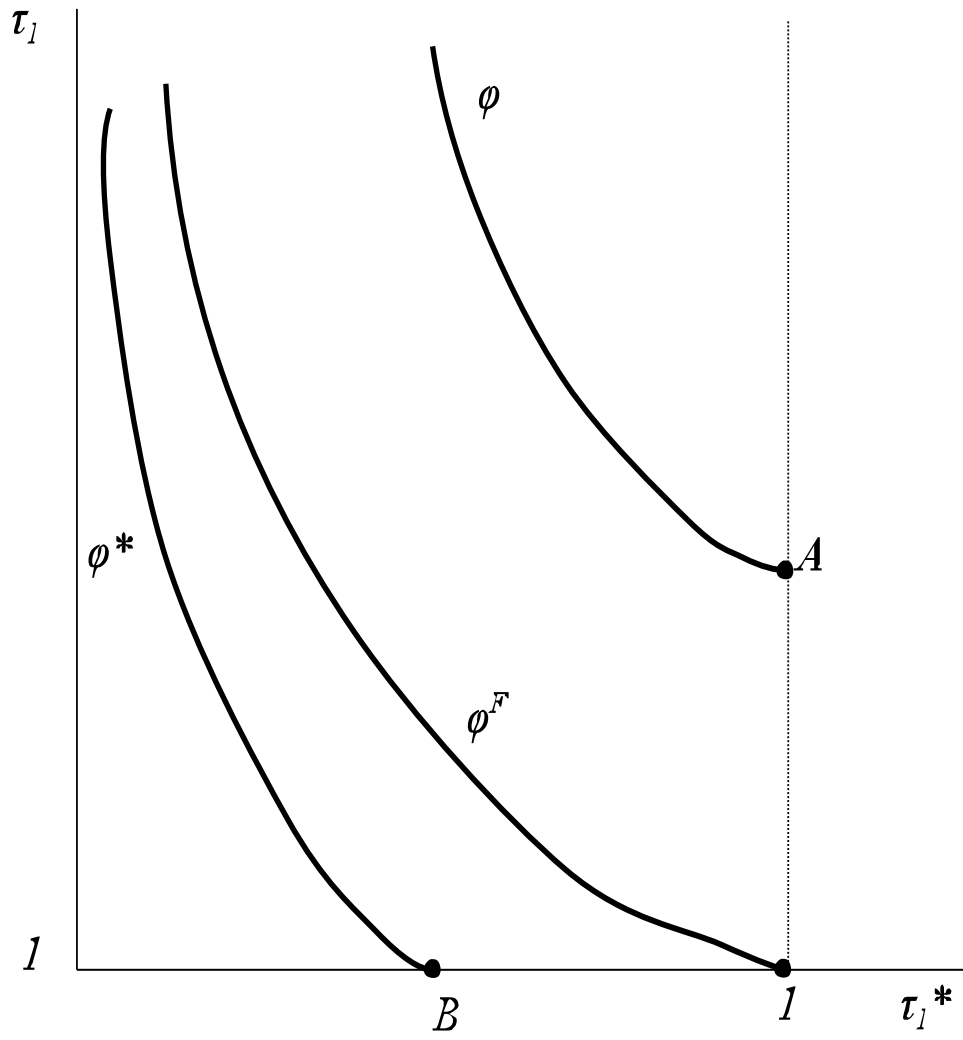


Figure 1

Then F 's best response, assuming it doesn't want simply to give government revenue to H , would be A .

Proposition 3 *There is a non-cooperative equilibrium in trade policy. Each country adopts a countervailing-duty law, and employs neither export taxes nor export subsidies. Import-competing sectors with sufficient political influence receive protection and those without do not. Such tariffs will be higher the higher the degree of political influence, and the lower the import penetration ratio and the elasticity of import demand.*

Remark 2 *Countervailing-duty laws emerge here as the result of non-cooperative choices by the two governments, **not** as a result of a trade agreement.*

The GATT attempts to curtail the use of export subsidies and also provides a code of conduct regarding countervailing-duty laws. But such laws were in existence *long* before the GATT.

Remark 3 *Proposition 3 displays those predictions of the Protection-for-Sale approach that have found empirical support, and does not display those predictions that appear to be counterfactual.*

The empirical literature should accordingly not be interpreted as confirming the Protection-for-Sale approach. Imai, Katayama, and Krishna (2005) reach a more-or-less similar conclusion from an entirely different approach. That conclusion is reinforced by a consideration of further predictions of the model.

Politically organized import-competing products are just one class of traded goods for which the Protection-for-Sale model makes predictions. Imports are predicted to be subsidized whenever the import-competing sector is not politically organized. The empirical literature has shown that, in such sectors, protection is negatively related to the inverse import-penetration ratio, a result important for relating this work to earlier reduced-form studies. But the literature is silent regarding the much more fundamental question of whether imports of such goods are in fact systematically subsidized.

The Protection-for-Sale model also predicts that all exports from unorganized sectors will be taxed. If one wished to look at the practical relevance of the role of terms-of-trade and trade-tax-revenue considerations—central to both the Received Theory and to its Protection-for-Sale special case—this is exactly where one should first look. For three reasons. ⁱ This

prediction is a direct consequence of the assumed concern for the terms-of-trade and for trade-tax revenue. **ii** Export taxes are not constrained by trade agreements. **iii** This sign prediction does not depend upon the validity of estimates of trade elasticities. But, in spite of all this, the empirical literature is silent about the practical success of this most basic implication of the Protection-for-Sale model.

Exports from politically-organized sectors are predicted by the model to be either taxed or subsidized, depending on the relative strength of political considerations. But, again, the empirical literature does not report on this prediction.

V. Concluding Remarks

The Received Theory of international trade agreements, the result of half a century of research by international trade theorists, suffers from fundamental puzzles that call into question its very relevance to reality. These puzzles characterize the Protection-for-Sale model in particular.

- If terms-of-trade motives dominate, each government will (counter-factually) employ both import tariffs and export taxes in Nash equilibrium. Any trade agreement would presumably wish to address export taxes (the Terms-of-Trade Puzzle). If political-support effects dominate, each government will tax imports but not exports, but, again counter-factually, neither country will implement a countervailing-duty law, and each will, with an export subsidy only partly countervailed by its partner, “bribe” the other government into allowing more imports than it otherwise would (the Export-Subsidy-Transfer Puzzle).
- But a number of empirical papers have given powerful evidence that, in politically organized import-competing sectors, protection is negatively related to the import-penetration ratio and appears to be negatively related to the domestic elasticity of import demand, and that distinguishing between politically organized and unorganized sectors is crucial to understanding this dependence.

- This paper has utilized a simple formulation of the political economy of protection based directly on a trade-off between the income of special interests and consumer surplus. The model delivers the predictions that appear to be supported by the empirical evidence, but is free of the puzzles exhibited by the Received Theory.

The empirical literature investigating the Protection-for-Sale model offers no real support for that model or for the Received Theory more generally.

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