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# International Capital Mobility and the Costs of U.S. Import Restraints

Jaime de Melo  
and  
David Roland-Holst

Model estimates indicate the practical importance of capital mobility — and terms-of-trade and rental adjustments — in determining the ultimate welfare effects of import restraints.

This paper — a product of the Trade Policy Division, Country Economics Department — is part of a larger effort in PRE to understand the effects of trade policy on industrial efficiency. Copies are available free from the World Bank, 1818 H Street NW, Washington DC 20433. Please contact Sheila Fallon, room N10-017, extension 37947 (24 pages).

De Melo and Roland-Holst evaluate the general-equilibrium welfare effects of tariffs, quotas, and voluntary export restraints under different assumptions about international capital mobility.

They show analytically that when the induced effects of terms of trade and rental rates are considered, the qualitative influence of capital mobility on the costs of protection cannot be ascertained unambiguously. (Thus the

importance of answering this question empirically.)

They use a computable general equilibrium model of the United States to estimate these effects empirically. These estimates indicate the practical importance of capital mobility — and of terms-of-trade and rental adjustments — in determining the ultimate welfare effects of import restraints.

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## 1. Introduction

In a series of recent papers, Neary and others have established the importance of trade in factor services, especially capital, in determining the welfare effects of import restrictions by tariffs, QRs, and VERs. 1/ In the absence of induced terms-of-trade changes and rental rate effects, Neary (1988) demonstrates that international capital mobility raises the costs of tariff protection and lowers that of QRs and VERs. In this paper, we examine more systematically the impact of international capital mobility on the welfare effects of import protection by tariff, QRs, and VERs. Generalizing the work of Neary and others to take explicit account of induced terms-of-trade and rental rate effects, we demonstrate that the qualitative influence of capital mobility on the costs of protection cannot be ascertained unambiguously. This reveals the importance, emphasized by Dixit (1987) among others, of deciding this question on empirical grounds. We then simulate the aggregate welfare effects of import restraints for the U.S. under different assumptions about international capital mobility, and the influence of the size of the U.S. in world markets.

The paper is organized as follows: Section 2 sets up an analytical model that indicates the general links between international capital mobility and the welfare effects of different forms of import restraint. Section 3 reports on the estimated welfare impact of international capital mobility on the welfare effects of U.S. import protection. Conclusions follow in section 4.

## 2. Qualitative Analysis of Import Restraints

We develop a general trade model to analyze the qualitative effects of alternative forms of protection with and without capital mobility. The purpose is to show how the welfare costs of various forms of protection are affected by international capital mobility in a general model with terms of trade and rental effects. To this end, consider an economy where tradables are produced by atomistic firms in perfect competition, demand and supply functions are continuous and differentiable, and trade policy changes do not affect the pattern of trade specialization. 2/

Preferences for a representative consumer are summarized by an expenditure function:

$$e(p,u) = Y \quad (2.1)$$

where  $p$  is a vector of domestic prices and  $u$  is a well-behaved utility function. Domestic income,  $Y$ , is then given by GDP plus tariff revenue, net of expatriated rentals, i.e.

$$Y = g(p, 1 + k) + (1-\theta) t \hat{\pi} M - rk - \bar{b} \quad (2.2)$$

where  $g$  is the continuously differentiable GDP function,  $M$  and  $t$  are vectors of imports and tariffs,  $\hat{\pi}$  is a diagonal matrix of world prices for imports,  $\bar{b}$  is an exogenous net transfer unrelated to trade restrictions, and  $r$  is the rental rate. Tariff rates,  $t$ , are exogenous policy parameters when imports are not constrained, but when imports are constrained,  $t$  represents the endogenous premium rate on the constrained imports. The

parameter  $0 < \theta < 1$  measures the share of revenues (rents) accruing to foreigners. For simplicity, assume that the share is zero for tariffs and QRs, unity for VERs. By choice of units, the exogenously fixed stock of domestically-owned capital is set equal to unity, and the foreign-owned capital stock, net of domestic capital ownership abroad, used in domestic production is denoted by  $k$ . Using standard duality theory, the equilibrium rental rate and import levels rental rate are given by:

$$r = g_k(p, 1 + k) \quad (2.3)$$

and

$$M = e_p(p, u) - g_p(p, 1 + k) \quad (2.4)$$

where lower case subscripts denote partial differentiation. To c in the welfare effects of a change in trade policy, equate (2.1) and (2.2), totally differentiate and substitute (2.3). In the remainder of the discussion, we assume there are no transfers unrelated to trade restrictions, i.e.,  $d\bar{b} = 0$ . Then, the resulting expression for the change in welfare,  $dy = e_u(p, u)du$ , which is the change in aggregate utility measured in numeraire units, is given by:

$$dy = (1-\theta) t' dm - \theta M' dt - M' [I - (1-\theta)\hat{t}] d\pi - k dr \quad (2.5)$$

where a prime denotes a transpose,  $I$  is the identity matrix, a caret denotes a diagonal matrix, distorted domestic prices have been expressed in terms of tariffs and world prices ( $dp = d\pi + dt$ ), and world prices have

been set equal to unity. The first two terms of (2.5) indicate that, in the presence of a distortion, any increase in imports will be welfare improving. However, the third term measures the welfare loss from purchasing imports at rising world prices. Note that the increasing cost of imports is itself offset by rising domestic tariff revenues (provided that  $\theta < 1$ ). In the case of immobile capital, the last term denotes the effect of changing endogenous rents on income repatriated to foreigners. On the other hand, when capital is internationally mobile, we will assume perfect capital mobility (i.e.  $dr=0$ ) and  $k$  endogenous.

To evaluate the role of capital mobility on the effects of import protection, consider first the case of protection by tariffs (i.e.,  $\theta=0$ ). With immobile capital, the welfare change induced by a tariff is then given by:

$$dy = t'dM' - M'(I - \hat{t})\pi_m dM - kdr \quad (2.6)$$

where  $\pi_m$  denotes a jacobian matrix of terms-of-trade effects induced by trade flows. In the case of a tariff and immobile capital both  $dr$  and  $dM$  are endogenous and can be obtained from (2.3) and (2.4), respectively. The change in the rental rate is given by:

$$\begin{aligned} dr &= g_{kp}dp + g_{kk}dk \\ &= g_{kp}dt + g_{kp}\pi_m dM \end{aligned} \quad (2.7)$$

and the change in imports by

$$\begin{aligned} dM &= e_{pp}dp + e_{pu}du - g_{pp}dp - g_{pk}dk \\ &= -(g_{pp} - e_{pp})dp + e_{pu}du \\ &= -Sdt - S\pi_m dM + x_y dy \\ &= -(I + S\pi_m)^{-1} [Sdt - x_y dy] \end{aligned} \quad (2.8)$$

In equilibrium, the change in imports is inversely related to the price response of excess domestic supply (the first term in brackets), and negatively related to the income-induced change in demand,  $x_y dy$ , where  $x_y$  denotes the income elasticity of demand in numeraire units.

Combining expressions (2.6), (2.7), and (2.8) leads to a reduced-form for the aggregate welfare effect of a tariff when capital is immobile, i.e.,

$$dy = -(1 - a'x_y)^{-1} (a'S + kg_{kp})dt \quad (2.9)$$

with net tariff income effect

$$a' = \{t' - [M'(I - t) + kg_{kp}] \pi_m\} (I + S\pi_m)^{-1} \quad (2.10)$$

The last expression indicates how induced terms-of-trade effects may offset distortionary welfare costs. The influence of rental rate changes,  $kg_{kp} = kr_p$ , depends upon the overall capital intensity of tradables and cannot generally be signed.

Consider now the case when capital is internationally mobile. Then expression (2.7) takes the form

$$dr = g_{kp}dp + g_{kk}dk = 0 \quad (2.11)$$

and substituting for  $dk$  from (2.11) into (2.8) yields

$$\begin{aligned} dM &= - (g_{pp} - g_{pk}g_{kk}^{-1}g_{kp} - e_{pp})dp + x_y d_y \\ &= - \tilde{S}dt - \tilde{S}\pi_m dM + x_y dy \end{aligned}$$

$$= - (I + \tilde{S}\pi_m)^{-1} [\tilde{S}dt - x_y dy] \quad (2.12)$$

using a tilde to denote a corresponding expression under international capital mobility. We now have the following expression for the welfare effect of a tariff change:

$$d\tilde{y} = - (1 - \tilde{a}'x_y)^{-1} \tilde{a}'\tilde{S}dt \quad (2.13)$$

where

$$\tilde{a}' = \{t' - M'(I-t)\pi_m\} (I + \tilde{S}\pi_m)^{-1} \quad (2.14)$$

Direct comparison of expressions (2.9) and (2.13) yields no general conclusions. Neary (1988) and others have observed that  $|\tilde{S}| > |S|$  because of the Le Chatelier Principle and the Envelope Theorem. Access to competitive international capital markets (i.e., assuming that  $r$  is fixed) raises domestic supply elasticities, increasing the quantity response to normal trade distortions. This drives the economy farther from free trade. However, we show that this effect will be offset by induced terms-of-trade and rental rate changes. The relative importance of each effect will depend upon the factor intensities of all tradable goods, and on the size of the economy in world markets. Assuming away terms of trade effects, i.e.  $a' = \tilde{a}' = t'$ , the difference between tariff-induced welfare effects, with and without capital mobility, becomes

$$\begin{aligned} d\tilde{y} - dy &= (1 - t'x_y)^{-1} [t'\tilde{S} - S) - kg_{kp}] dt \\ &= (1 - t'x_y)^{-1} [-t'g_{pk}g_{kk}^{-1}g_{kp} - kg_{kp}] dt \end{aligned} \quad (2.15)$$

The sign of the first term in bracket is positive, since  $g_{kk}^{-1} < 0$ , but the second term is still indeterminate. Neary and Ruane (1983, p. 576) assume that  $g_{kp} = 0$ , while Neary (1988, fn. p. 729) assumes  $k = 0$ . The significance of foreign-owned capital and of the protection-induced change in the value of payments to foreign owners of capital is an issue that must be settled on empirical grounds. 3/ The results above emphasize the importance of estimating these effects in countries with high levels of foreign investment.

The role of terms-of-trade effects is more complex, but nonetheless intuitive. These will partially or completely offset the distortionary costs of tariffs, leading in the latter case to welfare gains. If we omit rental rate effects, however, then

$$d\tilde{y} - dy = -f(\tilde{a})'\tilde{S} + f(a)'S \quad (2.16)$$

where  $f_a > 0$ . Since  $\tilde{S} > S$ , then  $\tilde{a} > a$  would mean that capital mobility increases the welfare effects (cost or benefit) of tariffs, as implied by Neary's results. A sufficient condition for this case to obtain would be that tradables have no cross terms-of-trade effects ( $\pi_m$  is diagonal and all nonzero elements are negative). However, empirical results below suggest that cross terms-of-trade effects are not likely to be negligible, at least for the U.S.

Turn now to the welfare effect of a quota on imports ( $\theta = 0$ ). Under competitive conditions, one can establish a first-order equivalence with a tariff since:

$$dy = \{t' - [M'(I - t) + kg_{kp}] \pi_m\} dM \quad (2.17)$$

when capital is immobile and

$$d\tilde{y} = [t' - M'(I - \hat{t})\pi] dM \quad (2.18)$$

when capital is internationally mobile. Since  $dM$  is exogenous, there is no first-order role for internationally mobile capital, and the difference  $d\tilde{y} - dy = kg_{kp}\pi_m dM$  depends upon domestic rental rate adjustments and induced terms-of-trade effects.

Second-order quota effects do admit a role for capital mobility. To evaluate these, expand the Taylor series

$$dy = y_m dM + 1/2 dM' y_{mm} dM \quad (2.19)$$

where  $y_m$  is obtained from (2.17) and (2.18) and  $y_{mm} = t_m - B$ , represents the role of first-order domestic price (now endogenous import premia  $t$ ) adjustments,  $t_m$ , and  $B$ , the second-order terms-of-trade effects. We assume the latter to be negligible and solve for the former in each case. When capital is immobile,  $t_m$  is obtained by substituting the exogenous quota adjustment  $dM$  from (2.8) into (2.6), and algebraic manipulation yields

$$\begin{aligned} t_m &= - (S + x_y kg_{kp})^{-1} \{I - x_y [t' - M'(I - \hat{t})\pi_m]\} - \pi_m \\ &= p_m - \pi_m \end{aligned} \quad (2.20)$$

The corresponding expression for mobile capital is obtained from (2.6) and (2.12) as

$$\begin{aligned} \tilde{t}_m &= -\tilde{S}^{-1} \{I - x_y [t' - M'(I - \hat{t})\pi_m]\} - \pi_m \\ &= \tilde{p}_m - \pi_m \end{aligned} \quad (2.21)$$

and the difference in price effects due to capital mobility can be represented by the determinant

$$\begin{aligned}
|\tilde{t}_m - t_m| &= |\tilde{p}_m - p_m| \\
&= - |[\tilde{S}^{-1} - (S + x_y k_{gkp})^{-1}]| \cdot |(I - x_y [t' - M' (I - t)\pi_m])|
\end{aligned}
\tag{2.22}$$

Again, the result depends upon the relative factor intensity of all tradables and induced terms-of-trade effects. As Neary (1988) and Neary and Ruane (1988) emphasize, the first term in brackets above is negative because of Le Chatelier effects. As was argued intuitively above, access to competitive international capital markets increases domestic supply elasticities, thus reducing required price adjustments to exogenously fixed quantity adjustments. In Neary and Ruane (1988) and Neary (1988),  $k_{gkp} = 0$  and  $\pi_m = 0$ , so the first determinant above is negative, the second is unity. Ignoring only terms-of-trade effects, purely capital-intensive tradables would magnify the effect Neary predicts (capital mobility lowers the cost of quotas), while labor-intensive tradables would counteract it. The same argument applies when  $\pi_m$  is nonzero. Thus, in general, expression (2.22) cannot be reliably signed, and recourse to empirical estimation is necessary.

When imports are subject to VER restraints, the cost of protection with immobile capital is ( $\theta = 1$ ).

$$\begin{aligned}
dy &= M'dt - M'd\pi - kdr \\
&= - M'dp - k_{gkp}d\pi \\
&= - (M'p_m + k_{gkp}\pi_m)dM
\end{aligned}
\tag{2.23}$$

while its mobile capital counterpart is

$$\tilde{dy} = - M' p_m dM \quad (2.24)$$

and capital mobility plays a more direct, but equally inconclusive, role. Assuming away terms-of-trade and rental effects, one obtains Neary's (1988) result that (2.23) is negative and that the welfare effects of VERs are reduced because of capital mobility. Again, this is an issue to be settled empirically.

We have shown that terms-of-trade and rental rate valuation effects are sufficient to prevent one from signing the effects of international capital mobility on the welfare costs of tariffs, QRs, and VERs. Terms-of-trade and rental effects are unlikely to be negligible, at least for a number of industrialized countries which have sizeable worldwide market shares. Thus we examine further the issue with a numerical application to the U.S. economy, evaluating the costs of protection with and without capital mobility for the year 1984.

### 3. An Application to the Welfare Effects of U.S. Import Restrictions

This section evaluates the aggregate welfare costs to the U.S. of QRs in autos, textiles and steel and of tariffs, using a static six-sector computable general equilibrium (CGE) model. <sup>4/</sup> The model is calibrated to 1984 data and is more thoroughly discussed in the appendix. Two forms of trade restriction are modelled: tariff protection with tax collection returned to the representative consumer; and QR protection. Two assumptions are made with respect to factor mobility: (1) no capital mobility, in which case capital owned by domestic and foreign residents are

the welfare costs of protection would be eliminated if the US could capture the premia by, for example, auctioning import licenses to importers.

Consider now the effects of induced terms-of-trade changes, looking first at the results in column 1 for immobile capital. An optimal level of QR (or tariff) protection can, in the absence of retaliation, improve national welfare. For the midsize economy, the optimal level of protection will be lower than for the large economy, but as is indicated by the estimates of the distortionary costs of QRs, it is still higher than the level of protection prevailing in 1984. Thus the distortionary costs of QRs are cut in half for the midsize economy case and become negative only in the large economy case. Observe now that the estimate of the premium component cost of VERs is largely unaffected by terms-of-trade changes. The reason is that we have assumed the same degree of monopoly and monopsony power in exports and imports. Hence the terms-of-trade losses in expenditures on imports are compensated by terms-of-trade gains on a lower volume of exports. Note also that, for the midsize economy case, the U.S. would be likely to see its welfare reduced by a unilateral tariff reduction. Of course, more detailed econometric evidence on export demand and import supply elasticities would be necessary to have confidence in this result, but it is nonetheless suggestive of the dilemma facing a large country when it contemplates a unilateral reduction in protection.

Note from the discussion of expression (2.15) that the Le Chatelier effect influences costs and benefits symmetrically. Now the induced terms-of-trade reverse the welfare effects of tariffs, but capital mobility reduces the magnitude of the loss from tariff liberalization as it

does the gain under fixed world prices. The effects on premia capture and full liberalization are also reversed.

The large economy variant gives a more extreme example of terms-of-trade effects. Now the distortionary costs of QRs are also negative because of the induced terms-of-trade losses and capital mobility attenuates losses from removing QRs as well as the losses from removing tariffs.

To summarize, although none of the uniform elasticity scenarios described here will correspond exactly to the degree of U.S. market power in the world economy, it is apparent from the midsize economy results that induced terms-of-trade effects have a strong influence on the welfare effects of protection, and particularly on the role of capital mobility in determining those effects. The simulations also pointed out to the quantitative relevance of expatriated rental income effects.

#### 4. Conclusions

This paper has extended previous analytical work on the role of international capital mobility in determining the welfare effects of various forms of import protection. Taking into account induced terms-of-trade and rental rate effects, we showed that the effect of capital mobility on welfare cannot be ascertained qualitatively. This indeterminacy led us to present a set of empirical results obtained from a CGE model of the U.S. These results confirm the importance of terms-of-trade and rental effects in determining the ultimate effects of capital mobility on the welfare costs of import restraints for an economy integrated into the world capital markets. The simulations also illustrated the importance of second-best effects in the evaluation of the costs of protection when there is international capital mobility.

Foonotes

- 1/ See for example, Neary and Ruane (1988), Neary (1988).
- 2/ The presentation follows closely Neary (1988). Wherever possible, our notation is the same as his.
- 3/ For example, in 1984 the foreign-owned share of the U.S. net capital stock was 1.4% and by 1988 this percent had risen six-fold. During the same period, the trade-weighted U.S. average tariff rate was 3.4% on imports representing 5.6% of gross output.
- 4/ The model is an extension of the model presented in de Melo and Tarr (1990) to include capital mobility.

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## Appendix

This appendix describes the structure and functional forms of the model used for the simulations reported in section 3 and the benchmarking to 1984 US data.

### A1. Model Outline

Table A1 presents the structure and functional forms of the static six-sector model used for the simulations. To save on notation, a one-sector version of the model is presented here. This helps focus the presentation on the treatment of different forms of protection and on assumptions about capital mobility. As in section 2, the model aggregates all components of final demand into consumption demand and the government sector returns all tax revenue (entirely due to tariffs) to the representative consumer. Hence, the economy only has trade distortions so that changes in welfare are entirely accounted for by changes in trade policy under each one of the model closures. Production takes place under perfect competition.

The welfare measure is the expenditure function associated with the LES utility function (eq. A.1) from which are derived labor supply,  $L$ , (eq. A.4) and composite consumption expenditures,  $C$ , (eq. A.9). Technology is described by CES functions for value-added (eq. A.2) and Leontief functions between intermediates (as a whole) and value-added, as well as within intermediates (eq. A.3). However, within each sector, demand is a CES function between domestically and foreign-produced goods (eqs. A.7 and A.8). Thus, the same elasticity of substitution between domestic and imported goods is assumed by end-use. Finally, export supply is given by a

CET function (eqs. A.11 and A.12). The assumption of product differentiation on the export side and on the import side rules out trade specialization in response to changes in trade policy.

#### A2. Benchmarking to 1984

Table A2 shows that the three sectors subject to import restraints are import-competing (low export-to-supply ratios and relatively high import-supply ratios) whereas the other two traded sectors export a substantial share of domestic production. This has implications for the resource pulls of trade policy changes in a model with product differentiation. In particular, an increase in protection in the "primary" or "other tradable" sectors will have, other things being equal, a smaller effect on resource pulls because of the possibility to divert export sales to the domestic market.

Ad valorem tariff rates appear in column 7. Note that these are applied on the premium-inclusive price of imports. The premium rate for textiles and vehicles is given in column 7. As explained in de Melo and Tarr (1989, chp. 4), these premia rates are conservative estimates of the premia due to quantitative restrictions in those sectors. The last four columns give the values assumed for the various elasticities describing demand and supply response.

Though not indicated in the table, the model was calibrated to the (exogenous) current account deficit of \$104 billion in 1984. Finally, note that because the model is calibrated to 1984, there is no premium rate on steel imports. As discussed in the text, rationing steel imports gives rise to a 7% premium on steel imports.

Table A1: A ONE SECTOR CGE MODEL**Expenditure Function (EXP)**

$$\text{EXP} = \text{LES} (P, Y) \quad (\text{A.1})$$

**Technology**

$$X = \text{MIN} \left\{ \frac{V}{A}, \text{CES} (L, K, \sigma_p) \right\} \quad (\text{A.2})$$

$$V = AX \quad (\text{A.3})$$

**Factor Supplies**

$$L = \overline{LS} \quad (\text{A.4})$$

$$K = \overline{KD} + KM \quad (\text{A.5})$$

**Factor Demands**

$$L/K = \text{CES}_p (r/w)^{\sigma_p} \quad (\text{A.6})$$

**Domestic Demand and Allocation of Traded Goods**

$$Q = \text{CES} (D, M; \sigma_m) \quad (\text{A.7})$$

$$D/M = \text{CES}_m (PMV/PD)^{\sigma_m} \quad (\text{A.8})$$

$$C = \text{LES} (Q, Y) \quad (\text{A.9})$$

$$D = VD + CD; M = CM + VM \quad (\text{A.10})$$

$$X^S = \text{CET} (D, E; \sigma_e) \quad (\text{A.11})$$

$$D/E = \text{CET}_e (PD/PE)^{\sigma_e} \quad (\text{A.12})$$

**Domestic Goods Market Equilibrium**

$$X^S = D \quad (\text{A.13})$$

Table A1 (continued)

## Income and Government Revenue

$$Y = WL + r\overline{KD} + GR - \overline{b} \cdot ER + (1-\theta) (\lambda \cdot M \cdot PM) ER \quad (\text{A.14})$$

$$GR = \pi \cdot M \cdot t \cdot ER \quad (\text{A.15})$$

## Trade Balance Constraint

$$\pi (M - E) = \overline{b} - rKM - \theta (\lambda \cdot M \cdot PM) ER \quad (\text{A.16})$$

## Foreign-Traded Goods Prices

$$PE = \pi \cdot ER \quad (\text{A.17})$$

$$PM = \pi (1 + t) ER \quad (\text{A.18})$$

## Foreign-Traded Goods Supplies

$$M = \pi^{\epsilon_s} \quad (\text{A.19})$$

$$E = \pi^{-\epsilon_d} \quad (\text{A.20})$$

## Determination of Premia Rates

$$M < M^* \Rightarrow \lambda > 0: PMV = PM (1 + \lambda) \quad (\text{A.21})$$

$$M = M^* \Rightarrow \lambda = 0; PMV = PM$$

## Numeraire

$$PD \equiv 1 \quad (\text{A.22})$$

Table A1 (continued)

<u>Variables</u>	<u>Definition of Variables and Parameters</u>
X	Domestic output
L	Labor use
K	Capital use
V	Intermediate use (domestic and imported)
VM	Imported intermediate goods
VD	Domestic intermediate goods
CM	Imported consumption goods
CD	Domestic consumption goods
E	Exports
D	Domestic goods for domestic use
Y	Aggregate domestic income
QR	Total tariff revenue
r	Rental rate
L	Labor supply
KM	Imported capital
t	Import tariff rate
PM	Domestic currencies price of imported consumer and intermediate goods
PMV	QR-ridden price of consumer and intermediate goods
PE	Domestic currency price of exported goods
ER	Exchange rate (in terms of numeraire)

Parameters and Exogenous Variables

$\bar{b}$	Balance of trade
$\overline{KD}, \overline{LS}$	Domestic capital; labor supply
$a$	Input-output coefficient
$\sigma_e, \sigma_m > 0$	Compensated price elasticities of export supply and import demand
$\sigma_p > 0$	Capital labor substitution
$\lambda > 0$	Premium rate when QR is binding
$t > 0$	Import tariff
$\epsilon_s > 0$	Import Supply Elasticity
$\epsilon_d > 0$	Foreign Export Demand Elasticity
$\pi \equiv \pi_e \equiv \pi_m$	By choice of units. Foreign currency price (in terms of numeraire)

Table A2: SUMMARY STRUCTURE OF THE 1984 U.S. ECONOMY

	X	D	M	E	L	K	$t_m$	$\lambda$	$\sigma_p^1/$	$\sigma_{mp}^2/$	$po^3/$	$E^4/$
Column	1	2	3	4	5	6	7	8	9	10	11	12
Primary	482.317	449.877	64.378	32.440	427.800	2449.931	.006	.000	.60	1.42	3.90	.34
Textiles	122.804	116.044	23.623	6.760	196.900	54.448	.177	.405	1.00	2.58	2.90	1.30
Vehicle	124.203	119.343	32.615	4.860	53.645	292.498	.027	.318	.81	2.01	2.90	1.00
Steel	57.508	56.148	12.708	1.380	53.100	236.517	.053	.000	1.00	3.05	2.90	1.00
Other Tradable	4018.182	3780.602	269.995	237.580	6000.254	15250.987	.029	.000	.80	.40	2.90	.70
Non-traded Services	2443.322	2443.322	.000	.000	3768.900	14037.896	.000	.000	.80	3.15	2.90	1.45
<u>Totals</u>	<u>7248.336</u>	<u>6965.336</u>	<u>403.319</u>	<u>283.000</u>	<u>10500.599</u>	<u>32322.277</u>						

Note: All values in columns 1 to 6 are in 1984 \$ billion. For a definition of variables, see Table A1.

- 1/ Elasticity of substitution in production.
- 2/ Compensated price elasticity of import demand.
- 3/ Compensated price elasticity of export supply.
- 4/ Income elasticity of demand.

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