DO GATT RULES HELP GOVERNMENTS MAKE DOMESTIC COMMITMENTS?

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We investigate empirically whether GATT rules may have helped the US government make trade policy commitments to its private sector. We study choices under two distinct environments. One environment is the determination of sectoral exclusions in the Tokyo Round of GATT negotiations. The other is the determination of tariff responses under GATT's escape clause. In each environment the US government was faced with a similar decision, but only in the former environment did GATT rules serve as a potential commitment device. Comparing decisions made across these two environments, we find evidence that GATT rules did help the US government make domestic trade policy commitments that it could not have made in the absence of these rules.

1. INTRODUCTION

BUILDING ON the seminal work of Kydland and Prescott (1977) on rules versus discretion, a number of theoretical papers have pointed out that international rules for trade policy, such as those embodied in the General Agreement on Tariffs and Trade (GATT) and its successor, the World Trade Organization (WTO), can help governments make commitments to superior trade policies that would not be credible to domestic agents in the absence of such rules. For example, Staiger and Tabellini (1987) state the following:

> Finally, these theoretical results contain a clear normative implication for improving on the time-consistent but suboptimal equilibrium: the government should be enabled to undertake binding commitments concerning its future behavior. From an operational point of view, this is suggestive of the important role that could be performed by an international organization like the GATT: namely, to enforce the domestic commitments to a policy of free trade. The GATT was originally conceived to facilitate international cooperation among individual countries; the results of the paper suggest that this institution can – and presumably to some extent already does – perform an equally crucial role in enforcing the cooperative outcome in a setting in which the strategic interaction is between each country and its own domestic residents (p. 825).

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Similar statements concerning the possible role of trade agreements in helping governments make commitments to their private sectors can be found in Matsuyama (1990), Brainard (1994), Mayer (1994), and most recently Maggi and Rodriguez-Clare (1998). Yet there is no empirical evidence as to whether international agreements such as GATT or the WTO do in fact offer member-governments a commitment technology with respect to their private sectors. The goal of this paper is to provide an initial empirical assessment of this issue.[1]

As an environment for the study of rules versus discretion in government policy-making, trade policy decisions may be uniquely suited among the many kinds of economic decisions that governments make. This is because governments confront similar trade policy decisions in a variety of institutional settings distinguished by the degree to which international rules apply. We exploit this by comparing US responses to injured import-competing sectors in two different institutional settings, one in which GATT rules explicitly apply and one in which they do not.

The first setting we consider is where the United States was faced with the determination and implementation of tariff reductions as part of the Tokyo Round of GATT negotiations (1974–1979). The centerpiece of GATT is the tariff *binding*, the commitment made by each GATT contracting party not to raise tariffs above specified levels. These bindings, in turn, have been reduced over time through a series of multilateral negotiating rounds.

In the Tokyo Round, the *negotiated tariff reductions* were determined in two steps. First, a general formula for lowering each country's tariff bindings across all product categories was adopted; and second, faced with the implication of applying formula cuts across the board, each government then chose to *exclude* certain product categories from the general formula cuts and to substitute alternative tariff changes for these products.[2] The outcome of these two steps determined the tariff reductions that were to be implemented at the conclusion of the Tokyo Round. By excluding a product category from the tariff-cutting rule, a government could therefore choose to offer relief to an import-competing sector that would otherwise face injury associated with the formula tariff cut.

A similar two-step procedure determined the *speed of implementation* of the negotiated tariff reductions at the conclusion of the round. First, a general staging rule was adopted under which the negotiated tariff reductions would be phased in over eight years in eight equal parts; and second, faced with the

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[1] The theoretical literature has also identified a second, logically distinct but possibly complementary role for trade agreements: in a setting where the important strategic interaction occurs across individual countries, a trade agreement can provide member governments with an escape from a terms-of-trade-driven prisoners' dilemma. See Johnson (1953/54), for the classic formalization of this more traditional view of what trade agreements do. More recent interpretations and extensions of this view are contained in Dixit (1987), Staiger (1995a), and Bagwell and Staiger (1990, 1999). To our knowledge, there are as yet no empirical studies that explore the extent to which trade agreements serve this purpose either.

[2] This two-step procedure also characterized the Kennedy Round, but was not followed in the recently completed Uruguay Round.

implication of applying the general staging rule across the board, each government chose to *exclude* certain product categories from the general staging rule.[3] The outcome of these two steps determined the speed with which the tariff reductions negotiated in the Tokyo Round were to be implemented. By excluding a product category from the general staging rule and substituting a slower phase-in, a government could provide temporary relief from the negotiated tariff reductions.

Our empirical investigation begins by considering the determinants of the US exclusion decisions in the Tokyo Round. In facing these decisions, the government was confronted sector-by-sector with a tradeoff between distributive gains and efficiency losses. The distributive gain from exclusion comes from the prevention of injury that would otherwise occur in each import-competing sector if the formula cuts were applied. The efficiency loss is associated with the sectoral production and consumption distortions that are maintained as a result of the sectoral exclusion from tariff reduction. The issue of government *commitment* relative to the private sector when making the exclusion decision arises because the government's assessment of this distribution/efficiency tradeoff, and hence its sectoral exclusion decision, depends in part on the degree to which it can commit to a course of action before private sector decisions are made. In particular, a government that is unable to credibly commit to a trade policy before the relevant production decisions are made will take those production decisions as bygones when selecting the exclusions and will as a consequence neglect the production distortions associated with its trade policy choices. We therefore draw inferences about the ability of governments to commit to trade policy decisions under GATT rules by examining the degree to which trade-policy-induced production distortions were reflected in the US exclusion decisions of the Tokyo Round.

In the context of the Tokyo Round, GATT rules may have helped governments commit to the tariffs implied by their exclusion decisions by making explicit the threat of costly dispute settlement procedures and possible retaliation from trading partners if these decisions were not adhered to. In particular, each member-government was obligated in general under GATT rules to refrain in the future from unilaterally raising its tariffs above the bindings it negotiated in the round. The temporary unilateral suspension of specific bindings and the associated temporary tariff increases would be permitted in certain circumstances, but only under the rules governing *escape clause* actions, which required that substantial injury to the relevant import-competing industry first be established. Thus, following the Tokyo Round's completion, the exclusion decisions of member-governments could be reversed unilaterally and without threat of penalty only under the relatively stringent injury conditions that would activate the escape clause. By providing a degree of

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[3] The list of items for which the actual staging rule differed from the general staging rule is contained in Annex I of GATT (1979).

government commitment in this way, GATT rules should have induced Tokyo Round exclusion decisions to reflect the production distortions that the departures from the formula tariff cuts would cause, i.e., all else equal, departures from the formula tariff cuts should have been smaller in sectors where the production distortions induced by these departures were larger. In our empirical work, we will interpret evidence of such a pattern as indicating that trade policy decisions made under GATT rules are relatively unconstrained by domestic credibility issues.[4]

When international rules such as those provided by GATT are absent, this does not necessarily mean that government credibility will be lost and therefore that the production distortions introduced by protection will be ignored when setting tariff levels. Governments could in principle find other means of establishing and maintaining trade policy credibility with their private sectors, for instance through some domestic reputation mechanism. If governments can successfully do this, then GATT may not provide any additional credibility benefit of the sort discussed above. Thus, to address the question we set out to explore, it would not be enough to find evidence that decisions made under GATT rules appear unconstrained by domestic credibility issues: we must also ask whether decisions made in the absence of GATT rules share this characteristic.

To accomplish this second task, we look at trade policy decisions made under the escape clause. In particular, we examine government choices over whether or not to offer additional protection to industries that have passed the escape clause injury standard. In this setting, the government is faced with a decision very similar to the exclusion decisions of the Tokyo Round: whether or not to offer increased protection to an industry that faces the prospect of substantial injury. However, unlike the exclusion decisions of the Tokyo Round, when making escape clause decisions the government cannot rely on explicit GATT rules to limit its ability to reconsider those decisions. This is because GATT commitments are temporarily ''unbound'' under the conditions of the escape clause, so that once the injury determination has been established a government

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[4] GATT rules also afford member-governments the opportunity to reverse their exclusion decisions by entering into *renegotiations* over tariff bindings with their trading partners subsequent to the conclusion of a round. Where the strategic interaction across governments presents the main problem to be solved by a trade agreement (see also note 1), GATT's provision for renegotiation can have important implications for the outcome of the original tariff negotiations (see Bagwell and Staiger, 1999). However, when considering the impact that GATT rules may have on the strategic interaction between a government and its own domestic residents, the important feature of this provision is simply the requirement that the procedures for renegotiation with one's trading partners must be carried out before any tariff changes can be made, which by itself serves to limit the flexibility with which a government could lawfully reverse exclusion decisions through this channel, much as the injury condition limits a government's flexibility in using escape clause actions for this purpose. Hence, despite the opportunities for reconsideration granted in these provisions, GATT's rules at least in principle place limits on the flexibility with which member-governments may lawfully exceed the tariff bindings negotiated in a round, and hence these rules could in principle help governments make domestic commitments. The empirical question is then whether this effect is evident in practice.

would be free to readjust unilaterally its tariff response at any time during the period of injury without fear of triggering dispute proceedings and possible retaliation from its trading partners (see, for example, Jackson, 1989, pp. 149–187).

Absent an alternative commitment mechanism, the lack of applicable GATT rules in these circumstances will undermine the credibility of escape clause decisions that attempt to take into account the costs of associated production distortions. Therefore, unless domestic reputation mechanisms are working to provide a substitute for explicit international rules in this case, the decision to offer increased protection under the escape clause should not be tempered by the magnitude of the production distortions induced by the added intervention. On the contrary, if, as theory would suggest, the commitment provided by GATT's rules enabled governments to sustain deeper negotiated tariff cuts in those industries where exclusions would have induced especially high production distortions, then in light of these prior decisions the escape clause's temporary suspension of GATT's rules (and the implied loss of government commitment) should lead governments to *undo* what the rules had accomplished. This suggests the perverse result that, if GATT rules are indeed contributing to the ability of governments to make trade policy commitments to their private sectors, then the *greatest* additional protection will be granted under the escape clause precisely where the associated production distortions would be *highest*, i.e., all else equal, additional protection under the escape clause should be more forthcoming where the magnitude of the production distortions induced by protection is highest.

Hence, if GATT rules are actually providing member governments with a commitment device relative to their private sectors that they would otherwise lack, we would expect to find that, ceteris paribus, the Tokyo Round exclusion decisions were *negatively* related to the production distortions they caused while escape clause decisions showed a *positive* sensitivity. This is in essence what we seek to determine in our empirical work.

To preview our findings, our empirical results are mixed, but overall they provide some support for the view that GATT rules help member-governments make trade policy commitments to their private sectors. We find some evidence that the United States granted exclusions from the Tokyo Round general tariff-cutting rule less readily in sectors where higher tariffs were more likely to significantly distort production decisions. When we consider US exclusions from the Tokyo Round general staging rules, stronger support for this inverse relationship between exclusions and associated production distortions is evident. These findings are consistent with the view that, at least when GATT rules apply, governments are able to make trade policy commitments to their private sectors. By contrast, we find no evidence of an inverse relationship between US escape clause protection and the implied production distortions, and in fact find some evidence of a positive association, as would be implied if GATT rules are providing member-governments with a commitment device relative to their private sectors which the member-governments do not otherwise possess (and which is therefore lost when GATT rules are temporarily suspended under the

escape clause). While our empirical results are subject to a number of important caveats and must therefore be viewed as only a first step in providing an answer to this question, we interpret these findings overall as suggestive that GATT rules may indeed help governments make domestic commitments.

The next section presents a model of tariff determination which is meant to capture the main elements of trade policy decisions in these two settings. While stylized, this theoretical framework serves to motivate our empirical methodology, which we present in section 3. Our empirical results for the Tokyo Round are presented in section 4. In section 5 we present empirical results for escape clause decisions, and compare the impact of the different institutional settings and the relative degrees of policy discretion they permit on actual tariff choices. Finally, section 6 concludes. Our data sources are described in the Appendix.

2. THEORY

Our goal in this section is to present a simple theoretical framework within which to evaluate the impact that GATT rules may have on the strategic interaction between a government and its own domestic residents. In particular, we wish to contrast the choices a government would make to protect specific industries from injury in the context of a GATT-sponsored round of tariff negotiations with the choices it would make in responding to injury under the escape clause, with the key distinction across the two environments being the degree to which the government can commit to a tariff policy in advance of the resource allocation decisions of the private sector. To this end, we first describe the economic environment and then proceed to discuss the institutional setting within which trade policy decisions will be made.

2.1 Economic Environment

We consider a simple partial equilibrium model of two economies trading two non-numeraire goods as well as a numeraire good that enters linearly into utility and is consumed in positive amounts by both countries. Let x denote the home-country import good and let y be the corresponding import good for the foreign country. Each government has a specific import tariff at its disposal, which we denote by t_x (t_y^*) for the home (foreign) government, with an "*" generally denoting a foreign-country variable. Arbitrage across the home and foreign market then ensures that home and foreign prices differ only by the relevant tariff, or $p_x = p_x^* + t_x$ and $p_y^* = p_y + t_y^*$, where p_i (p_i^*) denotes the price of good $i \in \{x, y\}$ in the home (foreign) market. Initially these tariffs are set exogenously at the levels $\bar{t}_x$ and $\bar{t}_y^*$, possibly as the result of prior rounds of GATT negotiations.

Demands for x and y are represented in each country by decreasing functions of the relevant local price, with D_i (p_i) [D_i^* (p_i^*)] denoting demand for good $i \in \{x, y\}$ in the home (foreign) country. The determination of supply in each

country is more involved. First, each country is endowed with an inelastic supply of its export good, $\bar{E}_y$ for the home country and $\bar{E}_x^*$ for the foreign country, and its import good, $\bar{E}_x$ for the home country and $\bar{E}_y^*$ for the foreign country. These endowments may be thought of as supplies of each good produced with factors that are not mobile during the time horizon relevant for the decisions to which our analysis applies. However, we wish to consider the implications of trade liberalization for resource allocation out of the import-competing sector, and so we must also introduce some factors that are mobile over this time horizon.

To accomplish this we assume that each country is also endowed with a supply of *skilled* labor, and a supply of *unskilled* labor. Unskilled labor comes in assorted types indexed by $\lambda \in [0, 1]$, and the distribution of types of unskilled labor in the home (foreign) country is described by the distribution function $F(\lambda)$ [$F^*(\lambda)$] with associated density function $f(\lambda)$ [$f^*(\lambda)$]. Countries produce the numeraire good with a common *skill-sensitive* technology that can convert a unit of skilled labor into one unit of the numeraire good and a unit of unskilled labor of type λ into $\alpha \times \lambda$ units of the numeraire good where $\alpha \in (0, 1)$. By contrast, the common import-competing technology in each country is not skill-sensitive, and it converts a unit of either skilled or unskilled labor into one unit of the import-competing good. Hence, with $1 > \alpha \times \lambda$ for each λ, all unskilled workers have a comparative advantage over skilled workers in import-competing production, and low-λ unskilled workers have a comparative advantage over high-λ unskilled workers in import-competing production as well. With all workers in an economy being paid the value of their marginal product, all workers employed in the domestic (foreign) import-competing sector will receive a wage equal to p_x (p_y^*), while in the domestic (foreign) numeraire sector skilled workers receive a unitary wage and unskilled workers of type λ receive a wage of $\alpha \times \lambda$ ($\alpha^* \times \lambda$). It therefore follows that the import-competing sector in each economy will employ all available unskilled workers before employing any skilled workers, and it will employ low-λ unskilled workers before employing high-λ unskilled workers.

A central feature of the model is the reallocation of workers from the import-competing to the numeraire sector in each economy in response to tariff liberalization. We assume that there are $\bar{N}_x$ ($\bar{N}_y^*$) unskilled workers in the home (foreign) country, and that the initial tariff levels $\bar{t}_x$ and $\bar{t}_y^*$ are such that some skilled workers (and therefore all unskilled workers) are initially located in the import-competing sector of their respective country. This will be assured provided that the initial tariffs are sufficiently high, and we denote the critical levels above which $\bar{t}_x$ and $\bar{t}_y^*$ must reside as I and I^*, respectively. Calculations yield the explicit expressions $I \equiv [1 - D_x^{*-1}(\bar{N}_x + \bar{E}_x + \bar{E}_x^* - D(1))]$ and $I^* \equiv [1 - D_y^{-1}(\bar{N}_y^* + \bar{E}_y^* + \bar{E}_y - D_y^*(1))]$. With $\bar{t}_x > I$ and $\bar{t}_y^* > I^*$, each economy is initially in an equilibrium in which (i) all unskilled workers are employed in the import-competing sector and (ii) all workers in the economy receive the same (unitary) wage.

We now suppose that the opportunity arises for a new round of tariff negotiations.[5] As these negotiations will lead naturally to the possibility of mutual reductions in each country's tariff, we need to determine the equilibrium prices and labor allocations for tariffs below the critical domestic and foreign levels I and I^*, respectively, and we need to specify government preferences, including how governments feel about the wage inequality between skilled and unskilled workers that tariff liberalization may induce.

When the domestic tariff is set below the critical level I, the wages paid to unskilled workers in the domestic economy and the domestic price of the import-competing good will fall below unity, and unskilled workers may begin to leave the domestic import-competing sector for jobs in the numeraire sector. More specifically, define $M \equiv [\alpha - D_x^{*-1}(\bar{N}_x + \bar{E}_x + \bar{E}_x^* - D_x(\alpha))]$. Then for $t_x \in [M, I]$, no unskilled workers will be induced to leave the domestic import-competing sector, but the equilibrium wage paid to domestic unskilled workers will decline from one to α as t_x falls from I to M. This follows from the x-market equilibrium condition, which for $t_x \in [M, I]$ can be written as

$$\bar{N}_x + \bar{E}_x + \bar{E}_x^* = D_x(p_x^* + t_x) + D_x^*(p_x^*). \tag{1}$$

Condition (1) defines the equilibrium foreign price of x for $t_x \in [M, I]$, $\hat{p}_x^*(t_x)$, and therefore the equilibrium domestic price of x will be given by $\hat{p}_x(t_x) \equiv \hat{p}_x^*(t_x) + t_x$ and the equilibrium domestic wage paid to unskilled workers will be given by $\hat{w}_x(t_x) \equiv \hat{p}_x(t_x)$ for $t_x \in [M, I]$. As can be seen from (1), $\hat{p}_x^*$ is decreasing in t_x over this range while $\hat{p}_x$ and $\hat{w}_x$ are increasing in t_x. Moreover, it can be checked from (1) and the definitions of M and I that $\hat{w}_x(I) = 1$ and $\hat{w}_x(M) = \alpha$.

For any $t_x < M$, some domestic unskilled workers will choose to leave the import-competing sector. In particular, for domestic tariffs in this range, domestic unskilled workers can be partitioned into low-λ types, who choose to stay in the import-competing sector, and high-λ types, who choose to leave for employment in the numeraire sector, with the marginal type $\tilde{\lambda}$ defined by the condition that the wage earned in the import-competing sector (p_x) is the same as the wage that would be earned by this type of unskilled worker in the numeraire sector ($\alpha \times \tilde{\lambda}$), or $p_x = \alpha \times \tilde{\lambda}$. Recalling the goods-market arbitrage condition $p_x = p_x^* + t_x$, we now record the x-market equilibrium condition for $t_x \leqslant M$, which defines as a function of t_x the market-clearing foreign price of good x, $\hat{p}_x^*(t_x)$:

$$\bar{N}_x F\left(\frac{p_x^* + t_x}{\alpha}\right) + \bar{E}_x + \bar{E}_x^* = D_x(p_x^* + t_x) + D_x^*(p_x^*). \tag{2}$$

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[5] We do not attempt to explain why the opportunity to negotiate a round of trade liberalization arises at a particular time, nor why any further liberalization would be desired in light of previous rounds. These are important questions, but they lie well outside the scope of this paper. For attempts to answer these questions from the perspective of enforcement difficulties at the international level, see Staiger (1995b), Devereux (1997), Bond and Park (1998) and Furusawa and Lai (forthcoming).

From (2) it follows that $\hat{p}_x^*$ is a decreasing function of t_x over this range. We then have the equilibrium domestic price of x defined by $\hat{p}_x(t_x) \equiv \hat{p}_x^*(t_x) + t_x$, and it again follows from (2) that $\hat{p}_x$ will be an increasing function of t_x over this range. The equilibrium allocation of unskilled workers in the domestic economy is determined by the equilibrium marginal type $\hat{\lambda}(t_x) \equiv \hat{p}_x(t_x)/\alpha$, with the number of workers remaining in the domestic import-competing sector given by $\bar{N}_x F(\hat{\lambda}(t_x))$ and thus increasing in t_x. Domestic wages of skilled workers are still unity, but the wages of unskilled workers in the domestic economy are now given by $\hat{w}_x(t_x) \equiv \hat{p}_x(t_x)$ for domestic unskilled workers of type $\lambda \in [0, \hat{\lambda}(t_x)]$, who choose to remain in the import-competing sector, and by $\alpha \times \lambda$ for domestic unskilled workers of type $\lambda \in [\hat{\lambda}(t_x), 1]$, who choose to leave the import-competing sector and produce the numeraire good. Hence, as t_x is increased, the number of unskilled workers staying in the domestic import-competing sector rises and the wage earned by all unskilled workers remaining in the domestic import-competing sector increases toward the skilled-labor wage of unity.

For any $t_y^* < I^*$, an analogous set of y-market equilibrium conditions (i.e., one for $t_y^* \in [M^*, I^*]$, and one for $t_y^* \leqslant M^*$, with M^* defined analogously to M) will determine the market-clearing domestic price of y, $\hat{p}_y(t_y^*)$, from which the equilibrium foreign price of y may then be defined by $\hat{p}_y^*(t_y^*) \equiv \hat{p}_y(t_y^*) + t_y^*$. The equilibrium allocation of unskilled workers in the foreign economy is then determined by the equilibrium marginal type $\hat{\lambda}^*(t_y^*) \equiv \hat{p}_y^*(t_y^*)/\alpha^*$. As with the domestic economy, foreign wages of skilled workers are still unity, but the wages of unskilled workers in the foreign country are now given by $\hat{w}_y^*(t_y^*) \equiv \hat{p}_y^*(t_y^*)$ for foreign unskilled workers of type $\lambda \in [0, \hat{\lambda}^*(t_y^*)]$, and by $\alpha^* \times \lambda$ for foreign unskilled workers of type $\lambda \in [\hat{\lambda}^*(t_y^*), 1]$.

We now define the trade-policy objectives of each government. We wish to capture in a simple way the notion that a government may pursue the competing goals of enhancing efficiency and preventing serious adjustment costs/injury to specific groups (e.g., unskilled workers) as it enters into tariff negotiations with its trading partners. We also wish to allow for the fact that political motives may be important in shaping the government's trade-policy goals.

We therefore define the domestic government's trade-policy objectives by

$$W(t_x, t_y^*) = CS_x(\hat{p}_x(t_x)) + \gamma_x \times PS_x(\hat{p}_x(t_x)) + TR_x(t_x, \hat{p}_x^*(t_x))$$
$$+ \bar{N}_x \left\{ F(\hat{\lambda}(t_x)) \times g_x(\hat{w}_x(t_x)) + \int_{\hat{\lambda}(t_x)}^{1} f(\lambda) \times g_x(\alpha \times \lambda) \mathrm{d}\lambda \right\}$$
$$+ CS_y(\hat{p}_y(t_y^*)) + PS_y(\hat{p}_y(t_y^*)), \tag{3}$$

where CS_i, PS_i and TR_i denote domestic consumer surplus, producer surplus and tariff revenue associated with industry $i \in \{x, y\}$, where $\gamma_x \geqslant 1$ denotes a domestic government weighting factor on import-competing producer surplus, and where $g_x(\cdot)$ is a function which is increasing and concave in its argument with $g_x(1) = 0$. The parameter γ_x is meant to capture political economy motives

of the domestic government in a simple way (see Baldwin, 1987), with $\gamma_x > 1$ reflecting a politically-motivated preference for channeling surplus toward producers in the domestic import-competing sector x. The function $g_x(\cdot)$ is meant to capture the domestic government's dislike for reducing the wage of domestic unskilled workers (who are located in its import-competing sector x at the time it initiates trade negotiations) below that of skilled workers as a result of its negotiated tariff reductions. In particular note that, for $t_x > I$, we have $\hat{\lambda}(t_x) = 1$ and $\hat{w}_x(t_x) = 1$ so that the term in curly brackets in (3) is zero, but that this term grows increasingly negative as t_x drops below I and the domestic wage of unskilled workers begins to fall below the domestic skilled-worker wage. We assume that the trade-policy objectives of the foreign government are similarly defined:

$$W^*(t_y^*, t_x) = CS_y^*(\hat{p}_y^*(t_y^*)) + \gamma_y^* \times PS_y^*(\hat{p}_y^*(t_y^*)) + TR_y^*(t_y^*, \hat{p}_y(t_y^*))$$

$$+ \bar{N}_y^* \left\{ F^*(\hat{\lambda}^*(t_y^*)) \times g_y^*(\hat{w}_y^*(t_y^*)) + \int_{\hat{\lambda}^*(t_y^*)}^{1} f^*(\lambda) \times g_y^*(\alpha^* \times \lambda) \, d\lambda \right\}$$

$$+ CS_x^*(\hat{p}_x^*(t_x)) + PS_x^*(\hat{p}_x^*(t_x)), \qquad (4)$$

where CS_i^*, PS_i^* and TR_i^* denote foreign consumer surplus, producer surplus and tariff revenue associated with industry $i \in \{x, y\}$, where $\gamma_y^* \geqslant 1$ denotes a foreign government weighting factor on import-competing producer surplus, and where $g_y^*(\cdot)$ is a function which is increasing and concave in its argument with $g_y^*(1) = 0$.

Finally, in an effort to motivate the inclusion of an "escape clause" from negotiated tariff commitments, we wish to capture the notion that, at the time of initial negotiations, there is some uncertainty as to the degree of injury that a given amount of tariff liberalization will actually cause. We represent this in the home country by the assumption that the parameter α can take on either of two magnitudes, α_H or α_L, with $\alpha_H > \alpha_L$. At the time of negotiations it is known only that, with probability $\rho \in (0, 1)$, the magnitude of α will be α_H, while with probability $(1 - \rho)$ the magnitude of α will be α_L. The actual magnitude of α will be revealed only after the negotiations are completed. We make an analogous assumption with regard to the foreign country. Note that, for a given $t_x < M$, condition (2) implies that $\hat{p}_x$ is increasing in α but less than proportionately so, and so $\hat{\lambda}$ is declining in α. Hence, for a given domestic tariff, the realization of a lower value of α brings with it diminished adjustment out of the domestic import-competing sector [$\bar{N}_x F(\hat{\lambda}(t_x))$ will be larger] and lower domestic unskilled wages ($\hat{w}_x = \hat{p}_x$ will be lower, as will $\alpha \times \lambda$, the alternative wage for a type-λ domestic unskilled worker if it locates in the numeraire sector) than would be implied under a high value of α. We thus interpret the state of the world in which α turns out to be low as reflecting the realization of relatively high adjustment costs associated with the transfer of resources out of the domestic import-competing sector. The possibility of such a "shock" will motivate the inclusion

of an "escape clause" which allows governments to suspend their negotiated tariff commitments under certain circumstances.[6]

2.2 Institutional Setting: Credibility from GATT Rules

We are now ready to describe the timing of the tariff negotiations and private sector decisions, which we characterize as corresponding to three stages. Our description attempts to capture the stylized features of GATT's rules as they would apply in this setting.

We suppose that there is a first stage in which a round of tariff negotiations occurs. In this stage, the two governments jointly select tariffs and agree on payments of lump-sum transfers.[7] Upon completion of these negotiations, the first stage ends and the values of α and α^* are revealed. If the low value of α (α^*) is realized, then adjustment costs turn out to be high in the domestic (foreign) country, and in the domestic (foreign) country the escape clause is invoked. In the second stage the government of this country is then permitted to select unilaterally a tariff increment for its import-competing sector at the same time that labor allocation decisions are made by the private sector. In conformity with GATT rules, we assume that "compensation" (in the form of a lump-sum transfer) must be paid to its trading partner for the export price effects of its escape clause action.[8] If instead the high value of α (α^*) is realized at the end of the first stage, then adjustment costs turn out to be low in the domestic (foreign) country, and in the domestic (foreign) country the escape clause is not triggered. Under these circumstances, the country will be held to the tariff commitment it negotiated in the first stage, and so in the second stage only the labor allocation decisions of the private sector remain to be made. Finally, all consumption decisions are made by the private sector in the third and final stage.

There are two important features of this setup that distinguish the tariff choices made in the stage-1 negotiations from the stage-2 escape clause tariffs, and both features follow from the fact that a country will have the opportunity to modify its stage-1 negotiated tariff commitment in stage 2 (via the escape clause) if and only if its adjustment costs turn out to be high. A first feature is

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[6] Note that we do not make a distinction here between temporary and permanent suspension, as there is essentially only a single period after the tariffs are implemented. In a multi-period model, such a distinction could be added without upsetting the basic flavor of our results, but at the cost of substantial additional complexity. We also note that GATT's escape clause can be given alternative interpretations to the one that we consider here (see, for example, Bagwell and Staiger, 1990).

[7] The ability to make international lump-sum transfers simplifies our characterization of the outcome of tariff negotiations between the two governments, but is otherwise not crucial to our argument.

[8] By stabilizing the export price effects of a government's decision to raise tariffs, GATT's compensation requirement effectively induces "large" countries, i.e., those with the power to influence the prices received by foreign exporters, to act as if they had no ability to affect export prices when making their tariff determinations. In the present setting, this requirement ensures that a government will not use the escape clause as an excuse to reassert its power over export prices. Bagwell and Staiger (1999) consider the efficiency properties of this kind of rule more broadly.

that, while the escape clause tariff choice will reflect the knowledge that adjustment costs are high, the stage-1 negotiated tariff commitment will be designed to deliver its preferred outcome when adjustment costs are low, since only in this state of the world can a government's stage-1 commitment not later be modified by an escape clause action. Hence, one difference between the tariff choices made in the negotiating round and those made under the escape clause is that the latter are designed to respond to additional injury in the import-competing sector not anticipated in the calculations which lead to the former. A second feature is that, while the escape clause tariff choice is made simultaneously with the resource allocation decisions of the private sector and therefore treats these private sector decisions as given, the calculations which lead to the tariff choices made in the negotiating round are carried out in advance of the decisions of the private sector, and can therefore take into account the impact that negotiated tariff commitments will have on the allocation of resources across the economy. Hence, a second difference between the tariff choices made in the negotiating round and those made under the escape clause is that the former will account for production distortions induced by the tariff choices while the latter will not.

These two features account for the difference between the tariff choices made in the negotiating round and those made under the escape clause in our formal setting, and they capture in a stylized way the essential differences across the two decision-making environments upon which we wish to focus. We now characterize these tariff choices, and then compare them to derive the basic predictions that will guide our empirical work. We begin with the stage-1 negotiated tariffs.

Negotiated Tariff Commitments

In light of the observations made above, the negotiated tariffs to be selected in stage 1 will reflect an underlying assumption that adjustment costs will turn out to be low ($\alpha = \alpha_H$, $\alpha^* = \alpha_H^*$) and will account fully for the production effects of the resulting tariff choices. As international lump-sum transfers can be used to divide the total surplus across the two countries, the negotiated tariff choices will maximize the sum of the government welfare functions, and hence negotiations will choose tariffs that solve

$$\max_{t_x, t_y^*} \ W(t_x, t_y^*, \alpha_H) + W^*(t_y^*, t_x, \alpha_H^*), \tag{5}$$

where $W(t_x, t_y^*, \alpha_H)$ is defined as in (3) with $\alpha = \alpha_H$ and similarly $W^*(t_y^*, t_x, \alpha_H^*)$ is defined as in (4) with $\alpha^* = \alpha_H^*$. It is direct to show that the domestic ad valorem tariff (τ_x^1) that solves (5) is given by

$$\frac{\tau_x^1}{1 + \tau_x^1} = \frac{(\gamma_x - 1) \times Q_x}{D_x \times \eta_{p_x}^{D_x} + Q_x \times \eta_{p_x}^{Q_x}} + \frac{N_x \times g_x'(\hat{w}_x)}{D_x \times \eta_{p_x}^{D_x} + Q_x \times \eta_{p_x}^{Q_x}}, \tag{6}$$

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where τ_x^1 denotes the domestic tariff expressed in ad valorem terms, Q_x and N_x denote domestic output and employment, respectively, in sector x, $\eta_{p_x}^{D_x}$ and $\eta_{p_x}^{Q_x}$ denote, respectively, the price elasticity of domestic demand (taken positively) and supply (reflecting the elasticity of inter-sectoral labor movements) in sector x, and $g_x'(\cdot)$ denotes the derivative of g_x with respect to its argument. Implicit in (6) is the assumption that domestic political economy and labor income inequality concerns [i.e., γ_x and $g_x(\cdot)$, respectively] are not so strong as to prevent the domestic government from accepting a negotiated tariff commitment that implies resource movements out of the domestic import-competing sector. An analogous expression describes the foreign tariff that solves (5).

   The right-hand side of (6) establishes that the negotiated domestic tariff may be written as the sum of two components. The first component will be zero if the government simply seeks to maximize domestic surplus with its tariff policy (i.e., $\gamma_x = 1$). But this component will be positive if the domestic government has a political desire to channel surplus toward import-competing producers (i.e., $\gamma_x > 1$). In this case, political motives will contribute toward a strictly positive negotiated domestic tariff, though these motives will be tempered on the margin by the additional domestic consumption and production distortions that a slightly higher tariff would introduce (i.e., the term $D_x \times \eta_{p_x}^{D_x} + Q_x \times \eta_{p_x}^{Q_x}$). The second component embodies the response to the adjustment costs/injury that the negotiated trade liberalization may cause. This component reflects the domestic government's desire to prevent its negotiated tariff reduction from creating large discrepancies between skilled and unskilled wages in the domestic economy [i.e., the term $g_x'(\cdot) > 0$], a desire that is also tempered on the margin by the additional domestic consumption and production distortions that a slightly higher tariff would introduce. Notably absent from the expression for the negotiated domestic tariff is the inverse of the foreign export supply elasticity, which would reflect the domestic country's power over foreign export prices (the terms of trade) and which would contribute to its unilateral motives for raising import tariffs. Negotiations will eliminate this inefficient terms-of-trade incentive, leaving two remaining reasons for a positive tariff as reflected in (6).

Escape Clause Tariffs

Now consider the escape clause tariff to be chosen in stage 2. We first consider the implications of the "compensation" requirement outlined above, and argue that this requirement helps to induce efficient escape clause choices by preventing a government from using the escape clause as an excuse to reassert its power over export prices. To see this, observe that, from (3) and (4), each country's tariff alters the welfare of its trading partner only through the impact on its trading partner's export price (i.e., its terms of trade). It therefore follows that, when exercising the escape clause, a requirement of lump-sum compensation offered to one's trading partner in an amount that offsets the value to the country of the terms-of-trade improvement induced by its escape clause action

will ensure that each country is confronted with the "right" (i.e., efficient) incentives relative to its trading partner when choosing its escape clause tariff.[9]

Under such a compensation requirement, each government will be induced to choose its escape clause tariff to maximize the same function as in (5), with two differences: first, the "shock" of high adjustment costs in the relevant country will have been realized, so that α_L replaces α_H (or α_L^* replaces α_H^*); and second, as the government will select an escape clause tariff simultaneously with the resource allocation decisions of the private sector, it will behave as if the allocation of resources – and hence output – is fixed, and so output elasticity will be treated as if it were zero. Of course, in equilibrium the resource allocation decisions of the private sector will fully reflect the escape clause tariff decisions, but it is just that the government is unable to take account of this sensitivity when selecting its escape clause actions. Solving (5) with these differences yields an expression for the domestic ad valorem tariff chosen under the escape clause, τ_x^2:

$$\frac{\tau_x^2}{1 + \tau_x^2} = \frac{(\gamma_x - 1) \times Q_x}{D_x \times \eta_{p_x}^{D_x}} + \frac{N_x \times g_x'(\hat{w}_x)}{D_x \times \eta_{p_x}^{D_x}}. \tag{7}$$

Note that we have defined the escape clause tariff τ_x^2 as the desired tariff level at the time of the escape clause decision, so that the escape clause *response* would be $\tau_x^2 - \tau_x^1$. An analogous expression describes the foreign tariff chosen under the escape clause.

Negotiated and Escape Clause Tariffs Compared

A comparison of (6) and (7) reveals that there are two distinct reasons for a positive escape clause response (i.e., $\tau_x^2 - \tau_x^1 > 0$). First, the larger shock associated with the escape clause decision (α_L as opposed to α_H) increases the marginal benefit to the home government of a higher tariff $[(\gamma_x - 1)Q_x + N_x \times g_x'(\cdot)]$ beyond its level at the time of the original (stage-1) tariff negotiations. And second, at the time of the escape clause decision the marginal cost of additional protection ($D_x \times \eta_{p_x}^{D_x}$) appears lower, as the government now ignores the production distortions ($Q_x \times \eta_{p_x}^{Q_x}$) that its tariff choices induce.

This discussion suggests a basic empirical distinction between negotiated and escape clause tariffs that should arise if GATT's rules are providing governments with a way to make commitments to their private sectors which they could not make in the absence of these rules. That is, while negotiated tariff levels should be *negatively* related, ceteris paribus, to the production distortions they cause [as captured by the term $Q_x \times \eta_{p_x}^{Q_x}$ which enters negatively in the expression for τ_x^1 in

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[9] It can further be shown (see Bagwell and Staiger, 1999) that such a requirement can be given an interpretation along the lines of GATT's norm of *reciprocity*, which neutralizes terms-of-trade movements associated with trade policy choices by calling for tariff adjustments that lead to equal changes in import and export volumes.

(6)], the escape clause tariff response (i.e., $\tau_x^2 - \tau_x^1$) should be *positively* related, ceteris paribus, to the size of the associated production distortion [as indicated by the absence of the term $Q_x \times \eta_{p_x}^{Q_x}$ in the expression for τ_x^2 in (7)]. This observation reflects the basic point that, by permitting a country to temporarily suspend its GATT obligations when adjustment costs are sufficiently high, GATT's escape clause provides each member-government with the flexibility to respond to an unexpected shock but also with the opportunity in this circumstance to reverse any impacts that GATT obligations may have had on the ability to make commitments to the private sector. Our empirical investigation will focus on this simple observation.

2.3   The Failure of GATT Rules to Enhance Credibility

How might GATT rules *fail* to enhance the credibility of trade policy decisions? And what would constitute empirical evidence to this effect? There are two possibilities which we now briefly discuss. A first possibility is that GATT rules are simply not needed for this purpose, as governments have found other means to secure the credibility of their trade policy programs. A second possibility is that, while governments could gain from additional means to enhance their credibility, GATT rules are ineffective for this purpose. We consider each in turn.

The first possibility may be captured in the framework outlined above by supposing that the government makes any stage-2 trade policy decisions *before* the resource allocation decisions of the private sector. Such a timing assumption would reflect the view that, even with GATT rules suspended under the escape clause, governments have the ability to commit through other means to trade policy decisions in advance of the resource allocation decisions of the private sector. Under this timing assumption, the domestic ad valorem stage-1 negotiated tariff will still be given by (6), but now the stage-2 escape clause tariff will be characterized by an expression analogous to (6) as well, with the only difference between the two tariff choices being that the former embodies the smaller shock (α_H) while the latter embodies the larger shock (α_L). Hence, if governments find trade policy commitments feasible independent of the application of GATT rules, then both negotiated tariffs and escape clause responses should be negatively related to the production distortions they induce.[10]

It is also possible that GATT rules are simply ineffective in enhancing the credibility of government trade policy decisions. This would be the case if the threat of costly dispute settlement procedures and possible retaliation from trading partners in response to violation of GATT rules were largely empty. Here, GATT rules might not stop governments from reconsidering in stage 2

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[10] Inspection of (6) confirms this negative relationship for negotiated tariffs. For the escape clause response, which is an increment to the negotiated tariff in light of higher-than-anticipated adjustment costs, this negative relationship can be confirmed under mild regularity conditions.

their stage-1 tariff choices even when the escape clause cannot be legitimately invoked. In the limit, as all such threats become empty, the ability of a government to reconsider its trade policy decisions would be effectively unconstrained by GATT rules, and an expression analogous to (7) would characterize both stage-1 and stage-2 tariff choices. In this case, neither the negotiated tariffs nor escape clause responses will show any sensitivity to the production distortions they induce.

2.4   Summary

Gathering these theoretical results together, it is now apparent that observations on negotiated and escape clause tariffs can be used to draw inferences about the extent to which GATT rules help governments make domestic commitments. In particular, evidence that both negotiated tariffs and escape clause responses are *unrelated* to the magnitudes of the production distortions they induce would be consistent with the view that GATT's rules are weak and ineffective and that governments are unable to make domestic commitments (with or without these rules). Alternatively, evidence that both negotiated tariffs and escape clause responses are *negatively* related to the magnitudes of the production distortions they induce would be consistent with the view that GATT's rules are irrelevant from the point of view of domestic commitments and that governments have found other means of securing commitments with regard to their private sectors. And finally, evidence that the negotiated tariffs are *negatively* related and that escape clause responses are *positively* related to the magnitudes of the production distortions they induce would be consistent with the view that GATT's rules do indeed provide governments with an ability to commit that they would otherwise not possess.

3.   EMPIRICAL METHODOLOGY

We now use the theoretical results of the previous section to motivate the basic empirical relationships which we will investigate. We consider first the exclusion decisions of the Tokyo Round (we focus here on exclusions from the tariff-cutting rule, though analogous statements apply to exclusions from the staging rule).

   As noted in the Introduction, the negotiated tariff reductions of the Tokyo Round were determined in two steps. First, a general formula for lowering each country's tariff bindings across all product categories was adopted; and second, faced with the implication of applying formula cuts across the board, each government then chose to exclude certain product categories from the general formula cuts and to substitute alternative tariff changes for these products. When added to the tariffs implied by the formula cuts, the Tokyo Round exclusions determined the final outcomes of the negotiations. According to our theory, if GATT's rules were helping governments commit to trade policy

decisions then these final negotiating outcomes should correspond to τ_x^1 as defined in (6).

However, rather than trying to explain the final negotiating outcomes of the Tokyo Round, we wish to focus instead on the exclusion decisions themselves, as these decisions confronted governments with choices very similar to those they would face under the escape clause, i.e., whether or not to offer protection to an industry that faces the prospect of substantial adjustment costs/injury. If the Tokyo Round exclusion decisions can be interpreted as a response to the anticipated adjustment costs/injury implied by the formula cuts, then we can use (6) to disentangle the final negotiating outcome into two component parts, one [corresponding to the first term on the right-hand side of (6)] which represents the tariff implied by a hypothetical "formula cut," and the other [corresponding to the second term on the right-hand side of (6)] then representing the Tokyo Round exclusion. According to this interpretation, the formula cut delivers a tariff, $(\gamma_x - 1) \times Q_x / [D_x \times \eta_{p_x}^{D_x} + Q_x \times \eta_{p_x}^{Q_x}]$, which by (6) would be optimal in the absence of concerns about adjustment costs [i.e., when $g_x'(\cdot) \equiv 0$].[11]

Denoting by τ_x^R the home-country's Tokyo Round ad valorem exclusion, we may then use (6) to express this exclusion as

$$\frac{\tau_x^R}{1 + \tau_x^R} = \frac{N_x \times g_x'(\hat{w}_x)}{D_x \times \eta_{p_x}^{D_x} + Q_x \times \eta_{p_x}^{Q_x}}, \tag{8}$$

where it is understood that the right-hand-side magnitudes are evaluated at τ_x^1 and α_H. If we use expression (8) to compare exclusion decisions across hypothetical import-competing industries, we can infer that the industries receiving the most substantial exclusions from the formula tariff cuts will be those industries in which (i) the government cares most strongly about preventing adjustment costs/injury, (ii) the largest numbers of workers suffer the greatest wage reductions as a result of the round, and (iii) product demands and supplies are the least responsive to price movements.

Recalling now that the commitment which is hypothetically made possible by GATT rules simply allows the government, when selecting a negotiated tariff, to take account not only of the consumption distortions induced by its tariff choice but of the production distortions induced by its tariff choice as well, it is evident from (8) that the government's ability to commit when making its Tokyo Round

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[11] This interpretation would imply an additional empirical relationship once the determinants of γ_x are specified. For example, if the domestic government sought to maximize national surplus with its tariff policy, then we would have $\gamma_x = 1$, and this would imply that the formula cut should be designed to reduce $\bar{t}_x$ to zero, from which the domestic government could then contemplate an exclusion on the grounds of adjustment costs. Alternatively, if the domestic government valued channeling national surplus toward producers in sector x, then we would have $\gamma_x > 1$, and so the formula cut would be designed to preserve a positive level of protection in sector x, from which the domestic government would again contemplate an adjustment-cost-based exclusion. Similar statements might be derived with respect to the general staging rules and their exclusions. However, while the determinants of γ_x and an explanation of the general formula cuts and staging rules are interesting topics in their own right, they are not the focus of this paper.

exclusion decisions will be signaled by an inverse relationship, ceteris paribus, between its selected exclusions across industries and $Q_x \times \eta_{p_x}^{Q_x}$, the price-responsiveness of industrial supply (which would be treated as zero absent the ability to commit). This observation can be given a very simple empirical representation under the further assumptions that demands take a constant-elasticity (η) form, and that the labor adjustment-cost parameter λ is distributed uniformly. Under this last assumption, the inter-sectoral labor supply elasticity becomes unity, allowing (8) to be written in the form

$$\frac{\tau_x^R}{1 + \tau_x^R} = \frac{N_x \times g_x'(\hat{w}_x)}{D_x \times [\eta + \theta_x]}, \tag{9}$$

where $\theta_x \equiv [\hat{w}_x N_x]/[\hat{p}_x D_x]$ or, equivalently, θ_x is the elasticity of industry-x output with respect to employment weighted by the ratio in industry-x of output to consumption. The implication of the assumed ability to commit embedded in the derivation of (9) is embodied in the presence of the term θ_x, which would be absent were the government unable to commit to its exclusion decisions in advance of the resource allocation decisions of the private sector. Accordingly, ceteris paribus, an inverse relationship between the magnitude of the Tokyo Round exclusions and θ_x can be interpreted as evidence of government commitment, as this signals that the government is least likely to offer exclusions from the Tokyo Round formula cuts in industries where the induced production distortions are, relative to the associated consumption distortions, the most prominent.

With (9) serving as motivation, we evaluate the US government's ability to commit to its Tokyo Round exclusion decisions by estimating the parameters of the simple linear relationship

$$\tau_x = \beta_0 + \beta_1 n_x + \beta_2 c_x + \beta_3 \theta_x + \beta_4 \Gamma_x + \varepsilon_x, \tag{10}$$

where τ_x is the US ad valorem Tokyo Round exclusion for industry x, n_x is production worker employment in industry x as a fraction of production worker employment in total manufacturing, c_x is "consumption" (domestic absorption) of industry x as a fraction of GNP, θ_x is the industry-x production worker wage bill divided by the value of industry-x consumption, Γ_x is a vector of variables that depict the strength of the government's concern for preventing adjustment costs/injury in industry x, the β's denote parameters to be estimated, and ε_x is assumed to be a classical disturbance term. On the basis of our earlier theoretical discussion, we expect β_1 to be positive whether or not the US government was able to commit to its exclusion decisions, as in either case the prospect of injury to a greater fraction of US production workers should have evoked, all else equal, a greater tariff response. Similarly, we expect β_2 to be negative independent of the ability of the government to commit, as products that loom large in consumption should in any event receive, all else equal, less protection. However, we expect β_3 to be negative if and only if the US

government was able to commit to its exclusion decisions in the Tokyo Round (and we expect it to be zero otherwise), as only under commitment will a government be less willing to provide exclusions where the production distortions associated with doing so would be highest.

Turning now to the US escape clause decisions, we noted earlier from (7) that GATT's escape clause provides each member-government with the flexibility to respond to an unexpected shock but also with the opportunity in this circumstance to reverse any impacts that GATT obligations may have had on the ability to make commitments to the private sector. Hence, if we view (10) as continuing to provide the basis for an explanation of government tariff choices in response to a shock, the central difference when (10) is estimated with observations on US escape clause decisions rather than Tokyo Round exclusion decisions should be with regard to β_3.

In particular, on the basis of our theoretical discussion there are three inferences that can be drawn depending on the estimated sign of β_3 under the escape clause in light of the estimated sign of β_3 under the Tokyo Round exclusions. If β_3 is estimated to be negative under the Tokyo Round exclusions, then a negative value for β_3 under the escape clause would be consistent with the view that the US government found commitments possible even absent GATT rules, and consequently that GATT rules provided no additional commitment ability in our sample. By contrast, if β_3 is estimated to be negative under the Tokyo Round exclusions but is found to be positive under the escape clause, then this would be consistent with the view that GATT rules can help governments make commitments, as it would imply that the lifting of these rules under the escape clause led the US government to reverse the relationship between tariffs and production distortions that the rules had facilitated. Finally, if β_3 is estimated to be zero under both Tokyo Round exclusion and escape clause decisions, then this would be consistent with the view that GATT's rules are weak and ineffective and that governments have difficulty making trade policy commitments with or without GATT. We now turn to our estimation results, beginning with the US Tokyo Round exclusions.

4. ESTIMATION RESULTS FROM THE TOKYO ROUND

In this section we estimate (10) with data on US exclusion decisions in the Tokyo Round. A complete list of data sources is provided in the Appendix. We first consider the extent to which US industries were granted exclusions from the general formula Tokyo Round tariff cuts. We then turn to an analysis of the US decisions to grant exclusions from the general staging rules of the Tokyo Round.

With regard to US exclusions from the general formula Tokyo Round tariff cuts, we have constructed ad valorem exclusion measures for 199 four-digit SIC sectors. To see how the exclusions are calculated, consider a product whose pre-Tokyo Round ad valorem tariff was 14 percent. According to the general tariff-cutting formula adopted in the Tokyo Round (the "Swiss rule"), this product

would receive a 7 percentage point reduction in its ad valorem tariff. If, say, the actual tariff change emerging from the Tokyo Round for that product was a 3 percentage point reduction in the pre-Tokyo-Round ad valorem tariff, then the ad valorem exclusion from the general formula cut for that product would be 4 percentage points. With the exclusions calculated in this way, US trade weights for 1980 were then used to aggregate the product-level exclusions to the four-digit SIC level. A common practice in the Tokyo Round was for a country to offer negative exclusions on low-tariff products as a way of maintaining deep average cuts in the face of exclusions in other sectors. In light of this, it might be argued that a separate model would be appropriate to explain the exclusion decisions on low-tariff products. We thus restrict our sample to four-digit sectors with ad valorem pre-Tokyo Round tariffs greater than 5 percent, leaving a total sample size of 199 sectors. This sample selection also provides a "minimum injury" standard associated with the general formula cuts: all sectors in the sample faced formula tariff cuts of no less than 1.3 percentage points.[12]

In estimating (10) for the four-digit SIC Tokyo Round exclusions, 1978 values at the four-digit SIC level were used for all explanatory variables, on the grounds that this was the most recent year of data that could enter into decisions that were completed in 1979. As noted in the previous section and embodied in (10), the explanatory variables by sector suggested by our theory include the ratio of production worker employment to total manufacturing production worker employment ($n_x \equiv PREMP$), the ratio of consumption to national income ($c_x \equiv CONS$), the ratio of the production worker wage bill to consumption ($\theta_x \equiv COMMIT$), and a set of variables that depict the strength of the government's concern for preventing adjustment costs/injury in each sector (Γ_x).

We experiment in our representation of Γ_x with a number of political variables discussed by Baldwin (1985), in an effort to account for variation across industries in the degree to which the US government may have been motivated to prevent injury associated with trade liberalization. These include a measure by industry of establishment size ($ESTSIZE$), four-firm concentration ratio ($CONCEN$), value-added share of output ($VALOUT$), and import penetration ratio ($IMPEN$). Baldwin (1985) argues that industries with low import penetration ratios are unlikely to be viewed by government officials as attractive candidates for protection, implying that the expected sign of the coefficient on the political variable $IMPEN$ is positive. However, Grossman and Helpman (1994) have observed that this relationship may in fact be negative, as high import penetration in an industry can imply that the cost to domestic consumers from protection will be relatively large as compared to the political payoff from helping domestic producers. Inclusion of the variable $VALOUT$ is

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[12] While we do not present results on the full sample, they are roughly equivalent. Below we do present results that account for the sample selection process.

motivated by the ''pressure group'' model of tariff determination (Olson, 1965), on the basis of the observation that the smaller an industry's value-added share of output, the larger is the percentage change in factor rewards associated with a given tariff change (assuming fixed prices of intermediate inputs), and thus the greater the industry's incentive to fight for protection. Thus, the expected sign of the coefficient on the political variable $VALOUT$ is negative. Also, according to the pressure group model, variables such as $ESTSIZE$ and $CONCEN$, which are related to the ability of an industry to internalize free-rider problems, should be important determinants of industry protection. According to this argument, the coefficients on $ESTSIZE$ and $CONCEN$ are expected to be positive. However, under the ''adding machine'' model as put forth by Caves (1976), governments are more concerned with protecting industries composed of a large number of small firms than industries which are highly concentrated, suggesting that the coefficients on $ESTSIZE$ and $CONCEN$ should be negative. As each of the foregoing observations is subject to various qualifications, we have no strong prior beliefs on the signs of the associated coefficients for these variables, and we will report estimates of the central parameters of interest (β_1, β_2 and β_3) both with these political variables included and in their absence.

Table 1 presents the results of estimation for the US exclusions from the general formula Tokyo Round tariff cuts. Column 1 presents ordinary least squares (OLS) estimates of the parameters of (10) with all variables expressed in levels, column 2 presents estimates of (10) when all variables are expressed in logs, and column 3 provides parameter estimates when $COMMIT$ is entered in level form and $PREMP$ and $CONS$ are entered as logs, as would be suggested by (9) expressed in log form provided that the elasticity of demand η is close to one (for the estimates presented in column 3, the remaining variables are entered as levels). A first observation is that the parameter estimates vary substantially across specifications. When (10) is estimated on levels (column 1), none of the parameter estimates are statistically different from zero at standard confidence levels, suggesting that the theory motivating (10) misses the central features of what went in to the Tokyo Round exclusion decisions. However, when estimated in logs (column 2), most parameters are estimated to be statistically different from zero, and the parameters of primary interest are each significant and of the theoretically expected sign in light of (9). Moreover, many of the coefficients on the political variables shown in column 2 are also significant, and take signs that are typically found by earlier researchers in this area (see Baldwin, 1985).

Of particular interest across the three specifications is the parameter estimate on $COMMIT$. This coefficient is found to be negative and significant when the other economic variables $PREMP$ and $CONS$ are also significant and of the theoretically expected sign (column 2). This result lends some support to the view that Tokyo Round exclusion decisions were made with commitment. In particular, when the economic model guiding our empirical exercise finds *any* support in the data, it does so in a way that is consistent with the conclusion that

TABLE 1   TOKYO ROUND EXCLUSIONS FROM GENERAL FORMULA CUTS*

Variable**	Eq. 1	Eq. 2	Eq. 3	Eq. 4	Eq. 5
CONSTANT	0.012	−0.027	0.012	−0.056	−0.043
	(1.49)	(−1.13)	(0.83)	(−2.77)	(−1.41)
COMMIT	0.007	−0.021	−0.057	−0.025	−0.021
	(0.16)	(−2.34)	(−0.96)	(−3.13)	(−2.42)
PREMP	0.604	0.016	0.009	0.017	0.017
	(0.51)	(2.39)	(1.55)	(2.56)	(2.37)
CONS	−1.258	−0.018	−0.009	−0.017	−0.019
	(−0.77)	(−2.86)	(−1.70)	(−2.73)	(−2.89)
VALOUT	−0.032	−0.013	−0.030	—	−0.009
	(−1.63)	(−1.53)	(−1.52)		(−0.99)
IMPEN	0.025	0.002	0.019	—	0.002
	(1.85)	(2.08)	(1.37)		(1.73)
ESTSIZE	0.016	0.008	0.016	—	0.007
	(1.44)	(3.26)	(1.48)		(1.99)
CONCEN	0.001	−0.005	0.001	—	−0.005
	(0.37)	(−1.17)	(0.58)		(−0.92)
R^2	0.05	0.15	0.06	0.05	—
Obs.	199	199	199	199	345

*Dependent variable: ad valorem exclusion from Tokyo Round general formula cuts.
**See text for variable descriptions and differences among equations; t-statistics in parentheses.

the US government exhibited an ability to commit with regard to the private sector when it selected its exclusions from the Tokyo Round general formula cuts. To check that this conclusion is not sensitive to the inclusion of political variables for which our theory gives little guidance, we also estimated (10) in logs but excluding all political variables. The estimation results, contained in column 4 of Table 1, confirm that the presence or absence of political variables has virtually no impact on this conclusion. Despite the sensitivity across specifications, we therefore interpret the finding of a negative and significant coefficient on COMMIT in the (logs) exclusion equation as providing some support for the notion that the US government showed an ability to commit in its determination of exclusions from the Tokyo Round general tariff-cutting rules.[13]

[13] When the estimated coefficient on COMMIT is statistically significant in the Tokyo Round exclusions, it is also quite large from a quantitative point of view: the standardized beta coefficients on COMMIT in column 2 of Table 1 is −0.38. Finally, the White (1980) test rejects the hypothesis of no heteroskedasticity; when the standard errors are re-estimated using White's (1980) procedure that insures consistency under heteroskedasticity, the t-statistic for COMMIT drops slightly and becomes just insignificant at the 5 percent confidence level. However, if the model is re-estimated dropping four outlier observations, the results remain essentially unchanged, and the t-statistics conform to the results of Table 1, even when the standard errors are estimated using White's (1980) procedure.

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The OLS results presented in the first four columns of Table 1 ignore the possible effect that our sample selection procedure may have on the properties of the error term. We now re-estimate (10) in a censored regression framework to account explicitly for our selection of sectors with pre-Tokyo Round tariff rates in excess of 5 percent.

In particular, we use maximum likelihood techniques to jointly estimate the parameters of a selection equation and a regression equation, with the selection equation governing when the dependent variable of the regression equation is observed. The dependent variable of the selection equation is the pre-Tokyo Round ad valorem tariff, for which we have 345 four-digit SIC observations. While we experimented with various forms for this equation, our reported results specify this equation in the form of (10), with all variables measured in logs at their 1968 values (this year conforms to the year following the conclusion of the Kennedy Round, the set of multilateral tariff negotiations which shaped the structure of pre-Tokyo Round tariffs). The list of explanatory variables for this equation is the same as that used throughout our analysis of Tokyo Round decisions, with the exception of *CONCEN* which was not available for that year. The regression equation is simply the Tokyo Round exclusion equation as specified by (10), with the dependent variable observed only if the pre-Tokyo Round ad valorem tariff exceeds 5 percent. The error terms of the two equations are assumed to have a bivariate normal distribution.

The last column (column 5) of Table 1 reports the results of estimation of (10) for the Tokyo Round exclusion equation when all variables are measured in logs. For conformity with the rest of the table, we report only the parameters of the regression equation. Comparing these results with the analogous OLS estimates (column 2 of Table 1), it is apparent that accounting for the sample selection process has little effect on the parameter estimates of interest. In particular, the coefficient on *COMMIT* continues to be negative and significant even after accounting for the sample selection process.

As a second piece of evidence regarding the ability of the US government to commit to its Tokyo Round decisions, we now present estimates of (10) as applied to US decisions to grant exclusions from the general staging rules of the Tokyo Round. As noted previously, while a general staging rule was agreed upon (cuts were to be implemented in eight equal stages), the actual staging rule for many products was in fact quite different. In this way, the government in effect provided temporary relief from the negotiated tariff reduction in those sectors where the staging rule was substantially slowed from the general rule, e.g., textiles and steel. Hence, these decisions provide an additional set of observations upon which the ability of the US government to make commitments within the context of the Tokyo Round may be checked.

We measure these staging rule exclusions with reference to the percentage of negotiated Tokyo Round tariff cuts that were in place as of 1984, the midpoint of the eight-year general staging process. Table 2 presents the results of estimating (10) over the entire sample for which Tokyo Round tariff reductions

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TABLE 2   TOKYO ROUND EXCLUSIONS FROM GENERAL STAGING RULES*

Variable**	Eq. 1	Eq. 2	Eq. 3	Eq. 4
CONSTANT	0.310	0.073	0.262	0.319
	(9.18)	(0.49)	(3.15)	(4.26)
COMMIT	−0.147	−0.104	−0.900	−0.549
	(−0.66)	(−2.20)	(−2.68)	(−1.93)
PREMP	9.626	0.102	0.105	0.095
	(1.31)	(2.16)	(3.60)	(3.92)
CONS	−18.114	−0.117	−0.117	−0.107
	(−2.31)	(−2.98)	(−4.70)	(−5.07)
VALOUT	0.197	0.103	0.179	—
	(2.39)	(3.43)	(2.25)	
IMPEN	−0.058	−0.008	−0.110	—
	(−1.24)	(−1.45)	(−2.28)	
ESTSIZE	−0.011	0.013	0.012	—
	(−0.27)	(1.06)	(0.28)	
CONCEN	0.000	0.002	0.000	—
	(0.43)	(0.07)	(0.79)	
log(*L*)	153.22	162.40	164.24	159.69
Obs.	316	316	316	316

*Dependent variable: one minus percentage of negotiated Tokyo Round tariff reduction in place as of 1984.
**See text for variable descriptions and differences among equations; *t*-statistics in parentheses.

were implemented. Because the dependent variable is truncated below at zero and above at one, we estimate (10) as a two-limit Tobit. We note, however, that OLS estimates are virtually the same as the two-limit Tobit estimates which we present. As before, we present the specification in levels (column 1), in logs (column 2), and in the form suggested by (9) expressed in log form (column 3). As with the earlier results on exclusions from the Tokyo Round general tariff-cutting rules, there is evidence that the pattern of exclusions from the general staging rule reflects the government's ability to commit: the parameter estimate on *COMMIT* is negative and significant whenever the coefficients on each of the other economic variables *PREMP* and *CONS* are also significant and of the theoretically expected sign (columns 2 and 3). The signs of the estimated coefficients on the political variables are in some cases reversed from their signs in the estimates presented in Table 1, reinforcing further the concern that the parameter estimates are quite sensitive to specification issues. Nevertheless, as a check that our basic conclusion regarding the parameters of primary interest is not sensitive to the inclusion of political variables for which our theory gives little guidance, we again estimated (10) in logs but excluding all political variables. The estimation results, contained in column 4 of Table 2, confirm once

again that the presence or absence of political variables has little impact on this conclusion.[14]

Despite the sensitivity across specifications, we therefore interpret the results of Tables 1 and 2 as providing some support for the notion that the US government showed an ability to commit in its Tokyo Round exclusions decisions. We turn next to an examination of US escape clause decisions to see whether there is evidence that the US government was able to commit as effectively when GATT's rules were not in force.

5. EMPIRICAL RESULTS FROM ESCAPE CLAUSE ACTIONS

In this section we present the results of estimating (10) for escape clause decisions over the period 1975–1986. An immediate problem we face is that protective responses under the escape clause often take the form of quantitative restrictions. Rather than employing various elasticity measures to convert these to tariff equivalents, we simply treat the decision to offer protection under the escape clause as a 0/1 variable. We thus estimate (10) as a Probit model under the assumption that the likelihood of import relief is increasing in the size of the equilibrium tariff response as characterized by (10). Of the 40 escape clause decisions in our sample, 15 cases ended in some form of protection being granted, with protection being denied in the remaining 25 cases.

A second problem we face is that our sample of escape clause cases spans a dozen years, and therefore escape clause decisions may be influenced by additional dynamic considerations, such as changes in political preferences over time or business cycle conditions, which we did not need to consider in our estimation of the Tokyo Round exclusion equation. This suggests that the inclusion of a number of additional controls on the right-hand side of (10) might be warranted, such as the political party of the President at the time of an escape clause decision, the proximity of the escape clause decision to an election date, the value of the aggregate trade balance relative to GNP, and so on. We experimented with these and other measures, and found empirical support for the inclusion of only one additional right-hand-side variable when estimating (10) on escape clause data – a dummy (*REP201*) indicating whether the industry had filed a previous escape clause petition.

It should also be borne in mind that the escape clause is designed to allow governments to respond with temporary protective measures to greater-than-anticipated injury in import-competing sectors. This has two implications for our empirical analysis of escape clause protection. First, we need to include a measure of the sectoral shock as a right-hand-side variable when estimating (10), to control for shocks of different magnitudes hitting different sectors. We experiment with several different measures of *SHOCK*, employing both the

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[14] Again, there is evidence of heteroskedasticity, but the results do not change when the standard errors are re-estimated using White's (1980) procedure. Also the results do not change when a big outlier is removed from the sample.

change in industry import penetration ratio and the change in industry wage. And second, as a matter of interpretation, the explicitly temporary nature of escape clause protection might by itself keep to a minimum the resource allocation decisions that would actually hinge on this protection, thereby relieving governments of the need to consider the possibility of serious production distortions associated with their escape clause decisions at all. Such an interpretation cannot be ruled out, and it should be kept in mind as a potential caveat throughout this section. But it is made less compelling by the Tokyo Round staging rule exclusion results reported in the previous section. After all, the staging rule exclusion decisions amounted to protective measures of an explicitly temporary nature as well, and yet we found evidence there that the government was indeed sensitive to the potential production distortions associated with its trade policy decisions. As a consequence, a natural (but by no means the only) interpretation of a failure to find such evidence here is that the production distortions are still present but that the government's ability to account for them in its tariff decisions is lost in the absence of GATT's rules.

Measures of the explanatory variables were taken from the relevant four-digit SIC sector in which the petitioning industry belonged for the year prior to that in which the determination of escape clause protection was made. Unfortunately, these data are not tailored to the particular industries represented by each escape clause petition. While in principle such data could be collected from the published case reports, in practice the data published in these reports are irregular and incomplete. Moreover, it is not uncommon for the reports to provide four-digit SIC data when more detailed data are unavailable. Nevertheless, to check the robustness of our results with respect to this measurement problem, we have also constructed as complete a data set as possible from the individual reports and supplemented this with four-digit SIC data where necessary, and we will discuss our results with this alternative data set as well.

Finally, there is an important issue of sample selection. The 40 observations on escape clause decisions in our sample were not generated randomly, but were instead determined by the joint requirement that (i) the industry chose to file an escape clause petition under US law and (ii) the US International Trade Commission (ITC) found the industry to be facing serious injury or a threat thereof. If the random factors influencing the decisions at either of the first two stages are correlated with the error term in the tariff equation (10), as they would be for example if an unobserved industry characteristic influenced decisions at all three stages, then simple Probit estimators of the coefficients of (10) will be biased and inconsistent. We will attempt to go part way to address the issue of sample selection later in this section, but must in the end acknowledge this as an important caveat in interpreting our results.

Table 3 presents Probit estimates of (10) under the same three specifications as presented earlier in Tables 1 and 2 in the context of the Tokyo Round exclusions: in levels (column 1), in logs (column 2), and in the form (column 3) which is suggested by (9) – *COMMIT* in levels and *PREMP* and *CONS* in logs

TABLE 3   DETERMINATION OF ESCAPE CLAUSE PROTECTION*

Variable**	Eq. 1	Eq. 2	Eq. 3	Eq. 4	Eq. 5
CONSTANT	−8.78	4.74	6.91	1.77	2.37
	(−1.74)	(0.73)	(0.76)	(0.56)	(0.98)
COMMIT	191.64	6.32	24.57	0.29	—
	(2.39)	(1.74)	(1.47)	(0.34)	
PREMP	703.13	−0.39	0.77	0.28	1,178.96
	(0.60)	(−0.26)	(0.71)	(0.39)	(2.23)
CONS	2.49	2.80	0.42	0.17	−0.70
	(1.37)	(1.51)	(0.45)	(0.26)	(−1.55)
SHOCK	29.93	10.37	10.37	0.58	15.44
	(1.73)	(1.22)	(1.22)	(0.10)	(1.58)
REP201	9.56	3.13	1.31	0.90	2.21
	(2.32)	(2.11)	(1.97)	(1.84)	(2.18)
VALOUT	−65.88	−8.32	−13.67	—	−12.95
	(−2.40)	(−2.03)	(−2.09)		(−2.12)
IMPEN	28.00	2.32	4.71	—	2.37
	(2.47)	(1.98)	(1.84)		(1.25)
ESTSIZE	−28.40	−1.81	−1.44	—	−8.46
	(−2.06)	(−2.07)	(−0.62)		(−1.44)
CONCEN	0.04	−0.69	−0.02	—	0.01
	(1.03)	(−0.76)	(−0.80)		(0.25)
Obs.	40	40	40	40	40

*Dependent variable: 1 if escape clause protection imposed, 0 otherwise.
**See text for variable descriptions and differences among equations; *t*-statistics in parentheses.

(with political variables in levels). The variable *SHOCK* is measured as the change in import penetration ratio. Its coefficient is always of the expected sign, but never significant at the 5 percent level, though it is occasionally significant at the 10 percent level (this is also true when *SHOCK* is measured as the change in wage). The coefficient on the dummy variable *REP201* is always positive and typically significant, implying that industries which have previously filed an escape clause petition have a better chance of receiving protection. The coefficients on other political variables are typically significant, and again take signs that are typically found by earlier researchers in this area (see Baldwin, 1985). The coefficients on *PREMP* and *CONS* are often of the wrong sign but never significant. Most importantly, however, and in contrast to our Tokyo Round findings, the coefficient on *COMMIT* across escape clause equations is always positive and sometimes (column 1) significant. To see whether the estimated coefficient on *COMMIT* – and in particular the failure to find a negative coefficient – might be sensitive to the inclusion of political variables, in column 4 we estimate (10) in logs but excluding all political variables. The

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significance levels on all remaining variables drop, but the signs of the estimated coefficients remain as before and, in particular, there is no evidence that our failure to find a negative and significant coefficient on *COMMIT* in the escape clause equation is sensitive to the inclusion or exclusion of political economy variables.

While the consistent lack of significance across specifications of the coefficients on *PREMP* and *CONS* is discouraging and a cause for some concern, the absence of a negative and significant coefficient on *COMMIT* in any of our escape clause equations in Table 3 does offer some support for the view that the government lacks commitment ability under the escape clause procedure. Moreover, the presence of a positive and significant coefficient on *COMMIT* in one of the escape clause equations of Table 3 (column 1) indicates a lack of commitment in the escape clause decisions at the same time that it reinforces our earlier finding that the US government *was* able to make commitments to the private sector in the context of its exclusion decisions in the Tokyo Round. According to our theoretical results of section 2 and their interpretation in section 3, the results in column 1 of Table 3 would, in combination with the Tokyo Round exclusion results of Tables 1 and 2, provide strong evidence that GATT's rules help governments make domestic commitments.

Of course, in light of the poor performance of the variables *PREMP* and *CONS* and the mixed evidence in favor of a positive coefficient on *COMMIT* in Table 3, an alternative interpretation of our escape clause results is that *none* of the variables specifically identified by our model performs particularly well in the escape clause equation, and that therefore the model simply fails to capture what governments care about in determining escape clause protection. However, it is also possible that our small number of escape clause observations is incapable of revealing in a strong and consistent way the relatively subtle effects that we are looking for, but that more central features of the model would find support. One way to explore this possibility is to consider what additional structure might be imposed on the escape clause estimating equation under the basic hypothesis that the government cannot commit in the escape clause decision-making environment, and to ask whether there is more support for the economic model when this additional structure is imposed. A natural candidate in this regard would be to abstract from the more subtle interactions between escape clause decisions and previous Tokyo Round commitments that give rise to the prediction of a positive coefficient on *COMMIT* under the escape clause, and to simply impose on the escape clause estimating equation a restriction that the coefficient on *COMMIT* is zero, as would be the case in the absence of any interaction between escape clause and Tokyo Round tariffs if the government could not commit to its escape clause decisions.

The fifth column of Table 3 presents the results of estimating (10) on escape clause data (in levels) when *COMMIT* is dropped from the equation. Now, all coefficients take their theoretically expected signs. In particular, the coefficients on each of the economic variables *PREMP*, *CONS*, and *SHOCK* take their

expected signs, though only the coefficient on *PREMP* is significant. The insignificant coefficient on *CONS* is consistent with the empirical findings of other studies and reflects perhaps a greater concern with producer as opposed to consumer interests in setting escape clause tariffs. The uniformly poor performance of our *SHOCK* measures in the escape clause equations is not entirely surprising either; it may reflect the sample selection issues discussed above, that protection decisions under the escape clause are only made in cases where the ITC has determined that the industry is facing serious injury or an established threat thereof. In any event, we view the results in column 5 of Table 3 as providing some evidence in support of the economic model as applied to escape clause decisions under the assumption that the government cannot commit to these decisions. Together with the other results contained in Table 3, they suggest that the absence of a negative coefficient on *COMMIT* in the escape clause equation is not simply a reflection of a general failure of the theory to account for systematic features of the escape clause decision.

Nevertheless, our failure to find any evidence that escape clause decisions take account of the production distortions may reflect problems of measurement and sample selection. In the remainder of this section we attempt to address both problems.

The most serious potential measurement problem is that, as discussed in the previous subsection, measures of all explanatory variables have been taken from the relevant four-digit SIC sectors rather than from the ITC reports themselves. In Table 4 we re-estimate columns 1 and 5 of Table 3 using a data set constructed as completely as possible from data provided in the ITC reports. This alternative data set combines the four-digit SIC data with more disaggregated data found in the ITC reports. The Appendix contains a detailed description of how these data have been constructed.

Columns 1 and 2 of Table 4 present our results of estimating the escape clause equations with report-based measures of the explanatory variables. All equations are estimated in levels. Column 1 presents the results of estimating (10) with report-based data with *COMMIT* included, while column 2 drops *COMMIT* from the equation. The results in columns 1 and 2 of Table 3 are broadly similar to the escape clause results presented in columns 1 and 5 of Table 3. The estimated coefficients on the variables *REP201*, *VALOUT*, and *IMPEN* are of the same sign as before and are significant with roughly the same frequency. The estimated coefficients on *CONS*, *SHOCK*, and *CONCEN* continue to be insignificant as before. The main difference is that the estimated coefficient on *PREMP* when *COMMIT* is excluded from the regression is no longer significant at the 5 percent level, though it maintains significance at the 10 percent level (column 2 of Table 4). Most importantly, however, the estimated coefficient on *COMMIT* in column 1 of Table 4 is still positive, though its significance level has dropped. In short, our estimates with this more disaggregated data continue to provide no evidence that escape clause decisions are made with commitment while at the same time they continue to reinforce

TABLE 4   DETERMINATION OF ESCAPE CLAUSE PROTECTION: SENSITIVITY*

Variable**	Eq. 1	Eq. 2	Eq. 3
CONSTANT	−1.45	0.48	−8.81
	(−0.53)	(0.22)	(−0.42)
COMMIT	27.87	—	194.27
	(1.59)		(1.44)
PREMP	768.02	711.10	731.45
	(1.54)	(1.78)	(0.14)
CONS	−0.20	−0.50	2.50
	(−0.25)	(−0.94)	(0.34)
SHOCK	−0.40	0.38	30.74
	(−0.06)	(0.07)	(0.57)
REP201	1.78	1.42	9.73
	(2.29)	(2.22)	(1.48)
VALOUT	−14.97	−7.34	−67.01
	(−2.33)	(−1.84)	(−1.54)
IMPEN	6.60	2.52	28.38
	(1.82)	(1.20)	(1.57)
ESTSIZE	1.31	0.56	−29.00
	(0.80)	(0.40)	(−0.62)
CONCEN	−0.01	−0.01	0.04
	(−0.22)	(−0.46)	(0.20)
CONSTANT	—	—	−0.09
			(−0.35)
LRSHOCK	—	—	5.00
			(2.35)
ρ	—	—	0.00
			(0.00)
Obs.	40	40	63

*Dependent variable: 1 if escape clause protection imposed, 0 otherwise.
**See text for variable descriptions and differences among equations; *t*-statistics in parentheses.

(albeit weakly) our earlier finding that the US government *was* able to make commitments to the private sector in the context of its exclusion decisions in the Tokyo Round.

Finally, in an attempt to partially address the sample selection problem discussed above, we estimate a bivariate Probit model by full information maximum likelihood methods.[15] The model consists of two equations, one

[15] This estimator is based on Wynand and Bernard (1981). The estimation employs the software "Limdep," by W. Greene. The details of the estimation procedure are illustrated in Greene (1989, chapters 12 and 20). For computational simplicity, we are forced to neglect the self-selection problem in the sample of observations on which the ITC decides. Thus, our procedure yields unbiased and consistent estimates only if the error term in the ITC Probit equation is uncorrelated with the variables that determine the filing decisions of firms.

corresponding to the ITC injury determination and the other corresponding to the (President's) decision of whether or not to grant protection. The dependent variable for the first equation takes a value of one in the event of a positive injury determination by the ITC, and zero otherwise. The dependent variable for the second equation relates to the protection decision, and is defined as before; it is observed only if the ITC decision is positive. Our total sample consists of 63 escape clause decisions made by the ITC during the period 1975–1986, of which 40 were affirmative.

According to US law, the ITC must determine whether or not there has been serious injury as a result of imports, or the threat thereof. It is therefore natural to specify the ITC regression by including as right-hand-side variables alternative measures of the extent of injury and the change in imports. We measure the change in imports as the average percentage change in import penetration over the five years prior to the ITC decision (*LRSHOCK*). The regressions that we report below include only this explanatory variable (plus the intercept) in the ITC equations. We tried other measures of injury and a richer set of explanatory variables, but their estimated coefficients generally turned out to be insignificant or of the wrong sign; moreover, the results of interest (the coefficient on the variable *COMMIT* in the protection regression) were never affected by the specification of the ITC regression.

Column 3 of Table 4 reports the results of the joint estimation of the two Probit regressions. The first 11 coefficients refer to the protection equation and are based on the selected sample of 40 observations. The next two coefficients refer to the ITC equation, and are based on the full sample of 63 observations. The last estimated coefficient, ρ, is the correlation coefficient between the error terms. All variables are measured in levels. Column 3 in Table 4 is the analogue of column 1 in Table 3, with the variable *COMMIT* included in the protection equation. The estimated correlation coefficient is zero. As a result, the estimated coefficients of column 3 in Table 4 are nearly identical to those of column 1 in Table 3. The only difference is that the standard errors are much larger in the latter. As a consequence, almost all estimated coefficients turn out to be insignificant when the system is jointly estimated. Despite this fact, the results are robust to alternative initial conditions for the parameters and for the correlation coefficient.

While our robustness checks are limited by available data, we infer from the results of Table 4 that the broad findings reported in Table 3 regarding the escape clause are likely to be robust to measurement issues and to the sample selection problem. The strength of the evidence that the estimated coefficient on *COMMIT* in the escape clause equation is non-negative (and possibly strictly positive) does not appear to be particularly sensitive to the level of aggregation of the explanatory variables, or to whether the protection regression is estimated in isolation or jointly with the ITC decision. When viewed in light of the evidence presented in the previous section supporting a negative coefficient on *COMMIT* in the Tokyo Round exclusion equations, we interpret our escape

clause findings as suggesting that the commitment which governments evidently achieve under the rule of GATT is not easily achieved in its absence.

6.   CONCLUSION

The debate on rules versus discretion has received a great deal of attention in the theory of economic policy, in macroeconomics, public finance and trade policy. A central question is whether the institutional environment really matters, or whether instead the policy-maker's reputation can substitute for commitment. While there is a large theoretical literature addressing this question, to date there has been little empirical study of how relevant the distinction between rules and discretion is, and no study within the context of trade policy.

   Trade policy lends itself particularly well to an empirical investigation of these issues, for two reasons. First, as shown in section 2, the theory yields very sharp predictions of how trade policy chosen under discretion differs from that chosen under rules. Second, and perhaps more important, trade policy in the US is implemented under a variety of institutional arrangements. A major difference between some of these arrangements is the commitment technologies that they provide. Hence, by comparing the policies implemented within these different environments, one can examine whether or not the capacity to undertake binding policy commitments matters.

   We have attempted to do just that by comparing trade policy actions taken in the highly discretionary environment of escape clause decisions with those taken under less discretion within the context of the Tokyo Round. Our empirical results are mixed, but overall they provide some support for the view that GATT rules help member-governments make trade policy commitments to their private sectors. We find some evidence that the United States granted exclusions from the Tokyo Round general tariff-cutting rule less readily in sectors where higher tariffs were more likely to significantly distort production decisions. When we consider US exclusions from the Tokyo Round general staging rules, stronger support for this inverse relationship between exclusions and associated production distortions is evident. These findings are consistent with the view that, at least when GATT rules apply, governments are able to make trade policy commitments to their private sectors. By contrast, we find no evidence of an inverse relationship between US escape clause protection and the implied production distortions, and in fact find some evidence of a positive association, as would be implied if GATT rules are providing member-governments with a commitment device relative to their private sectors which the member-governments do not otherwise possess (and which is therefore lost when GATT rules are temporarily suspended under the escape clause). While our empirical results cannot be viewed as conclusive, they are nevertheless suggestive that GATT's rules do indeed help governments make domestic commitments.

7. APPENDIX

This appendix defines the variables and describes the data sources underlying our reported empirical results. We do not include sources for those variables, e.g., certain political variables, which we experimented with but did not report. With the exception of the ITC report-based data to be discussed below, all of the independent variables used in this study were constructed from data contained in the National Bureau of Economic Research (NBER) Immigration, Trade, and Labor Markets Data Files. This is an annual data set covering four-digit SIC manufacturing industries from 1958 through 1986, and more recently updated through 1994. A detailed description of the data is contained in Abowd (1990).

All independent variables in the Tokyo Round regressions were constructed using 1978 values (1968 values for the selection equation in the censored regression model), except for the four-firm concentration ratio which was available only for 1976. All independent variables for the escape clause regressions were taken from the four-digit industry (or industries) associated with the petition, with the year being that associated with the month 15 months prior to the ITC ruling date. Where a single petition spanned several four-digit SIC industries, we treated each four-digit industry as a separate Presidential decision on the grounds that the President did often distinguish among industries or products of a given petition in the final escape clause determination [e.g., Color TV (TA-201-19), and Non-Electric Cookware (TA-201-39)]. The rule for choosing the year associated with each escape clause petition reflects our attempt to generate pre-shock variables, and leads to independent variables which are measured generally one to two years prior to the year of the ITC ruling. We experimented with other rules, with no change in the results. The one exception to this rule was the four-firm concentration ratio which, as noted, was available only for 1976.

We also constructed an alternative data set for the escape clause regressions by combining four-digit SIC data with more disaggregated data found in the ITC reports. For 22 of our 40 observations, we collected measures of (apparent) consumption, sales, import penetration, change in import penetration, and establishment size directly from the relevant reports. We then supplemented the missing values with their four-digit counterparts. While data on production worker employment were also generally available from the ITC reports, the figure reported was total employment of production workers by firms involved in the petition, regardless of whether these workers were employed in the production of the products named in the petition. Thus, as an alternative to the four-digit production worker employment figures, we also constructed an employment series as the product of the ITC reported sales and the ratio of production worker employment to sales for the relevant four-digit industry, under the assumption that all production within a four-digit industry shares a common labor-to-sales ratio. As it turns out, our results were largely the same

regardless of which employment figure we used. We thus present results only with the four-digit employment figure. No consistent data on wages or concentration were available as an alternative to the four-digit data. The absence of wage (or payroll) data from the ITC reports also means that our variable *COMMIT* could not be constructed entirely from report data. However, in addition to the four-digit measure, we constructed a measure of this variable using four-digit wage data but with our report-based employment and consumption series. Again, our results were unaffected by the use of this alternative measure of *COMMIT*, and we report results using the four-digit measure of *COMMIT*. Finally, for each report-based data series we experimented with the last year of data available in each report and alternatively with the second to last year of data available, and found that it made no difference in our results. Thus, we present our findings with all variables corresponding to the last year of available data in the ITC report.

The dependent variables for the Tokyo Round regressions were constructed from World Bank data supplied to us by Kishore Gawande and Daniel Trefler. The exclusions from both the Swiss rule cuts and the general staging rule were constructed by beginning with line–item changes and aggregating up to the four-digit SIC level using 1980 US trade weights. The dependent variable for the escape clause regressions was constructed by assigning a zero to Presidential decisions which ended in no action or expedited adjustment assistance procedures, and a one otherwise. Our escape clause sample is limited to Presidential decisions involving manufacturing products during the period 1975 through 1986.

The variable definitions follow:

COMMIT	Ratio of production worker payroll to consumption.
WAGE	Average production worker wage, deflated by CPI.
PREMP	Ratio of production worker employment to total production worker employment in US manufacturing sector.
CONS	Ratio of shipments minus net exports to GNP.
VALOUT	Ratio of value-added to shipments.
IMPEN	Ratio of imports to consumption.
ESTSIZE	Average employment per establishment.
CONCEN	Four-firm concentration ratio for 1976.
SHOCK	Annual percentage change in *IMPEN* or *WAGE*.
REP201	Dummy variable that takes a value of one if a President has considered an escape clause petition from the industry before or during the sample period, and zero otherwise.

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