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RULES VERSUS DISCRETION IN TRADE POLICY: AN EMPIRICAL ANALYSIS

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ABSTRACT

We test empirically for evidence that government tariff-setting behavior depends on the degree of discretion with which policy-makers are endowed. We do this by studying government tariff choices under two distinct environments. One environment is that of tariffs set under the Escape Clause (Section 201 of the U.S. Trade Act of 1974). We argue that these decisions afford the government with ample opportunity to reoptimize, and with correspondingly little ability to commit. The other environment is the Tokyo Round of GATT negotiations and the determination of the set of exclusions from the general formula cuts. We argue that these decisions provided the government with a much diminished opportunity to reoptimize, and with a correspondingly greater ability to commit. Comparing decisions made in these two environments allows us to ask whether the degree of policy discretion has a measurable impact on trade policy decisions. Our findings suggest that it does.

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## 1. Introduction

An important determinant of the optimal setting of any (second-best) tariff policy is the degree to which the supply side of the economy can respond to the imposition of the tariff. This follows from the fact that a tariff is both a subsidy to producers and a tax on consumers of the import good, and therefore distorts two decisions. Thus, for instance, if a tariff is imposed to address an existing consumption distortion, its optimal setting will come closer to completely eliminating the consumption distortion the less are resources able to respond to the tariff (the smaller the production distortion it induces on the margin). If it is used to address an existing production distortion, the optimal tariff setting will come closer to leaving consumption decisions completely undistorted the less are resources able to respond to the tariff (the smaller the marginal impact of the tariff on the existing production distortion). In the presence of a trade distortion (the case of a large country), the optimal tariff will be higher the less are resources able to respond to the tariff (the lower the foreign import demand elasticity). And if a tariff is used to redistribute income, not only the costs of distorted production but, as is well known from Stolper-Samuelson and Specific Factors results, the redistributive impacts of the tariff as well may depend crucially on the ability of productive resources to respond.

All this suggests that governments may behave very differently when setting tariff levels depending on the degree to which the supply side of the economy is in a position to respond to the actual policy choice. An important determinant of the magnitude of this response is the timing of the government decisions relative to those of the private sector or, to put it

differently, the freedom with which the government can reoptimize once private decisions are made. In particular, resources that can move after observing the government policy action can condition their sectoral location decision on the observed tariff choice. On the other hand, resources that move simultaneously with or before the government tariff choice must base their decisions on the expected (rather than actual) policy; the sectoral allocation of these resources is then taken as given by the government when it chooses a tariff level. The greater are the government's opportunities to reoptimize, the greater is its degree of policy discretion relative to the private sector, and the greater is the proportion of factors that base their decisions on the expected government action, lowering the government's overall assessment of supply responsiveness when making its tariff decision.

Of course, in a repeated setting those factors of production that move prior to or simultaneously with the government tend to base their allocation decisions on expected tariff actions that turn out in equilibrium to be correct: hence, the government does not in fact find it possible to exploit the timing of its decisions to surprise the private sector. On the contrary, unless the government can credibly bind itself to a tariff policy which is not ex-post optimal, its timing "advantage" will turn into a liability: the government loses control of the private sector's expectations and remains trapped in a suboptimal time-consistent tariff equilibrium.

It is this logic that underlies much of the recent literature on the efficacy of rules versus discretion in trade policy. For example, Staiger and Tabellini (1987) have analyzed the costs of policy discretion when a government attempts to use tariffs as a redistributive tool. Lapan (1988)

has characterized the equilibrium when a large country attempts to impose its optimal tariff in a discretionary policy regime. And Staiger and Tabellini (1989) argue that, because of the second-best nature of most trade policy intervention, the issue of credibility is likely to be an important determinant of the extent as well as the efficacy of trade policy in most environments.

In addition to the small body of theoretical literature on credibility and trade policy, there is a large amount of work on rules versus discretion in macroeconomic policy, generated by the seminal paper of Kydland and Prescott (1977). However, as is true of all the work on rules versus discretion, this literature is almost exclusively theoretical.<sup>1</sup> This is a serious omission, given the very sharp normative implications of this debate for actual policymaking. It is perhaps this omission that explains why some economists have suspended their judgment on the relevance of these issues, or have de facto ignored them in their research on economic policy.

In this paper we test empirically for evidence that trade policy depends on the degree of government discretion. We do this by studying government tariff choices in two distinct environments. One environment is that of tariffs set under the Escape Clause (Section 201 of the U.S. Trade Act of 1974). We argue that these decisions afford the government with ample opportunity to reoptimize, and with correspondingly little ability to commit. The other environment is the Tokyo Round of GATT negotiations and the determination of the set of exclusions from the general formula cuts. We argue that these decisions provided the government with a much diminished

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<sup>1</sup> Recent exceptions are Judd (1989) in public finance, Romer (1989) for monetary policy, and Edwards and Tabellini (1990) for monetary and fiscal policy.

opportunity to reoptimize, and with a correspondingly greater ability to commit. Comparing decisions made in these two environments allows us to ask whether different degrees of policy discretion have a measurable impact on trade policy decisions.

While we explore the effects of discretion in trade policy within the context of the Escape Clause, we feel that the issue is of much broader interest, especially in light of the recent literature on trade policy in the presence of imperfect markets. While much of this literature is concerned with various conditions under which activist trade policies are warranted, taken together the results of the literature suggest a second, more subtle, implication: the new activist trade policy, if it is to be pursued at all, must be pursued with discretion, judging each situation on a case by case basis.<sup>2</sup> As such, the current debate over the appropriate degree of activism in trade policy is unavoidably a debate over the appropriate degree of policy discretion as well. The results of our empirical analysis should thus be relevant to this broader debate.

The next two sections set out in some detail the theoretical framework discussed informally above. Section 4 motivates our empirical approach. Section 5 describes the Escape Clause and Tokyo Round tariff-setting environments, and argues that a crucial difference between the two is the degree of government discretion. Section 6 then discusses the data and

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<sup>2</sup> For instance, Dixit (1987) concludes "The current median view of the profession in this matter can be fairly characterized as (i) a recognition that the existence of imperfect competition does modify or overturn some conventional beliefs about trade policy, and (ii) an awareness that the design of policy to fit each situation requires close attention to its specific details. This suggests that research should be directed toward improving our understanding of the realities of some industries that are likely candidates for strategic trade policies."

presents our empirical findings. Section 7 concludes. Our data sources are described in the Appendix.

## 2. Credibility and Trade Policy

### 2.1 The General Framework

In this section we formalize the argument that the timing of tariff-setting decisions relative to private sector decisions matters. We begin by abstracting from distributional issues and consider a one-consumer economy, within the general framework laid out by Dixit (1985). The purpose of this section is to illustrate that the potential for credibility problems in trade policy is widespread. The next section focuses in detail on trade policy motivated by redistributive goals and derives the main testable implications of our theory.

Consider first a small open (one-consumer) economy that faces a given vector of world prices,  $r$ , and has exogenous domestic consumption and production distortions. The role of trade policy is to offset these distortions. Let the consumption and production distortions be summarized by the vectors  $\alpha$  and  $\beta$  respectively, and let  $\tau$  be a vector of specific tariffs. Then, the relationship between domestic prices, world prices, distortions and tariffs can be written as

$$(1) \quad p = r + \tau + \alpha$$

$$(2) \quad q = r + \tau + \beta$$

where  $p$  and  $q$  denote consumers' and producers' prices (in terms of a

numeraire commodity). Let  $E(l,p,u)$  be the expenditure function, with the numeraire good labeled by zero and its price normalized to unity, and with  $u$  the consumer's utility level. We assume for simplicity that all goods are traded. Define  $\pi(l,q)$  as the profit function with the same convention about the numeraire. Profits are assumed to be taxed at 100% so that consumer and producer prices can be independently normalized. All tax and tariff revenues are returned to the consumer lump sum. Using standard properties of the expenditure and profit functions, the equilibrium balanced trade condition can be written as

$$(3) \quad E_0 - \pi_0 + r \cdot (E_p - \pi_q) = 0$$

where subscripts denote derivatives.

Our timing assumptions are as follows. First sector  $i$  chooses a supply response to the vector of expected tariff choices of the government  $\tau^e$ . Next, or simultaneously with sector  $i$ 's choice, the government commits to its vector of tariffs  $\tau$ . Then, after observing  $\tau$ , sector  $i$  is permitted a dampened supply response to the difference between actual and expected tariffs, with the elasticity of sector  $i$ 's ex-post (after  $\tau$  is observed) supply curve being  $(1-\psi_i) \in [0,1]$  of its ex-ante (before  $\tau$  is observed) elasticity. All consumption decisions are made after the government tariffs are in place. Thus,  $\psi_i$  parameterizes the inflexibility of sector  $i$ 's supply decisions relative to the policy decisions of the government. If  $\psi_i = 0$ , all supply decisions are made after observing the governmental choice. In this case, the government can enter into binding policy commitments and there is no credibility problem. In the opposite extreme case,  $\psi_i = 1$ ,



all supply decisions are made before observing the policy, and the ex-post supply response is zero. More generally,  $1 > \psi_i > 0$ , in which case the ex-ante and ex-post supply responses differ. Accordingly, the ex-ante and ex-post optimal policies also differ.

Naturally, in equilibrium the expected tariff  $\tau^e$  coincides with the ex-post optimal policy, and the government fulfills those expectations. In the literature on rules versus discretion, this equilibrium policy has been called the "time-consistent" policy, or the "discretionary" policy. Throughout this section we will simply call it the equilibrium policy, to emphasize that it is the optimal government response under a particular assumption about the timing of moves.

Differentiating (3) and using (1) and (2) provides the key relationship from which the equilibrium tariff is determined:

$$(4) \quad (E_{0u} + r \cdot E_{pu}) du = (\alpha + r)' E_{pp} d\tau - (\beta + r)' [\pi_{qq} d\tau^e + (I - \psi) \pi_{qq} (d\tau - d\tau^e)]$$

where for simplicity  $\psi$  is taken to be a square diagonal matrix with  $i$ th diagonal element  $\psi_i$ , and  $I$  is the identity matrix of the same dimension. Throughout, primes will be used to denote transposes.

Under these timing assumptions, the government takes the expected tariff as given ( $d\tau^e = 0$ ) when it sets policy: the expected tariff only matters for those production decisions that have already been made (and hence can no longer be altered) when the actual policy is determined. Moreover, in equilibrium policy surprises are ruled out ( $\tau = \tau^e$ ). Thus, the equilibrium (ex-post optimal) policy is determined by:

$$(5) \quad (E_{0u} + r \cdot E_{pu}) du - (\alpha + \tau)' E_{pp} d\tau - (\beta + \tau)' (I - \psi) \pi_{qq} d\tau$$

The coefficient on the left hand side of (5) is the income effect on all commodities, and it can be shown to be positive. Hence, the change in utility as tariffs are changed has the same sign as the right hand side of (5). The terms  $E_{pp} d\tau$  and  $\pi_{qq} d\tau$  on the right hand side denote the consumption and production substitution effects respectively. Hence, the two terms on the right hand side reflect the welfare effect of moving consumption and production when there are distortions or tariffs.

According to equation (5), the equilibrium policy depends on the matrix  $\psi$  that parameterizes the degree of government discretion relative to that of private producers. The traditional case considered in the literature on optimal trade policy is a special case of (5): it corresponds to  $\psi=0$ , in which case the ex-ante and ex-post optimal policies coincide (i.e., the government can precommit in advance of all productive decisions). We now turn to a characterization of the equilibrium tariff response to production and consumption distortions when  $\psi_i$  is allowed to vary between 0 and 1 for all  $i$ .

## 2.2 Production Distortions

Consider first the use of tariffs to address a production distortion. The equilibrium tariff  $\hat{\tau}$  is given, using (5), by the solution to

$$(6) \quad \frac{du}{d\tau} = 0 = [E_{0u} + r \cdot E_{pu}]^{-1} [\hat{\tau}' E_{pp} - (\beta + \hat{\tau})' (I - \psi) \pi_{qq}]$$

or

$$(7) \quad \hat{\tau}' = \beta'(I-\psi)\pi_{qq} [E_{pp} - (I-\psi)\pi_{qq}]^{-1}$$

Thus, the equilibrium tariff policy is affected by the timing of the government move. In particular, if  $\psi=0$  so that no supply-side decisions need be committed until after the government tariff choice is observed, then (7) coincides with the traditional expression for the optimal tariff in the presence of a production distortion (see for example, Dixit, 1985). At the other extreme, if  $\psi=I$  so that all supply-side decisions must be made prior to or simultaneously with the government, the actual tariff set by the government will have no impact on the production distortion once expectations are given, and the equilibrium has  $\hat{\tau}=0$ : the tariff will be completely ineffective as a policy tool to correct production distortions.

### 2.3 Consumption Distortions

Consider next the existence of consumption distortions. This corresponds to the case where  $\alpha \neq 0$  and  $\beta=0$ . The equilibrium tariff  $\hat{\tau}$  is given, using (5), as the solution to

$$(8) \quad \frac{du}{d\tau} = 0 = [E_{0u} + r \cdot E_{pu}]^{-1} [(\alpha + \hat{\tau})' E_{pp} - \hat{\tau}' (I-\psi)\pi_{qq}]$$

or

$$(9) \quad \hat{\tau}' = -\alpha' E_{pp} [E_{pp} - (I-\psi)\pi_{qq}]^{-1}$$

Again, the equilibrium tariff is affected by the timing of the government decision. If the government has no opportunity to surprise the

supply side of the economy ( $\psi=0$ ), the equilibrium tariff coincides with that prescribed by the theory of optimal taxation (see again Dixit, 1985). At the other extreme, if the government moves after all supply-side decisions have been made ( $\psi=I$ ), then all production distortions introduced by the tariff will be ignored by the government in equilibrium, and  $\hat{r}' = -\alpha'$ : the equilibrium tariff completely eliminates the consumption distortions.

#### 2.4 Terms of Trade

Finally, consider the case of a large country wishing to exploit its monopoly power in trade and unconcerned about the possibility of retaliation. For simplicity we assume that the matrix  $\psi$  applies both domestically and in the rest of the world. The large country analogue to (4) is

$$(10) \quad (E_{0u} + r \cdot E_{pu}) du = (r+\alpha)' E_{pp} [dr+d\tau] - (r+\beta)' [\pi_{qq} (dr^*+d\tau^*) + (I-\psi)\pi_{qq} ((dr+d\tau) - (d\tau^*+d\tau^*))] - m \cdot dr$$

where  $m$  is the vector of net imports from the rest of the world, and where the world price vector  $r$  is determined by

$$(11) \quad E_p - \pi_q = \pi_r^{r^*ow} - E_r^{r^*ow}$$

with  $\pi_r^{r^*ow}$  and  $E_r^{r^*ow}$  the profit and expenditure functions, respectively, for the rest of the world. The large country analogue for (5) is then:

$$(12) (E_{0u} + r \cdot E_{pu})du = (\alpha+r)'E_{pp}(dr+d\tau) - (\beta+r)'(I-\psi)\pi_{qq}(dr+d\tau) - m \cdot dr$$

with

$$dr = [(E_{pp} + E_{rr}^{r^o w}) - (I-\psi)(\pi_{qq} + \pi_{rr}^{r^o w})]^{-1} \{ [(I-\psi)\pi_{qq} - E_{pp}]d\tau - [E_{pu} + E_{rr}^{r^o w}]du \}$$

A trade distortion is represented by the condition  $dr \neq 0$ ,  $\alpha=0$ , and  $\beta=0$ .

The equilibrium tariff is given using (2.12) by the solution to

$$(13) \quad \frac{du}{dr} = 0$$

which after manipulation yields

$$(14) \quad \hat{r}' = m' [(I-\psi)\pi_{rr}^{r^o w} - E_{rr}^{r^o w}]^{-1}$$

As before, the equilibrium tariff vector for a large country is affected by the timing of government moves, and will in general be higher the greater is the proportion of resources that must allocate prior to or simultaneously with the government tariff decision (the closer  $\psi$  is to 1). (See also Lapan, 1988).

## 2.5 Discussion

These three instances of equilibrium trade policy lead to the same broad conclusion. In equilibrium, the degree of discretion in government decisions relative to that of the private sector has a profound impact on the chosen tariff policies. In particular, the greater the government's

degree of discretion relative to the private sector, and therefore the greater the fraction of resources which move prior to or simultaneously with it (the closer  $\psi$  is to 1), the smaller will be the assessment of factor supply responsiveness ( $(1-\psi)\pi_{qq}$ ) implicit in the government's tariff choice. Naturally, the allocation of productive resources fully reflects the government policy even if the government moves after some productive decisions have been made. In other words, both the expected and the actual policy matter. However, in equilibrium the government does not take into account the effects of expected policies, but only those of actual policies. This discrepancy, between what the government takes into account and the overall effects of the (actual and expected) policy, increases with the extent of government discretion (i.e., with  $\psi$ ). Hence, the welfare properties of the equilibrium depend on the extent of government discretion: the larger is the degree of discretion, the less the government takes into account the full effects of the policy and, ceteris paribus, the lower is social welfare. For this reason, policy discretion can be counterproductive.

### 3. Credible Trade Policy and Income Distribution

We now study trade policy motivated by redistributive goals. As argued in the next section, the observed policy interventions that we exploit in our empirical test largely reflect this motivation. The model of this section generalizes Staiger and Tabellini (1987). We refer the reader to that paper for a more detailed investigation of credible trade policy in this framework.

### 3.1 The Model

Consider a small open economy with two traded goods and two inputs to production, labor and capital. Capital is immobile across sectors, and technology is homogeneous of degree one in both inputs. To simplify notation, we assume that both sectors share the same production function, and that each sector is endowed with one unit of capital. The production technologies are given by

$$(15) \quad i=f(N^i), \quad i=x,y, \quad f'(\cdot)>0, \quad f''(\cdot)<0,$$

where  $N^i$  = labor employed in sector  $i$ ;  $x$  = exported good; and  $y$  = imported good.

In each sector, firms combine labor with their fixed stock of capital, up to the point where the value of labor's marginal product is equated to the nominal wage measured in terms of any numeraire,  $W^i$ :

$$(16) \quad P^x f'(N^x) = W^x; \quad P^y (1+t) f'(N^y) = W^y$$

where  $P^x$  is the world price of the exported good,  $t$  is the ad valorem tariff on imports, and  $P^y$  is the world price of imports. Wages are assumed to be perfectly flexible so that (16) yields the nominal wage that clears the labor market in each sector.

Throughout this section, we consider the reaction of private agents and of the government to a shock that lowers the world price of good  $y$ . To simplify notation, let  $P^x=1$  and let  $P^y$  be the post-shock realization of the price of good  $y$ .

The aggregate supply of labor in the economy as a whole is assumed fixed and equal to  $\bar{N}$ . Labor is mobile between sectors, and reallocates in response to the shock on the basis of the expected intersectoral wage differential. We contrast equilibrium trade policy under two opposite timing assumptions. Under discretion, the government sets policy after all the workers in sector  $y$  have chosen whether or not to reallocate to the other sector based on the expected wage differential. By (16), the expected wage differential subsequent to the shock but prior to the policy action is:

$$(17) \frac{w^y{}^e}{w^x{}^e} = \frac{p^y (1+t^e) f'(N^y(t^e))}{f'(N^x(t^e))}$$

Under commitment, the timing is reversed: first the government irrevocably commits to a tariff. And then all the workers, having observed the policy, choose whether or not to reallocate from  $y$  to  $x$  based on the actual wage differential. In this case the actual wage differential is defined as in (17) with  $t$  replacing  $t^e$ . Consumption decisions are always made after the government policy is in place.

A crucial assumption of the model is that labor's intersectoral mobility comes only at a cost. Specifically, we assume that, whenever one unit of labor moves from one sector to the other, its marginal product falls by the fraction  $(1-\lambda)$ ,  $1>\lambda>0$ . These moving costs differ across individuals: the parameter  $\lambda$  is distributed uniformly on the unit interval across workers.

Consider the regime with discretion. Here, workers must make their sectoral allocation decision before observing the government action. Any



worker for which  $\lambda > W^y/W^x$  finds it optimal to reallocate from  $y$  to  $x$ . Let  $\bar{\lambda} = W^y/W^x$  be the marginal worker, who is just ex-ante indifferent between reallocating or not. It can be shown that  $\bar{\lambda}$  is an increasing function of the expected tariff,  $t^e$ . Intuitively, a higher expected tariff reduces the relative wage differential in sector  $x$ . Hence only the low moving-cost (high  $\lambda$ ) workers find it optimal to reallocate. Similarly, consider the regime with commitment, and let  $\bar{\lambda} = W^y/W^x$  be the marginal worker who is ex-post indifferent between relocating or not (i.e., after the tariff is in place). It can be shown that  $\bar{\lambda}$  is an increasing function of the actual tariff,  $t$ . The intuition is the same as above. Under either regime, equilibrium requires that  $t = t^e$ , and hence  $\bar{\lambda} = \bar{\lambda}^e$ .

Based on this notation, and the assumption that  $\lambda$  is uniformly distributed in the population, we can write the fraction of workers,  $n$ , who remain in sector  $y$  as  $\bar{\lambda}$  under commitment and  $\bar{\lambda}^e$  under discretion, respectively. To simplify the analysis, we express labor in efficiency units. Thus, the effective quantity of labor employed in each sector once the adjustment to the shock is completed is given by:

$$(18) N^y = \bar{\lambda} N_0^y$$

$$(19) N^x = N_0^x + N_0^y \int_{\bar{\lambda}}^1 -\lambda d\lambda = N_0^x + N_0^y (1 - \bar{\lambda}^2)/2$$

where  $N_0^i$  is the initial employment in sector  $i$ .

The remainder of the model is straightforward and is identical to that in Staiger and Tabellini (1987). Specifically, let  $I$  be national disposable income valued at domestic prices. Imposing the condition of

balanced trade at world prices, abstracting from domestic taxes, and assuming that the tariff is nonprohibitive, it follows that, subsequent to the shock

$$(20) \quad I = f(N^x) + P^y(1+t)f(N^y) + T,$$

where the tariff revenue  $T$  is defined by

$$(21) \quad T = t(C^y - f(N^y))P^y$$

$C^y$  being aggregate demand for the imported good  $y$ . Substituting (21) into (20), national income valued at domestic prices is given by

$$(22) \quad I = f(N^x) + P^y [f(N^y) + tC^y]$$

In order to focus on the redistributive consequences of tariffs for the labor allocation decision, we assume that the distribution of income is determined solely on the basis of the wage differential between the two sectors. Thus, income from capital and tariff revenues is distributed to each worker in proportion to the share of his labor income in the economywide wage bill. Define the income share variable,  $\varphi$ , as

$$(23) \quad \varphi^i = \frac{I^i}{I} = W^i/W \quad i=x,y,\lambda$$

where  $W$  is the average wage rate,  $I^i$  is total disposable income of a worker of the  $i$ th type (valued at domestic prices), and the superscripts  $x$ ,

$y$ , and  $y^\lambda$  denote workers originally in sector  $x$  who remain there, workers originally in sector  $y$  who remain there, and workers of type  $\lambda$  originally in sector  $y$  who move to sector  $x$ , respectively. Using the previous notation, and recalling that  $W^y \lambda = \lambda W^x$ , the average wage rate  $W$  under commitment is

$$(24) \quad W = \frac{N_0^x W^x + N_0^y W^y [\lambda + (1-\lambda^2)/2]}{\bar{N}}$$

Under discretion, the average wage rate is defined as in (24) with  $\lambda^0$  replacing  $\lambda$ .

Each worker consumes a bundle of  $x$  and  $y$ , chosen to maximize an identical homothetic utility function, subject to a standard budget constraint. The indirect utility function of a representative consumer of the  $i$ th type can be written in terms of the previous notation as

$$(25) \quad V^i = V(P^x, P^y, I^i), \quad i=x, y, y^\lambda$$

Letting  $V_p^i$  and  $V_I^i$  denote the partial derivatives of (25) with respect to  $P^y$  and  $I^i$ , respectively, the consumption of  $y$  on the part of consumers of the  $i$ th type can be expressed, using Roy's identity, as

$$(26) \quad C_y^i = - \frac{V_p^i}{V_I^i} = \phi^i C^y, \quad i=x, y, y^\lambda$$

The second equality follows from the assumption that the common utility function is homothetic.

Finally, the government is assumed to care about the three types of

workers in proportion to their frequency in the population. However, we allow the relative weights in the government objective function to be affected by political considerations, which we represent by the parameter  $\alpha^y$ . Thus, under commitment the government maximizes:

$$\bar{J} = (1-\alpha^y)N_0^x v^x + \alpha^y N_0^y \bar{\lambda} v^y + \alpha^y N_0^y \int_{\lambda}^1 v^y \lambda d\lambda$$

or, with normalization,

$$(27) J = \gamma v^x + \bar{\lambda} v^y + \int_{\lambda}^1 v^y \lambda d\lambda$$

where  $\gamma = \left(\frac{1-\alpha^y}{\alpha^y}\right) N_0^x/N_0^y$ . Under discretion the government maximizes a function analogous to (27), except that  $\bar{\lambda}$  is replaced by  $\bar{\lambda}^*$ . Note that a value of  $\alpha^y=1/2$  would correspond to a utilitarian social welfare function, while  $\alpha^y>1/2$  ( $\alpha^y<1/2$ ) implies that workers in sector  $y$  receive relatively greater (lower) weight in the government decision. The determinants of  $\alpha^y$  will be discussed in the following sections.

We assume the absence of any market mechanisms for reallocating the risk associated with the terms-of-trade shock. If such private insurance markets existed and worked perfectly, there would be no role for government intervention in the form of protection in our model. <sup>3</sup>

### 3.2 Equilibrium under Commitment

This subsection derives the equilibrium trade policy when the government can commit. Since the results here and in the next subsection

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<sup>3</sup> See Eaton and Grossman (1985) for a defense of this assumption, and Dixit (1987) for a criticism of it.

form the basis for our empirical work, we impose the simplifying assumption of logarithmic utility to ensure a reasonably simple form for the equilibrium tariff. The first-order conditions for a government optimum are:

$$(28) \quad \frac{dJ}{dt} = (V^y - V^y \bar{\lambda}) \frac{d\bar{\lambda}}{dt} + \frac{dV^x}{dt} + \lambda \frac{dV^y}{dt} + \int \frac{1}{\lambda} \frac{dV^y \lambda}{dt} d\lambda = 0$$

where we have:

$$(29) \quad \frac{dV^i}{dt} = P^y V_P^i + V_I^i \left[ I \frac{d\phi^i}{dt} + \phi^i \frac{dI}{dt} \right] - V_I^i \left[ I \frac{d\phi^i}{dt} + \phi^i \left( \frac{dI}{dt} - P^y C^y \right) \right]$$

The second equality in (29) follows from (26). The first term on the right-hand side of (29) captures the direct redistributive effect of the tariff on the  $i$ th individual. The remaining terms capture the effect on the  $i$ th individual's welfare due to the consumption and production distortions of the tariff.

After some simple algebra, we have:<sup>4</sup>

$$(30) \quad \frac{dI}{dt} - P^y C^y = \frac{P^y \tau}{1+\tau} [C^y + \eta^y]$$

where  $\eta^y$  is the elasticity of output supply in sector  $y$ . By the assumption that the workers' utility function is logarithmic:

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<sup>4</sup> Equation (30) has been derived from (22), (19), (18), and by exploiting the definition of  $\bar{\lambda}$  and the assumption of a logarithmic utility function.

$$(31) \quad V_I^i = \frac{1}{I^i} = \frac{1}{\varphi^i I}$$

Combining (29), (30) and (31), we obtain:

$$(32) \quad \frac{dV^i}{dt} = \frac{1}{\varphi^i} \frac{d\varphi^i}{dt} - \frac{P^y \tau}{(1+\tau)I} [C^y + y\eta^y]$$

Moreover, in equilibrium  $V^y = V^y \bar{\lambda}$  by definition of  $\bar{\lambda}$ . Hence, combining (30) and (31), we can rewrite the government first-order conditions as:

$$(33) \quad \gamma \frac{1}{\varphi^x} \frac{d\varphi^x}{dt} + \lambda \frac{1}{\varphi^y} \frac{d\varphi^y}{dt} + \int_{\lambda} \frac{1}{\lambda} \frac{1}{\varphi^y \lambda} \frac{d\varphi^y \lambda}{dt} d\lambda = \frac{\tau}{1+\tau} (1+\gamma) P^y [C^y + y\eta^y] \frac{1}{I}$$

The left-hand side of (33) is the marginal benefit of protection, taking the form of redistribution from high to low income workers. The right-hand side is the marginal cost of the tariff, net of tariff revenues, due to production and consumption distortions. At the optimum, the marginal benefit and the marginal cost of the tariff must be equal.

To complete the description of the equilibrium, it remains to discuss the effect of the tariff on the distribution of income. By (23) and (29), after some simplifications:

$$(34) \quad \frac{d\varphi^x}{dt} = - \frac{\varphi^y \varphi^x}{1+h} \frac{d\lambda}{dt} < 0; \quad \frac{d\varphi^y}{dt} = (1 - \frac{\lambda \varphi^y}{1+h}) \varphi^x \frac{d\lambda}{dt} > 0; \quad \frac{d\varphi^y \lambda}{dt} = - \frac{\lambda \varphi^y \varphi^x}{1+h} \frac{d\lambda}{dt} < 0$$

where  $h = N_0^x / N_0^y$  and the signs follow from  $d\lambda/dt > 0$ . Thus, a tariff redistributes in favor of those who remain in the injured sector.

Intuitively, if workers were to reallocate from  $y$  to  $x$  based on the expectation of no protection subsequent to the shock, then a surprise tariff would leave this labor allocation unaffected and would raise the value of labor's marginal product in sector  $y$  directly by raising the domestic price of  $y$ ; this, in turn, would increase  $W^y$  relative to  $W^x$ . However, in equilibrium, workers are not surprised by the government action, so that this redistributive effect is partially offset by the fact that fewer workers will leave the injured sector  $y$  subsequent to the shock, knowing that protection is forthcoming. Nevertheless, since moving costs  $(1-\lambda)$  differ across individuals by assumption, and since workers choose to leave the injured sector  $y$  in ascending order of moving costs (descending order of  $\lambda$ ), the fact that fewer workers leave sector  $y$  as a result of the tariff implies that the marginal worker who is just indifferent between staying in  $y$  and moving to  $x$  corresponds to a higher value of  $\lambda$  as a result of the government's tariff response (formally,  $d\lambda/dt > 0$ ). Hence in equilibrium the tariff succeeds in raising  $W^y/W^x$ , (which equals  $\lambda$ ) despite the induced effect on the allocation of labor.<sup>5</sup>

Combining (33) and (34), and simplifying, we obtain the equilibrium tariff under commitment:

$$(35) \quad \frac{t^c}{1+t^c} = \frac{(N^y/\bar{N})(1-\delta\phi^y)\eta^w}{(P^y M^y/I)\eta^{M^y}}$$

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<sup>5</sup> In this respect, the model differs from Staiger and Tabellini (1987), who assume a single value of  $\lambda$  for all workers, and hence conclude that under commitment trade policy can not affect the wage differential across sectors: in that model, the direct effects of the tariff are exactly offset by the induced smaller reallocation of labor from  $y$  to  $x$ .

where  $\delta = [(1+h(1-\alpha^y)/\alpha^y)/(1+h)]$  is a weight that reflects the government distributive goals,  $\eta^w$  is the elasticity of the equilibrium wage differential with respect to the tariff,  $M^y$  is imports of  $y$ , and  $\eta^{My}$  is import demand elasticity taken positively. It can be shown that  $\eta^w \leq 1$ : as noted above, the redistributive effects of protection are partially offset by the induced smaller reallocation of labor. The greater is labor mobility, the smaller is  $d\lambda/dt$ , and as a result the smaller is the elasticity  $\eta^w$ . Note also that a government maximizing a utilitarian social welfare function ( $\alpha=1/2$ ) would correspond to  $\delta=1$ , so that income equality (preserving the status quo) is the government's goal. However, if  $\alpha^y > 1/2$  ( $\alpha^y < 1/2$ ), then  $\delta < 1$  ( $\delta > 1$ ) and the government prefers income to be distributed unequally in favor of sector  $y$  (the rest of the economy).

Equation (35) conforms with intuition. The numerator refers to the marginal benefits of protection, in the form of income redistribution, which enhance government welfare. The marginal benefits of protection are higher the larger is the fraction of employment in the injured sector,  $N^y/\bar{N}$ , the greater is  $\alpha^y$ , the weight placed on the utility of an injured-sector worker, the greater is the extent of injury (the lower is  $\varphi^y$ ), and the greater is the elasticity of the wage differential with respect to the tariff  $\eta^w$  (because the greater is the redistributive impact of trade protection). The denominator refers to the marginal production and consumption distortions of the tariff, captured by the elasticity of import demand,  $\eta^{My}$ , weighted by the import share of national income. The greater these distortions, the smaller is the equilibrium tariff. Finally, for convenience in comparing the optimal tariff under commitment to that under discretion, we note that the assumption of logarithmic utility allows the



denominator of the right hand side of (35) to be written equivalently as  $(P^y M^y / I) \eta^{My} = (P^y C^y / I)(1 + \sigma^y \eta^y)$  where  $\sigma^y$  is the ratio of output to consumption in sector  $y$ . With this, we rewrite (35) as

$$(36) \quad \frac{t^c}{1+t^c} = \left[ \frac{(N^y / \bar{N})(1 - \delta \varphi^y)}{(P^y C^y / I)} \right] \left[ \frac{\eta^w}{1 + \sigma^y \eta^y} \right]$$

### 3.3 Equilibrium under Discretion

We next derive the trade policy implemented when the government cannot commit. In this case, labor allocates based on the expectation of the tariff, and prior to observing the actual policy. Hence, when the policy is chosen, the government is forced to treat the labor allocation as given. In terms of the previous notation,  $\dot{\lambda}^* / dt = 0$ . This has two effects on the government optimality conditions. On the one hand, the government neglects the production distortions induced by trade policy. Repeating the previous steps under the additional constraint  $\dot{\lambda}^* / dt = 0$ , we can rewrite the government optimality condition as in (33), except that  $\eta^y$  disappears from the right hand side (intuitively, the ex-post output elasticity is zero, since all production decisions have been made once the tariff is implemented). On the other hand, the redistributive effects of trade policy now appear greater, since the direct effects of the tariff on  $P^y$  are not partially offset by the smaller reallocation of labor from  $y$  to  $x$ . Specifically, by (23) and (24), we can rewrite (34) as:

$$(37) \quad \frac{d\varphi^x}{dt} = \frac{(\varphi^y)^2}{(1+t)(1+h)} < 0; \quad \frac{d\varphi^y}{dt} = \frac{\varphi^y [(1+h) - \lambda \varphi^y]}{(1+t)(1+h)} > 0; \quad \frac{d\varphi^{y\lambda}}{dt} = \frac{-\lambda(\varphi^y)^2}{(1+t)(1+h)} > 0$$

The signs of (37) and (34) are the same. But the expressions in (37) can be shown to be larger in absolute value than those in (34).

Combining (37) with the analogue of (33) for the regime with discretion, we obtain the equilibrium tariff when the government cannot commit:

$$(38) \quad \frac{\tau^d}{1+\tau^d} = \frac{(N^y/\bar{N})(1-\delta\phi^y)}{(P^y C^y/I)}$$

which has the same intuitive interpretation as (36).

### 3.4 Commitment versus Discretion

We now compare the equilibrium under discretion to that under commitment. By (38) and (36), there are only two differences. They both are due to the fact that the ex-post elasticities that are relevant under discretion differ from the ex-ante elasticities that matter when the government can commit. First, the ex-post elasticity of the wage differential is equal to unity. Hence,  $\eta^w=1$  in (38) but not in (36). This is because if the government cannot commit, it sets policy after the labor reallocation is completed. Hence, the redistributive effects of the tariff are not offset by a smaller reallocation of labor away from the injured sector, and the wage differential moves in the same proportion as the tariff. Second, the ex-post elasticity of output supply is zero. Hence,  $\eta^y=0$  in (38) but not in (36). Again, this is because under discretion the government sets policy after production decisions have been made.

Since under commitment  $\eta^w < 1$  and  $\eta^y > 0$ , equations (38) and (36) imply that  $t^d > t^c$ : the government provides more protection under discretion than under commitment. In equilibrium, however, the private sector correctly anticipates the trade policy decisions, so that any hope of actually using policy discretion to surprise the private sector is futile. Hence, the government welfare is higher with commitments than under discretion, since the latter equilibrium involves an excessive amount of protection. This and other normative issues are further addressed in Staiger and Tabellini (1987).

#### 4. Empirical Methodology

In this section we discuss the framework within which our assessment of the empirical importance of discretion in the determination of trade policy will be carried out. To motivate our empirical methodology, we employ the distributional assumption on  $\lambda$  to rewrite the expression for the optimal tariff under commitment in (36) as

$$(39) \quad \frac{t^c}{1+t^c} = \left[ \frac{(N^y/\bar{N})(1-\delta\varphi^y)}{(P^y C^y/I)} \right] \left[ \frac{1}{1/\eta^w + \sigma^y \theta^y} \right]$$

where  $\theta^y$  is the wage bill divided by the value of output in sector  $y$ . Comparing (39) with (38), the optimal tariff under commitment will lie further below its discretionary level the smaller is the ex-ante redistributive effect of the tariff ( $\eta^w$ ) and the larger the output share of consumption ( $\sigma^y$ ) and the wage bill share of output ( $\theta^y$ ). These last two effects can be understood by recalling that under commitment the

government takes into account the distortionary effect of its policies not only on consumption decisions but on labor allocation decisions as well, and through these on production decisions, while under discretion the government only takes into account the distortionary impact of its policies on consumption decisions; hence, the greater is the importance of labor in output ( $\theta^y$ ) and the greater is output relative to consumption ( $\sigma^y$ ), the greater is the impact of this difference on tariff choices in the two environments. Finally, under the assumption that  $f''(\cdot)$  is sufficiently close to zero,  $\eta^w$  takes on a value of approximately one.<sup>6</sup> With this last simplifying assumption, and taking logs of (38) and (39), the optimal tariff under discretion is given by

$$(40) \quad \ln\left(\frac{t^d}{1+t^d}\right) = \ln(N^y/\bar{N}) + \ln(1-\delta\varphi^y) - \ln(P^y C^y/I)$$

and under commitment given by

$$(41) \quad \ln\left(\frac{t^c}{1+t^c}\right) = \ln(N^y/\bar{N}) + \ln(1-\delta\varphi^y) - \ln(P^y C^y/I) - \sigma^y \theta^y$$

Thus, equations (40) and (41) suggest a simple test for whether the degree of policy discretion matters; namely, to check whether the last term on the right hand side of (41),  $\sigma^y \theta^y$ , enters as a significant explanatory

<sup>6</sup> Explicit calculation yields the following expression for  $\eta^w$ :  $\eta^w = \frac{f''(N^y) - f''(N^x)}{f'(N^y) + \lambda \frac{f''(N^y)}{f'(N^y)} + \lambda \frac{f''(N^x)}{f'(N^x)}}$ , with  $\eta^w$  approaching one from below as  $f''(\cdot)$  approaches zero. Thus, with  $f''(\cdot)$  close to zero, the difference between the optimal tariff under commitment and that under discretion is due primarily to the perceived difference in distortions (rather than redistributive effects) brought about by the tariff.

variable in the tariff choices. According to our theory, it should have a negative and significant coefficient only if the government can enter binding commitments. The next two sections describe how we carry out this test.

#### 5. Tariff-Setting under Section 201 and the Tokyo Round

In this section we argue that tariff decisions made under the Escape Clause and exclusions granted from formula cuts under the Tokyo Round correspond roughly to the model outlined in section 3, with the former decisions reflecting a high degree of government discretion relative to the latter. Our approach is to analyze decisions made in these two environments within the framework provided by (40) and (41) and to test for evidence that the degree of discretion matters in the determination of tariff policy.

In one sense, the determination of Escape Clause tariffs and the determination of exclusions from the Tokyo Round tariff-cutting rules represent the same conceptual experiment. In each case, an initial drop in the domestic price level for a particular sector had occurred (or was expected to occur), and the government was faced with a decision as to how to respond to this event. In the case of an Escape Clause decision, the initial drop in the domestic price level would not typically have been policy-induced (the 1974 act dropped the requirement existing in the Trade Act of 1962 that trade concessions be the major cause of increased imports). In the case of determining Tokyo Round exclusions, the (expected) price drop was a direct result of the agreed-upon (Swiss) tariff-cutting rule. In both cases, given the initial sectoral injury (or expected injury), the government was then faced with the decision of choosing a tariff response:

in the case of Escape Clause action the tariff response would be set directly, while in the case of the Tokyo Round exclusions the tariff response would be chosen indirectly by setting an exclusion from the agreed-upon tariff reductions. In both cases, the government could anticipate that any action it took would be met by reciprocal responses from foreign trading partners: Article XIX of the GATT provides for this explicitly in the context of Escape Clause actions (see Richardson, 1988), while the give and take between governments in arriving at exclusions from the Tokyo Round tariff cuts is well documented (see Baldwin and Clarke, 1987).

There are, however, three potentially important differences between these decision making environments. The first concerns differences in the constraints under which the government operated. The second concerns possible differences in the perception of the degree of permanence of the government decision in each case. And the third concerns the degree of government discretion in each case and the timing of government decisions relative to those of the private sector.

As to the first, in Escape Clause decisions the government was constrained not to lower tariffs below their current level. This constraint was absent when exclusions were determined to the Tokyo Round tariff-cutting rule. In fact, Baldwin and Clarke (1987) note that during the determination process the U.S. did offer "negative exclusions", i.e., tariff cuts which were of greater magnitude than the tariff-cutting rule, on a range of low-tariff products. We will attempt to control for this difference in the empirical work to follow by restricting our attention when considering the Tokyo Round exclusions to sectors in which pre-Tokyo round

tariffs exceeded five percent.<sup>7</sup> A related point concerns the possibility that the government could set exclusions from the Tokyo Round reductions with a more general equilibrium view in mind than would be possible in the context of the sector-by-sector decisions under escape clause actions. However, as Baldwin and Clarke (1987) note, "The procedure for determining what items would not be subject to the tariff-cutting rule and what withdrawals would be made in response to the other countries' exceptions was similar to traditional item-by-item negotiation." (p. 259, footnote 1.) This suggests that general equilibrium considerations were not an important element in the determination of exclusions from the negotiated tariff reductions of the Tokyo Round.

As to the second difference, the Tokyo Round exclusions, once set, were in principle not explicitly meant to be temporary, while an Escape Clause action is in principle an explicitly temporary measure, with its termination or decline contemplated from year to year. However, in practice, the differences in the duration of tariff responses under the two regimes is less pronounced. The mean duration of episodes of Escape Clause protection initiated since 1975 is approximately five years. The conclusion of the Tokyo Round negotiations in 1979 marked the seventh round of multilateral trade-barrier reductions that have been negotiated under GATT auspices since 1947, implying that the mean length of time between GATT rounds is between five and six years. Hence, in practice, the permanence of the government

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<sup>7</sup> Baldwin (1985) adopts a similar procedure.

decisions which we consider under the two regimes is roughly equivalent.<sup>8</sup>

This brings us to the third difference in the decision-making environment, that of the degree of government discretion with respect to the private sector. It is this difference that we attempt to exploit as the basis for our empirical work. In particular, the negotiated tariff reductions of the Tokyo Round, including exclusions from those reductions, were completed in 1979, and were implemented beginning in 1980 over a period of up to eight years. Thus, the determination of the exclusion from the general tariff-cutting rule was commonly known by the private sector well in advance of its actual implementation. Moreover, government reconsideration of these decisions requires the impacted industry to file an Escape Clause petition. Since the initial filing of a Section 201 petition involves substantial cost on the part of petitioners, the government's opportunity for reoptimization is quite limited in this setting. This in turn implies that, when determining the exclusions, the government would be making its tariff decision before the great bulk of resources affected by the decision would respond, and would have limited opportunity to reoptimize once private sector decisions were made.

The procedure for setting Escape Clause tariffs, on the other hand, offers the government ample opportunity to reoptimize once private sector

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<sup>8</sup> Still, one might argue that, with the Tokyo Round occurring twelve years after the previous (Kennedy) Round, decisions under the Tokyo Round were viewed as more permanent than those resulting from Escape Clause proceedings. As a partial control for this, we also consider exclusions from the agreed-upon general staging rule of the Tokyo Round, that is, exclusions from the schedule for implementing the negotiated tariff reductions. Since the general rule had tariff reductions staged in over eight years, the exclusions from this staging rule were explicitly temporary, and their timing mirrored quite closely that of Escape Clause tariff responses. As it turns out, our empirical results are broadly similar regardless of which Tokyo Round decision is analyzed.



decisions have been made. Because some degree of injury must precede the filing of a Section 201 petition which has any hope of getting to the President, many of the allocational decisions of the private sector are likely to be made by the time the President determines the tariff response.<sup>9</sup> Moreover, Escape Clause tariffs are automatically subject to annual review, providing additional opportunities for the government to reoptimize conditional on private sector decisions. Even a Presidential decision that protection is not in the national economic interest does not rule out a later opportunity to reoptimize; the law states that an industry may refile the same petition with the ITC provided that one year has elapsed since the ITC's previous report to the President concerning this petition.<sup>10</sup> Thus, the petitioner's cost of refiling is small, and the opportunity for reoptimization on the part of the government is accordingly large.

Note that this argument has nothing to do with whether Escape Clause actions have "surprised" the private sector more or less than the tariff exclusions under the Tokyo Round. In fact, in our theoretical work the equilibrium policy involves no surprise. The question is whether, in determining the policy, the supply responses were taken into account by the government equally under these two institutional environments.

This discussion leads us to conclude that the most significant difference between the environments within which Tokyo Round exclusions and

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<sup>9</sup> For example, in establishing the threat of serious injury, the law instructs the ITC to consider evidence of "a decline in sales, a higher and growing inventory, and a downward trend in profits, wages, or employment (or increasing underemployment) in the domestic industry concerned" (Public Law 93-617, 1975).

<sup>10</sup> The requirement that one year elapse since the petition was last filed can also be waived when the ITC determines that "good cause" exists.

Escape Clause tariffs were chosen appears to be the degree of discretion enjoyed by the government relative to the private sector. Hence, an analysis of the different tariff decisions made under the two regimes may provide evidence on the degree to which discretion matters in determining the character of trade policy. We turn next to the data and our empirical results.

## 6. Empirical Results

Our empirical strategy can now be easily described. We wish to estimate a version of (41) for tariff decisions made by the President under the Escape Clause and for exclusions granted from the formula cuts under the Tokyo Round. Our theory implies that the last variable in the right hand side of (41),  $\sigma^y \theta^y$ , should enter negatively and significantly only in the Tokyo Round exclusions, and not in the Escape Clause decisions. Rejecting this implication would mean that the government has found a way to cope with the credibility problems of policy discretion, through reputation or otherwise. A failure to reject this implication, on the other hand, would suggest that reputation is not a good substitute for commitment, and that policy discretion imposes a binding credibility constraint on trade policy.

However, in implementing this strategy we face a difficulty: we are not really committed to the assumptions about functional forms that are implicit in (41). Moreover, the theoretical model of section 3 treats as a "black box" the many political economy considerations which enter into our model through the parameter  $\alpha^y$ , and which are likely to be important in the actual determination of trade policy. We deal with this problem by checking if our results are robust across several alternative

specifications. In particular, we consider a number of variations on the simple linear equation

$$(42) \tau = \beta_1 + \beta_2 (N^y / \bar{N}) + \beta_3 (P^y C^y / I) + \beta_4 (\sigma^y \theta^y) + \beta_5 \Gamma + \epsilon$$

where  $\Gamma$  denotes a column vector of variables that proxy for the term  $(1 - \varphi^y \delta)$  in the theoretical model of (41),  $\beta_5$  is the corresponding row vector of coefficients, and  $\epsilon$  is a classical disturbance term.

As explained in section 4, the term  $(1 - \varphi^y \delta)$  reflects the government distributive goals. As a proxy we use the extent of injury (that is, how far relative income in the injured sector has fallen from its status quo) and a number of different political variables suggested by the existing literature on the political economy of trade policy.

According to our theory, the tariff response should be larger the greater the fraction of the labor force employed in the injured sector and the smaller is consumption of the injured sector good as a fraction of total expenditure, irrespective of whether the government can or cannot make policy commitments. Thus, we would expect  $\beta_2$  to be positive, and  $\beta_3$  to be negative, regardless of the government's ability to commit. Moreover, and also irrespective of the ability to commit, we expect the tariff response to be positively related to the extent of injury. However, since only under commitment does the government take into account the distortionary effects of its policies on labor allocation decisions and through these on production, the tariff response should be lower the greater is the importance of the wage bill in output and the greater is output relative to consumption only if the government can commit to its tariff

choices. We thus expect  $\beta_4$  to be negative under the Tokyo Round and zero under the Escape Clause procedure.

A complete listing of data sources is provided in the Appendix. While it was possible to obtain measures of ad valorem exclusions from the formula cuts negotiated under the Tokyo Round by 4-digit SIC manufacturing industry, Presidential 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 choose simply to treat the President's Escape Clause decision as a 0/1 variable, and estimate (42) as a Probit model for Escape Clause decisions. Of the 40 Presidential Escape Clause decisions in our sample, 15 cases ended in some form of Presidential action (other than expedited adjustment assistance reviews, which were counted as no action).

An important issue of sample selection is raised by the fact that the 40 observations of Presidential 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 and that (ii) the 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 (42), 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 (42) will be biased and inconsistent. In fact, in a study of ITC injury determination decisions relating to Escape Clause, Antidumping, and Countervailing Duty investigations, Hansen (1990) produced evidence of self-selection among industries filing for protection; the

likelihood of a positive ITC ruling was found to be a determinant of the industry decision of whether or not to apply. Nevertheless, it seems unlikely that sample-selection issues pose a serious problem at the Presidential decision stage, since self-selection in the filing decision is presumably more reflective of the likelihood of getting past the initial screening of the ITC than of a favorable Presidential finding, while the ITC injury determination is itself logically separable from the Presidential decision of whether or not protection is in the national interest, and determinants of the ITC and Presidential decisions are as a consequence likely to be distinct. Thus, we proceed to estimate (42) as a simple Probit model, and postpone a more rigorous treatment of sample selection issues to future research.

The explanatory variables by sector suggested by our theory include the ratio of production worker employment to total manufacturing production worker employment, the ratio of consumption to national income, and a measure of the sectoral shock, as well as the ratio of the production worker wage bill to consumption.<sup>11</sup> As a measure of the shock for the Escape Clause equation we try the change in the import penetration ratio and the change in the wage in the period leading into the Presidential decision; for the Tokyo Round exclusion equation we use the formula tariff reduction. In addition to the explanatory variables suggested by our theory, we consider a host of political variables discussed by Baldwin (1985). These include a measure of establishment size, four-firm concentration ratio, value-added share of output, employment, import penetration ratio, and average wage, as well as a

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<sup>11</sup> Note that consumption here includes intermediate products, since it is constructed as sales minus exports plus imports.

number of dummies constructed to control for political differences (e.g. Presidential party, proximity of the decision to an election date) and cyclical differences (e.g. aggregate trade balance as a fraction of GNP) across Escape Clause decisions.

In estimating (42) for the 4-digit SIC Tokyo Round exclusions, 1978 values at the 4-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. Also since as noted in the previous section, low-tariff products often received negative exclusions as a way of maintaining deep average cuts in the face of exclusions in other sectors, we restrict our sample for the Tokyo Round exclusion equation to 4-digit sectors with ad valorem pre-Tokyo Round tariffs greater than five percent. For the Escape Clause equation, measures of explanatory variables were taken from the relevant 4-digit SIC sector in which the petitioning industry belonged for the year prior to the year in which the Presidential decision was made.<sup>12</sup>

We begin with estimates of (42) in the context of Presidential Escape Clause decisions. Table 1 presents Probit results under a variety of specifications. Of the list of political variables described above, five were at least occasionally significant, and are included in each

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<sup>12</sup> In particular, we do not have data tailored to the particular set of industries represented by each 201 petition. While in principle such data could be collected from the published case reports themselves, in practice the data published in these reports is irregular and incomplete. Moreover, it is not uncommon for the reports to provide 4-digit SIC data when more detailed data is unavailable. While we plan to construct a more detailed data set in future work, it seems unlikely that the error introduced by using 4-digit SIC data (as opposed to the specific set of industries within the 4-digit grouping that were covered by the petition) could account for our results.

specification listed in the table. These include the import penetration ratio (IMPEN), the ratio of value added to output (VALOUT), average employment per establishment as a measure of establishment size (ESTSIZE), the four-firm concentration ratio for 1976 (CONCEN), and a dummy variable that takes a value of 1 if the industry has previously filed a Section 201 petition (REP201). As Baldwin (1985) notes, 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. Inclusion of the variable VALOUT is motivated by the "pressure group" model of tariff determination (Olson, 1965); the smaller an industry's value added share of output, the larger will be the percentage change in factor rewards associated with a given tariff change, 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. Thus, we have no strong prior beliefs on the signs of these coefficients. Finally, REP201 is included to control for any repetition effect that may be present.

The specifications presented in Table 1 include (42) estimated in levels (eq 1), in logs (eq 2), and in the form which most closely mirrors (41)--  $\sigma^y \theta^y$  in levels and the remaining economic variables in logs--with political variables in levels (eq 3) or logs (eq 4). The variable SHOCK is measured as the change in import penetration ratio going into the year in which the Escape Clause petition was considered. The coefficient on SHOCK is always of the expected sign, but never significant at the five percent level, though it is occasionally significant at the ten percent level (this is also true when SHOCK is measured as the change in wage). The coefficients on the political variables VALOUT and IMPEN are always of the expected sign and typically significant. The coefficients on the political variables ESTSIZE and CONCEN are typically negative and occasionally significant, lending some support to the adding machine model. The coefficient on the political dummy variable REP201 is always positive and typically significant, implying that industries which have previously filed a 201 petition have a better chance of receiving Escape Clause protection. The coefficients on CONS (consumption as a fraction of GNP) and PREMP (production worker employment as a fraction of total manufacturing production worker employment) are often of the wrong sign but never significant, while the coefficient on COMMIT ( $\sigma^y \theta^y$ , which reduces to the ratio of production worker wage bill to consumption) is always of the wrong sign and occasionally significant.

Table 2 presents the results of estimation when COMMIT is dropped from the equation, as is appropriate if Escape Clause decisions are characterized by a high degree of policy discretion. The first column (eq 1) presents the equation in levels while the second column (eq 2) presents the equation in



logs. Now, all coefficients take their theoretically expected signs. In particular, the coefficients on each of the economic variables PREEMP, CONS, and SHOCK take their expected signs, though only the coefficient on PREEMP is significant. The apparent unimportance of the cost of protection to consumers in the Escape Clause decision (the insignificant coefficient on CONS) is consistent with the empirical findings of other studies of tariff determination 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; this may in part reflect the fact that, as discussed above, the ITC sends to the President only those petitions associated with industries facing serious injury or an established threat thereof. Finally, the negative and significant coefficient on VALOUT and the generally negative but insignificant coefficients on ESTSIZE and CONCEN lend some support to both the pressure group and adding machine political economy models of tariff determination.

In summary, under no specification do we find the coefficient on COMMIT to be significantly less than zero, while dropping this variable leaves us with an equation which conforms reasonably well to theoretical predictions.<sup>13</sup> We conclude that Presidential Escape Clause decisions appear to conform to the predictions of a model in which tariffs are set without the ability to commit.

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<sup>13</sup> We also experimented with dropping variables other than COMMIT from the estimating equation to see whether a high degree of colinearity between COMMIT and other included variables might be responsible for its uniform insignificance in the Escape Clause equation. In all specifications, the coefficient on COMMIT was never found to be significant and of the right sign.

We turn next to analogous estimates for the exclusions to the formula cuts negotiated in the Tokyo Round. Here we have ad valorem exclusion measures for 369 4-digit SIC sectors, and can thus estimate (42) by OLS rather than Probit. Thus, for instance, a sector whose pre-Tokyo Round ad valorem tariff was 14% would, according to the Swiss rule, receive a seven percentage point reduction in its ad valorem tariff as a result of the Tokyo Round. If, say, the actual tariff change emerging from the Tokyo Round for that sector was a three percentage point reduction in the pre-Tokyo-Round ad valorem tariff, then the ad valorem exclusion from the (Swiss) formula cut for that sector would be four percentage points.

As mentioned above, we restrict our sample to sectors with a pre-Tokyo Round tariff larger than five percent, leaving a total sample size of 201 sectors. In addition to eliminating from our sample those low-tariff sectors whose negative exclusions were used to balance the positive exclusions of other sectors, this also serves to provide a "minimum injury" standard associated with the Swiss formula cuts; all sectors in the sample faced formula tariff cuts of no less than 1.3 percentage points.<sup>14</sup> Finally, while the most natural measure for SHOCK would be the formula reductions themselves, these are likely to be endogenous, since the formula was designed to cut high tariffs by more than low tariffs (to achieve some degree of "harmonization"), and since the same characteristics that lead industries to enjoy high pre-Tokyo Round tariffs are likely also to enter into their ability to secure exclusions from the formula cuts. To avoid this problem of endogeneity and still make some attempt to control for the

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<sup>14</sup> While we do not present results on the full sample, they are roughly equivalent.

size of the shock, we have constructed the exclusion measure as a percent of the formula reduction for that sector. As it turns out, our results are the same whether this measure or simply the ad valorem exclusion is used as the dependent variable in (42). Since the latter specification conforms more closely to earlier empirical work along these lines (see, for example, Baldwin, 1985), we present our results in the form of ad valorem exclusions.

Table 3 presents the results. As before, (42) is estimated in levels (eq 1), in logs (eq 2), and in the form which most closely mirrors (41) with political variables in levels (eq 3) or logs (eq 4). The political variables that were at least occasionally significant are the same as in the Escape Clause estimation, except that REP201 no longer applies.

The coefficients on the political variables VALOUT and IMPEN are always of the expected sign and often significant. While the coefficient on CONCEN is never significant, the positive and sometimes significant coefficient on ESTSIZE tends to support the pressure group model. When entered as levels, none of the coefficients on COMMIT, PREMP, or CONS are significant. However, when entered as logs, the coefficients on COMMIT, PREMP, and CONS are all significant and of the expected sign. The finding of a negative and significant coefficient on COMMIT in the (logs) exclusion equation, and the absence of such a finding for any of the Escape Clause equations, suggests that the different degree of policy commitment across the two decisionmaking environments may indeed have a measurable impact on the determination of trade policy. Clearly, however, this conclusion is sensitive to the specification of our estimating equation.

To get a better sense of what the data is telling us, we return to (40) and (41) and note that an additional implication of the model of section 3

is that the wage level should enter negatively in the determination of the tariff response under commitment (through the wage bill  $W^y N^y$ ), but should be absent under discretion (except possibly through the shock measure). In fact, a comparison of (40) and (41) confirms that the wage level is the only additional information entering into the determination of the equilibrium tariff under commitment which is not present under discretion. Moreover, replacing the variable COMMIT with the wage level should have little effect on coefficient estimates in the Escape Clause equation, but should make of indeterminate sign the coefficients on PREMP and CONS in the exclusion equation, since by (41) the total effect of a change in  $N^y$  on  $t$  (both directly and indirectly through  $\theta^y$ ) is composed of two effects of opposite sign, and similarly for  $P^y C^y$ . In summary, denoting as WAGE the production worker wage, (40) and (41) imply

$$t^d = t^d \begin{matrix} (0) & (+) & (-) \\ (WAGE, & PREMP, & CONS, \cdot) \end{matrix}$$

$$t^c = t^c \begin{matrix} (-) & (?) & (?) \\ (WAGE, & PREMP, & CONS, \cdot) \end{matrix}$$

Thus, estimating an equation of the form

$$(43) \quad t = \beta_1 + \beta_2 (N^y / \bar{N}) + \beta_3 (P^y C^y / I) + \beta_4 (W^y) + \beta_5 \Gamma + \epsilon$$

we expect to find the coefficient on WAGE insignificantly different from zero and little change in the other coefficients for the Escape Clause equation, and a significantly negative coefficient on WAGE for the exclusion equation, with the coefficients on PREMP and CONS of indeterminate sign. Note also that the hypothesized relationship between the wage level and the

tariff response is distinct from that which comes out of the "social change" model of tariff determination (Ball, 1967), since this political model would imply that WAGE should be negatively related to tariff responses in both the Escape Clause and Tokyo Round exclusion equations (reflecting the hypothesized desire to bring about a more egalitarian income distribution rather than simply aiming to preserve the status quo), while our model suggests that it should only appear negatively in the latter.

Table 4 presents the results of estimation of (43) for the Escape Clause and the Tokyo Round exclusions. For each equation, only the results under a level specification are reported, since the log specification contains no additional information over the regression of Table 3 (when all variables are measured in logs, (43) is just a rearrangement of (42)). The results conform to the model's predictions, and reinforce the tentative conclusions drawn from the previous tables. The coefficient on WAGE in the Escape Clause equation is never significant, and leaves the performance of the equation largely unaffected. In contrast, the coefficient on WAGE in the Tokyo Round exclusion equation is always significant and of the expected sign and, as expected, the coefficients on PREMP and CONS become insignificantly different from zero. Combined with the results presented in the previous tables, the results of Table 4 lead us to feel somewhat more confident about concluding that differences in the degree of policy discretion between the Escape Clause and Tokyo Round environments have a discernible impact on the resulting tariff decisions.<sup>15</sup>

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<sup>15</sup> This conclusion is reinforced by the finding that when the estimated coefficient on WAGE and 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 Table 3, eq. 2, and on WAGE in Table 4 are -.38 and -.19 respectively. Finally, the White

As a final piece of evidence concerning this hypothesis, we repeat our empirical procedure focusing on a different decision made within the context of the Tokyo Round. In particular, we look at the determination of exclusions to the agreed-upon general staging rule; that is, the schedule for implementing the agreed-upon tariff reductions once the Tokyo Round negotiations were complete. 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.<sup>16</sup> In this way, the government in effect chose to provide 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.

We attempt to capture the effect of these staging rule exclusions by looking at 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 5 presents the results of estimating (42) in levels (eq 1), in logs (eq 2), and in the form closest to (41) with political variables in levels (eq 3) and logs (eq 4). The political variables are the same as in the Tokyo Round exclusion equation. As with the Tokyo Round exclusion results, there is evidence that the pattern of exclusions from the general staging

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(1980) test rejects the hypothesis of no heteroskedasticity in the Tokyo Round exclusions regressions; when the standard errors are reestimated using White's (1980) procedure that insures consistency even under heteroskedasticity, the t-statistics for WAGE and COMMIT drop slightly and become just insignificant at the 5% confidence level. However, if the model is reestimated dropping 4 outlier observations, the results remain essentially unchanged and the t-statistics conform to the results of Tables 3 and 4, even when the standard errors are estimated using White's (1980) procedure.

<sup>16</sup> The list of items for which the actual staging rule differed from the general stage rule is contained in Annex I of GATT (1979).

rule reflects an ability on the part of the government to commit; the coefficient on COMMIT is typically negative and often significant. However, the political variables VALOUT and IMPEN are now consistently significant and of the wrong sign. When they are dropped, the coefficient on COMMIT typically remains negative but loses significance.

Table 6 presents the results of estimating (43) for the staging rule exclusions. The coefficient on WAGE is negative and significant while the coefficients on PREMP and CONS become insignificantly different from zero, consistent with the hypothesis that the determination of exclusions from the staging rule of the Tokyo round was characterized by commitment. As in Table 5, the political variables VALOUT and IMPEN are significant and of the wrong sign in these equations; when they are dropped, the coefficient on WAGE remains negative and significant.<sup>17</sup>

While the results concerning exclusions from the Tokyo Round staging rule are subject to the same kind of specification sensitivity that arises in our previous estimation results, it is clear that along relevant dimensions the Swiss formula exclusion equation and the staging rule exclusion equation are much more like each other than either is like the Escape Clause equation. This is, in particular, true with regard to the variables associated with the degree of commitment (COMMIT and WAGE), which never enter significantly and of the right sign in the Escape Clause equation but which often enter significantly and with the expected sign in the Swiss formula exclusion and staging rule exclusion equations. Taken

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<sup>17</sup> Again, there is evidence of heteroskedasticity, but the results do not change (and for some specifications they actually improve) when the standard errors are reestimated using White's (1980) procedure. Also the results do not change when a big outlier is removed from the sample.

together, we view these results as generally pointing to the empirical importance of the degree of government discretion in the determination of trade policy.

## 7. Conclusions

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. But the existing literature has focused almost exclusively on theoretical aspects of this debate. To date there has been little empirical study of how relevant the distinction between rules and discretion is in the real world, 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 developed in section 3, 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 U.S. 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. While our empirical results are far from conclusive, they are at



least suggestive that the degree of discretion matters in trade policy decisions. Perhaps more importantly, our results signal the need for further empirical work before one can conclude with confidence that the degree of discretion does--or that it does not--matter in the determination of trade policy.

### Bibliography

Baldwin, R.E. (1985), The Political Economy of U.S. Import Policy, MIT Press, Cambridge, MA.

Baldwin, R.E. and R.N. Clarke (1987), "Game-Modeling Multi-national Trade Negotiations," Journal of Policy Modeling 9.

Ball, D.S. (1967), "United States Effective Tariffs and Labor's Share," Journal of Political Economy 75.

Buckler, M. and C. Almon (1972), "Imports and Exports in an Input-Output Model," American Statistical Association, Proceedings of the Business and Economic Statistics Section.

Caves, R.E. (1976), "Economic Models of Political Choice: Canada's Tariff Structure," Canadian Journal of Economics 9.

Director-General of General Agreement on Tariffs and Trade (GATT) (1979), The Tokyo Round of Multilateral Trade Negotiations (Geneva).

Dixit, A. (1985), "Tax Policy in Open Economies," in A.J. Auerbach and M. Feldstein eds.: Handbook of Public Economics, North-Holland, Amsterdam.

Dixit, A. (1987), "Strategic Aspects of Trade Policy," in T.F. Bewley ed.: Advances in Economic Theory: Fifth World Congress, Cambridge University Press, New York.

Dixit, A. (1989) "Trade and Insurance with Imperfectly Observed Outcomes," Quarterly Journal of Economics 104.

Eaton, J. and G.M. Grossman, (1985) "Tariffs as Insurance: Optimal Commercial Policy when Domestic Markets are Incomplete," Canadian Journal of Economics 18.

Edwards, S. and G. Tabellini (1990), "Explaining Fiscal Deficits and Inflation in Developing Countries," Journal of International Money and Finance, forthcoming.

Hansen, W.L. (1990), "The International Trade Commission and the Politics of Protectionism," American Political Science Review 84.

Judd, K. (1989), "Optimal Taxation in Dynamic Stochastic Economies: Theory and Evidence," unpublished manuscript.

Kydland, F., and E. Prescott (1977), "Rules Rather than Discretion: the Inconsistency of Optimal Plans," Journal of Political Economy 85.

Lapan, H.E. (1988), "The Optimal Tariff, Production Lags and Time Consistency," American Economic Review 78.

Olson, Mancur (1965), The Logic of Collective Action: Public Goods and the Theory of Groups. Cambridge, MA: Harvard University Press.

Public Law 93-617 (January 2, 1975).

Richardson, J. David (1988), "Safeguards Issues in the Uruguay Round and Beyond," in Robert E. Baldwin and J. David Richardson eds." Issues in the Uruguay Round, NBER Conference Report.

Romer, D. (1989), "Does the Absence of Precommitment in Monetary Policy Matter? A Simple Test," unpublished manuscript.

Staiger, R.W., and G. Tabellini (1987), "Discretionary Trade Policy and Excessive Protection," American Economic Review 77.

Staiger, R.W., and G. Tabellini (1989), "Rules and Discretion in Trade Policy," European Economic Review 33.

White, H. (1980), "A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity," Econometrica 48.

## Data 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. All of the independent variables were constructed from data contained in the National Bureau of Economic Research (NBER) Trade and Immigration Data Set. This is an annual data set covering four-digit SIC manufacturing industries from 1958 through 1985.

All independent variables in the Tokyo Round regressions were constructed using 1978 values, 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 only available for 1976.

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 U.S. 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.

The variable definitions and their data sources follow.

COMMIT: ratio of production worker payroll to consumption (CONS).  
WAGE: average production worker wage, deflated by CPI.  
PREMP: ratio of production worker employment to total production worker employment in U.S. manufacturing sector.  
CONS: ratio of shipments minus net exports to GNP.  
VALOUT: ratio of value-added to shipments.  
IMPEN: ratio of imports to consumption (CONS).  
ESTSIZE: average employment per establishment.  
CONCEN: four-firm concentration ratio for 1976.  
REP201: dummy variable that takes a value of one if a President has considered an Escape Clause petition from the industry before, and zero otherwise.

**Table 1**  
**Presidential Escape Clause Decisions\***  
**(Probit)**

<u>Variable**</u>	<u>Eq 1</u>	<u>Eq 2</u>	<u>Eq 3</u>	<u>Eq 4</u>
CONSTANT	-8.71 (-1.74)	4.77 (0.74)	6.90 (0.76)	-7.28 (-0.66)
COMMIT	186.71 (2.38)	6.34 (1.74)	24.54 (1.47)	43.48 (1.35)
PREMP	649.33 (0.56)	-0.39 (-0.26)	0.77 (0.71)	0.67 (0.53)
CONS	2.46 (1.36)	2.80 (1.51)	0.41 (0.45)	1.53 (0.97)
SHOCK	28.41 (1.71)	10.37 (1.21)	2.91 (0.45)	7.61 (1.01)
REP201	9.25 (2.31)	3.13 (2.11)	1.31 (1.97)	2.63 (1.80)
VALOUT	-63.75 (-2.40)	-8.33 (-2.03)	-13.64 (-2.46)	-6.93 (-2.10)
IMPEN	27.28 (2.46)	2.33 (1.99)	4.72 (1.84)	2.01 (1.54)
ESTSIZE	-27.26 (-2.05)	-1.81 (-2.07)	-1.43 (-0.61)	-1.58 (-1.80)
CONCEN	0.04 (1.02)	-0.68 (-0.75)	-0.02 (-0.80)	-0.41 (-0.48)
R <sup>2</sup>	.78	.53	.43	.47
Observations	40	40	40	40

\* Dependent variable: 1 if President imposed protection, 0 otherwise.

\*\* See text for variable descriptions and differences among equations; t-statistics in parentheses.

**Table 2**  
**Presidential Escape Clause Decisions\***  
(Probit)

<u>Variable**</u>	<u>Eq 1</u>	<u>Eq 2</u>
CONSTANT	2.32 (0.96)	8.74 (1.91)
PREMP	1167.36 (2.23)	2.11 (2.33)
CONS	-0.69 (-1.54)	-0.50 (-0.81)
SHOCK	15.14 (1.56)	5.01 (0.69)
REP201	2.20 (2.18)	1.52 (2.05)
VALOUT	-12.82 (-2.11)	-4.77 (-2.18)
IMPEN	2.37 (1.25)	0.69 (1.63)
ESTSIZE	-8.31 (-1.43)	-0.78 (-1.50)
CONCEN	0.01 (0.24)	-0.29 (-0.39)
R <sup>2</sup>	.49	.41
Observations	40	40

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\* Dependent variable: 1 if President imposed protection, 0 otherwise.

\*\* See text for variable descriptions and differences among equations; t-statistics in parentheses.

**Table 3**  
**Tokyo Round Exclusions from Swiss Formula Cuts\***  
(OLS)

<u>Variable**</u>	<u>Eq 1</u>	<u>Eq 2</u>	<u>Eq 3</u>	<u>Eq 4</u>
CONSTANT	0.013 (1.64)	-0.027 (-1.13)	0.013 (0.91)	0.016 (0.75)
COMMIT	0.008 (0.19)	-0.021 (-2.34)	-0.049 (-0.85)	-0.050 (-0.93)
PREMP	0.567 (0.48)	0.016 (2.39)	0.008 (1.43)	0.007 (1.27)
CONS	-1.205 (-0.74)	-0.018 (-2.86)	-0.008 (-1.58)	-0.009 (-1.80)
VALOUT	-0.033 (-1.80)	-0.013 (-1.53)	-0.033 (-1.75)	-0.020 (-2.37)
IMPEN	0.025 (1.85)	0.002 (2.08)	0.019 (1.39)	0.003 (2.52)
ESTSIZE	0.015 (1.42)	0.008 (3.26)	0.015 (1.44)	0.007 (2.81)
CONCEN	0.001 (0.43)	-0.005 (-1.17)	0.001 (0.63)	-0.004 (-0.88)
R <sup>2</sup>	.05	.15	.06	.13
Observations	201	199	201	199

\* Dependent variable: ad valorem exclusion from Swiss Formula cut.

\*\* See text for variable descriptions and differences among equations; t-statistics in parentheses.



Table 4

<u>Variable***</u>	<u>Escape Clause*</u>	<u>Tokyo Round**</u>
CONSTANT	2.64 (0.72)	0.027 (2.71)
WAGE	-1.22 (-0.11)	-0.002 (-2.21)
PREMP	1163.01 (2.23)	-0.197 (-0.17)
CONS	-0.67 (-1.42)	0.397 (0.23)
SHOCK	15.20 (1.54)	---
REP201	2.25 (2.01)	---
VALOUT	-13.10 (-1.98)	-0.028 (-1.90)
IMPEN	2.19 (0.89)	0.014 (1.03)
ESTSIZE	-8.57 (-1.36)	0.018 (1.76)
CONCEN	0.007 (10.27)	0.001 (0.80)

\* Dependent Variable: 1 if President imposed protection, 0 otherwise.

\*\* Dependent Variable: ad valorem exclusion from Swiss Formula cut.

\*\*\* See text for variable descriptions and differences among equations; t-statistics in parentheses.

**Table 5**  
**Tokyo Round Exclusions from General Staging Rule\***  
(OLS)

<u>Variable**</u>	<u>Eq 1</u>	<u>Eq 2</u>	<u>Eq 3</u>	<u>Eq 4</u>
CONSTANT	0.064 (0.79)	-0.292 (-1.33)	0.391 (2.73)	0.145 (0.76)
COMMIT	0.215 (0.55)	-0.116 (-1.45)	-1.429 (-2.78)	-1.33 (-2.86)
PREMP	7.239 (0.69)	0.224 (3.48)	0.262 (4.84)	0.245 (4.79)
CONS	-3.751 (-0.28)	-0.174 (-2.91)	-0.227 (-4.63)	-0.197 (-4.23)
VALOUT	0.487 (2.81)	0.265 (3.67)	0.431 (2.55)	0.286 (4.20)
IMPEN	-0.183 (-1.40)	-0.033 (-3.00)	-0.247 (-1.91)	-0.036 (-3.34)
ESTSIZE	-0.156 (-1.64)	-0.075 (-3.06)	-0.122 (-1.31)	-0.072 (-3.05)
CONCEN	0.001 (1.35)	0.154 (3.93)	0.002 (2.56)	0.148 (3.83)
R <sup>2</sup>	.09	.22	.16	.24
Observations	259	258	259	258

\* Dependent Variable: one minus percentage of negotiated tariff reduction in place as of 1984.

\*\* See text for variable descriptions and differences among equations; t-statistics in parentheses.

**Table 6**  
**Tokyo Round Exclusions from General Staging Rule\***  
**(OLS)**

<u>Variable**</u>	
CONSTANT	0.254 (2.72)
WAGE	-0.021 (-3.47)
PREMP	1.80 (0.18)
CONS	10.73 (0.80)
VALOUT	0.606 (4.26)
IMPEN	-0.351 (-2.70)
ESTSIZE	-0.075 (-0.79)
CONCEN	0.002 (2.08)
R <sup>2</sup>	.13
Observations	259

\* Dependent Variable: one minus percentage of negotiated tariff reduction in place as of 1984.

\*\* See text for variable descriptions and differences among equations; t-statistics in parentheses.