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POLITICAL ECONOMY THEORIES**

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Non-Tariff Barriers as a Test of Political Economy Theories

Philip I. Levy*

Abstract

This paper provides a rough test of a broad and prominent class of political economy of trade models and finds them wanting. The class features governments with weighted social welfare functions, including the prominent model of Grossman and Helpman. Whether the government is the single domestic player or there are other players involved (as with the lobbies in the Grossman-Helpman case) the government ultimately acts as a unitary player in international dealings. Recent work has shown that such unitary actors care exclusively about terms of trade in international negotiations. This paper pursues the implication that governments' choice of trade instruments may offer a better test of the unitary government framework than existing empirical work. We use the structure of United States protection to argue that governments consistently choose instruments that sacrifice terms of trade, thus casting doubt on the unitary approach. We offer a discussion of alternative theories of political economy that could accommodate this stylized fact.

JEL Classification: D72, F13.

Keywords: Trade policy, Lobbying, Tariffs, Political Economy.

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I. Introduction

This paper argues that the political economy of trade policy is more complicated than most prominent models allow. In particular, the common practice of treating governments as unitary agents in international dealings leads to a testable implication about the choice of trade instruments: governments should pick relatively efficient ones. In an unsophisticated test of those theories, this paper presents evidence that the bulk of trade protection is of a relatively inefficient form that is inconsistent with a central prediction of the theories. There already exist a number of sophisticated tests of these theories, but we argue that they do not capture the essence of the models they purport to test.

The last decade saw substantial progress in theories of the political economy of trade. To a large extent, this progress consisted of providing previously opaque theories with solid microeconomic foundations. While theories of weighted social welfare functions were plausible and tractable, it was not clear what kinds of interactions among agents would give rise to them. Gene Grossman and Elhanan Helpman's introduction of the common agency approach to lobbying filled this void and offered a combination that seemed almost too good to be true: a group of heterogeneous agents involved in a lobbying competition which ultimately leads to a single, manageable welfare function.

This rich simplicity offered the promise of performing more intricate comparative statics or institutional analyses while retaining a political economic foundation. That foundation was desirable because of the apparently pervasive deviations of trade practice from standard normative trade theory, such as the prevalence of protection among countries that did not seem to have any market power.

Even authors who might have been skeptical of the importance of political economy found it virtually costless to include it in their models. A prominent example is Kyle Bagwell and Robert Staiger's theory of the General Agreement on Tariffs and Trade (GATT). They argue that the trading system is designed to address concerns about terms of trade movements. While that would seem to mark a return to the days before the political economy literature flourished, Bagwell and Staiger show that many of the prevailing political economy models also place great emphasis on the terms of trade. In fact, they show that one can abstract away from most political economy specifications and present a very general welfare function in which the government cares only about the domestic price and the international price. The important common feature of this broad class of models is that, for a given domestic price, government welfare will increase with an improvement in the terms of trade.

It is this prediction that we test in this paper. Though Bagwell and Staiger's model and most of the political economy theories to which they refer all deal exclusively with tariffs, we argue that they have strong implications for the choice of trade policy instrument. In particular, any government with this broad Bagwell and Staiger welfare function should choose a tariff over a Voluntary Export Restraint (VER). In general, those policies are comparable except that the VER involves the transfer of quota rents (erstwhile tariff revenue) to the trading partner country. This matches up very well with the theoretical prediction, since the transfer of quota rents is equivalent to holding constant the domestic price while worsening the terms of trade. It is precisely this that governments are assumed to dislike.

Our unsophisticated test consists of using the structure of United States trade policy to demonstrate that the vast bulk of protection — certainly as measured by welfare cost — takes the form of non-tariff barriers (NTBs). In fact, so prevalent are NTBs relative to tariffs that more elaborate empirical tests of theories of tariff levels have resorted to NTB coverage ratios as the dependent variable. These NTBs often are structured in such a way as to worsen the terms of trade.

None of this is to argue that governments or domestic agents are acting irrationally. Rather, the argument is that through some particular modeling choices, the literature turned to models that featured governments as unitary actors, even when government policy was the result of domestic competition. We show a parallel to an older literature on household behavior, in which certain assumptions (specifically, altruism and transfers on the part of the household head) will lead selfish household members to work towards the common goal of maximizing household income. Just as empirical tests of household behavior have found instances in which households demonstrably did *not* act as unitary agents, we argue that the choice of trade policy instrument has similar implications for the unitary nature of governments.

There are a number of theoretical models that, by design or good fortune, are compatible with the prevalence of NTBs. We attempt a taxonomy. One class relies on the representation of foreign interests in the formation of domestic policy. Another considers a more complex negotiating game than the one in standard models. A third class, which we deem the most promising, features non-unitary polities in which there is imperfect information among agents and the choice of instrument can send a signal.

The next section develops the linkage between weighted government welfare functions and the choice of trade policy instrument. Section 3 reviews existing empirical tests of the Grossman and Helpman framework and then uses recent U.S. trade policy to argue that the prevalence of non-tariff barriers that sacrifice a potential terms of trade gain constitutes a more fundamental challenge to the framework. Section 4 considers some theoretical alternatives to the unitary framework. Section 5 concludes.

II. Developing Testable Implications of the Theory

The theory that this paper tests is the description of governments as unitary actors with linear social welfare functions in a competitive environment.¹ In a classic, unweighted government welfare function, the government would maximize:

$$(1) \quad W_G = \sum_I CS + \sum_F PS + TR$$

where I is the set of individuals and CS their consumer surplus, F the set of firms and PS their producer surplus, and TR the tariff revenue. If tariffs were the only instrument, this leads to the classic policy formulation that the optimal tariff for countries unable to affect their terms of trade is 0, while it is positive for countries that observe an imperfectly elastic foreign export supply schedule. Of course, even in a small country, a tariff effects a transfer from consumers to producers in the import-competing sector, but under formulation (1) this has no beneficial effect on government welfare.

The normative prescription for zero tariffs in small countries seemed to offer a test for the classic formulation of government welfare as a positive theory. If small

¹ In fact, the test applies to a somewhat broader class of models as described in more detail below. We focus on this subset for heuristic purposes since it encompasses the popular Grossman-Helpman model.

countries had tariffs, the theory could be rejected. Indeed, the prevalence of tariffs in small countries prompted the creation of alternative political economy descriptions.²

A ready alternative formulation is the Stigler-Peltzman political support function.

We reinterpret that welfare function here as:

$$(2) \quad W_G = \sum_I CS + \sum_F PS + \sum_{l \in \Omega} \alpha_l PS_l + TR$$

where we have simply added a single term to (1).³ That term allows additional weight for each producer l in a set of producers with special standing with the government, Ω . The weights, $\alpha_l > 0$, can differ for different producers. The virtue of this approach is that it offered a straightforward explanation for trade protection: the government cares more about the recipients of transfers than those who are being taxed. Thus, it breaks away from the uncomfortable prediction of free trade for small countries and it does so in an eminently tractable way. The tractability comes from the unitary nature of the government; it is easy to operate with a single differentiable objective function. The principal disadvantage of this approach is that it is something of a black box. We are offered no particular insights into why the government would attach additional weight to the welfare of firms in Ω ; we are simply asked to believe.

It might have appeared, then, that the modeler was faced with a choice: one could pursue “realistic” non-unitary models in which multiple agents interact, such as the party

² This simple prima facie test has been challenged recently. Bagwell and Staiger (2001, p. 79), in arguing for the importance of terms-of-trade considerations, warn against mistaking country size for market power. Given transport costs, “the issue is not the size of a country’s economy relative to the world economy but rather the size of certain industries in a country relative to other industries in that region.” Thus, in their example, Mexico would not regard Guatemala as small.

³ More accurately, the Stigler-Peltzman approach said the government valued the rents received by industry (Stigler’s original formulation) and consumer surplus (a Peltzman contribution). Baldwin goes one step further and allows different weights on consumer surplus and tariff revenue. He then refers to the result as the “deus ex machina” government objective function. (Baldwin 1987)

competition models of Magee, Brock and Young. (Magee, Brock and Young 1989), but these would be significantly less pliable than formulations such as in (2). Alternatively, one could adopt the political support function, but at the expense of any understanding of the fundamental forces driving the model.

The seminal work of Gene Grossman and Elhanan Helpman (Grossman and Helpman 1994) seemed to offer a panacea. They proposed that the government cared about two things: contributions from lobbies and the general welfare. Thus:

$$(3) \quad W_G = a \left(\sum_I CS + \sum_F PS + TR \right) + \sum_{l \in L} C_l$$

where C_l is the “contribution” that industry l offers the government and L is the exogenously specified set of industries that may lobby the government in this way. Just as the consumer surplus, producer surplus and tariff revenue terms could fluctuate with tariff-driven price changes, the contribution could be a schedule contingent on prices. The assumption of a prominent role for lobbying groups matched well with descriptive work on the formation of trade policy.⁴ Through the adoption of the common agency approach, the ultimate outcome of the model was the familiar and tractable weighted government welfare function as in (2). This meant that one could pursue questions about trade negotiations while enjoying solid microeconomic foundations.⁵

While the empirical evidence that governments value contributions is persuasive, it is not obvious why the government should also have the general welfare term entering linearly into its objective function. In the absence of elections, this might be seen as a

⁴ See, for example, (Destler 1995).

⁵ Among the papers that did this were (Grossman and Helpman 1995) and (Levy 1998).

convenient and innocuous shorthand for the broader support necessary for the government to remain in power.

Whatever the reason for the inclusion of general welfare, we can gain insight into its effect by noting a parallel to an earlier literature on the economics of the household. In considerations of household behavior, one prominent question that could be asked is whether the household behaves as a single unit with a single objective function or whether the different interests of adults and children interact in such a way that the outcomes cannot be characterized as the maxima of a single objective function. As an example of one such alternative, one might see a Nash Bargaining Solution emerge from family interactions.⁶

In the 1970s, Gary Becker put forward his “Rotten Kid Theorem” (described in Chapter 8 of (Becker 1981)). In his setting, there are benevolent parents and selfish children. There is a clear conflict of interests between these family members; the parents are willing to distribute income to the children, but not to the extent that the children would like. The theorem states: “Each beneficiary, no matter how selfish, maximizes the family income of his benefactor and thereby internalizes all effects of his actions on other beneficiaries.” (p. 183). Thus, under the particular assumptions of Becker’s framework, the family’s actions can be modeled as though it were maximizing a unitary objective function (family income). The key to the result is that the parents are assumed to be altruistic; the welfare of the children enters explicitly into their welfare function. The result holds so long as the benefactor is not pushed to a corner solution (with zero desired contributions).

⁶ For reviews of this literature, see (Bardhan and Udry 1999, Chapter 2, Section 4) on the development context and (Bergstrom 1997) on theories of the family.

Returning to the trade model of G-H, the government plays the role of benevolent parent with altruistic concern for the other domestic agents (consumers and shareholders in domestic firms). In their adoption of the Bernheim and Whinston common agency framework, (Bernheim and Whinston 1986), one of the conditions for equilibrium is that lobbies maximize the sum of their own welfare and that of the government (by the similar reasoning that if the solution does not maximize joint welfare, then there is additional surplus available that the lobby could try to exploit).

G-H assume that governments are unable to effect the kind of direct transfers to lobbies that Becker imagined.⁷ Thus, tariffs are chosen toward the same end. The end result is a version of Equation (3) in which lobbies present the government with “truthful” contribution schedules — ones that accurately depict the marginal effect of a price change on profits. The government then acts as if those industries represented by lobbies receive weight $(1+a)$ in its objective function, while all other agents receive weight ‘a’. Thus, we return to the weighted social welfare function of (2), but with the apparent added richness of an agency game between competing lobbies. The point of the analogy to Becker’s model of the family is that it is unsurprising that the government’s altruism renders the intra-country conflicts moot when the country engages in international dealings.

In a series of recent papers, Robert Staiger and Kyle Bagwell have shown that the unitary objective function that emerges from the G-H analysis has strong implications for countries’ interaction in the world trading system. In particular, they argue that such governments are principally concerned with the terms-of-trade implications of their trade

⁷ In fact, they provide a thoughtful discussion of why lobbies might prefer the absence of direct subsidies. We return to this point later.

policies.⁸ This harkens back to the original optimal tariff arguments of Johnson that emerged from Equation (1). Bagwell and Staiger note that terms of trade arguments have fallen into disfavor among trade economists, but argue that with the advent of theories such as G-H's, they return as a logical implication.

In a two-good model, they posit their own objective function of a very general form:

$$(4) \quad W_G = W(p(t, p^w), p^w)$$

where p^w is the relative price of the home country's import good (i.e., the inverse of the terms of trade), and p represents the domestic price of the import good, which is dependent on the world price and the tariff τ . (Bagwell and Staiger 1999, p. 220). The sole restriction they place on this welfare function is:

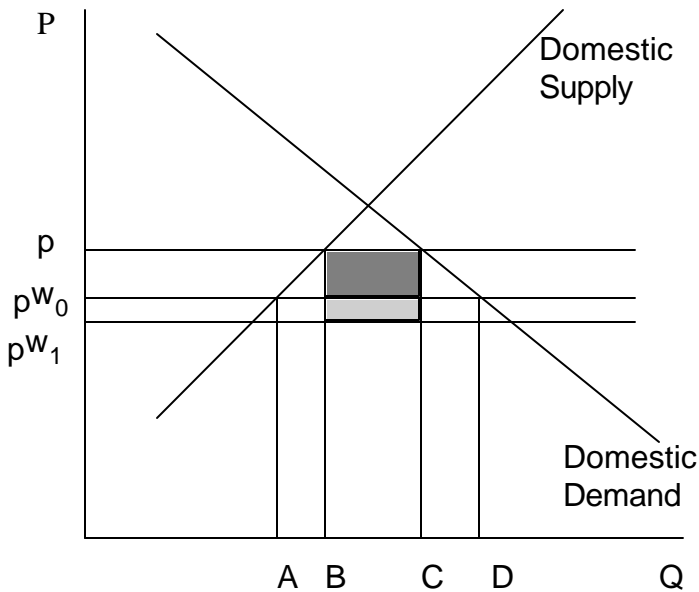
$$(5) \quad \partial W(p, p^w) / \partial p^w < 0$$

This specification of the welfare function has two striking effects. First, Bagwell and Staiger show it to encompass the more specific government objective functions of a wide range of models, including all those specified in Equations 1-3 of this paper. Second, this specification clarifies the importance of the terms of trade in those models. The restriction in Equation 5 just says that, holding the domestic price constant, an improvement in the terms of trade makes a country better off. This formally captures the essence of the earlier discussion concerning the Rotten Kid Theorem. In models of this type, though domestic agents have conflicting interests, they interact in such a way as to be representable by a unitary objective function. The welfare of the polity improves with better terms of trade in the same way that the contentious members of Becker's model

⁸ The principal work on which this discussion draws is (Bagwell and Staiger 1999), but see also (Bagwell

family all approved of higher income, despite their disagreements about how it should be distributed.

The central assertion of this paper is that this yields a testable implication for these models (and for Bagwell and Staiger's theories of the GATT as well). The test is an eminently basic one: If governments are principally concerned with terms of trade in their international interactions, we should not see them adopting instruments that forsake the terms of trade relative to other available instruments. Specifically, we should not see a proliferation of Voluntary Export Restraints or bilateral quota systems in which exporters control quota rights. Since these deliver the quota rents to foreign interests, they sacrifice



the terms of trade gain that countries were ostensibly targeting through their trade policy.

Figure 1 depicts the classic competitive partial-equilibrium analysis of a tariff or a VER for a large country. The initial world and domestic prices are p_0^w and imports are AD. We

can consider the imposition of a tariff

$$t = \frac{(p - p_1^w)}{p_1^w}$$

This raises the domestic price to p and lowers the world price to p_1^w , an

improvement in the terms of trade. Alternatively, a VER to achieve the same domestic

and Staiger 2001b, 2001a)

price p would require the trading partner to limit its exports to quantity BC . This is costly to the home country as it reallocates the erstwhile tariff revenue (the shaded boxes) to the foreign country.

In our context, it is important to note that the VER can readily be given a price interpretation. Under the VER, the terms of trade will be equal to the domestic price p , since the transfer of the quota rents constitutes an additional payment exactly equal to the difference between the world and domestic prices. Thus, we arrive at our testable statement:

PROPOSITION 1: Governments with objective functions as in Equations 4 and 5 should strictly prefer a tariff to a VER that achieves the same domestic price.

The proof is immediate. By assumption, the domestic price is the same in each case. Under the VER, terms of trade are worsened and the partial derivative in (5) requires this to lower government welfare monotonically.

Note that neither (Grossman and Helpman 1994), (Grossman and Helpman 1995) nor (Bagwell and Staiger 1999) explicitly allow for VERs nor do they make explicit predictions about instrument choice. G-H consider tariffs exclusively, though (Grossman and Helpman 1994) features an interesting discussion of the choice between a tariff and a more efficient subsidy. Bagwell and Staiger do raise the issue of VERs as a means of illustrating the potential costliness of neglecting terms of trade issues. Discussing the findings of (Berry, Levinsohn and Pakes 1999) on the U.S. VER on Japanese auto imports in the 1980s, they write:

“... the decision of the United States to “give away” such an amount might be taken as evidence that governments in fact do not care about the terms of trade, even when the associated implications for income are large. This inference, however, does not follow from the U.S. VER experience. The relevant policy alternative for the United States was not a set of unilateral tariff increases...which surely would

have incited a retaliatory “trade war” with Japan, but rather a set of tariff changes from the United States and Japan that were consistent with GATT rules.” (Bagwell and Staiger 1999, p. 242, note 40)

This raises several points. One interpretation is that governments are playing a game with more intricate rules that sometimes require a choice between tariffs and VERs. If so, it would seem worthwhile to model this explicitly. A second point is that Bagwell and Staiger note elsewhere that the GATT allows renegotiation of previous tariff commitments. Even if renegotiation were not explicitly allowed, the *de facto* remedy for the Japanese were they to protest U.S. imposition of a tariff would be either compensation or authorization to retaliate with a tariff of their own. It would be astonishing if the net authorized damage that the Japanese could have inflicted on the United States were of the same order of magnitude as the \$8.3 billion 1983 dollars estimated by (Berry, Levinsohn et al. 1999), particularly in light of the trade imbalances that prevailed at the time.⁹ Third, if the only reason for adopting the less efficient VER is the pre-existent GATT tariff binding and this binding is tighter in practice than it would appear, that would lead one to ask why the binding was agreed to in the first place. If the auto VER were a unique instance, one might believe that this was a rare case in which the government faced an unanticipated demand for protection. In fact, as we show in the next section, the use of these non-tariff barriers is pervasive and has, at least in the case of textiles and apparel, lasted since the 1960s. Finally, if one moves beyond the case of automobiles, which were covered by GATT agreements, one saw similar instruments employed in sectors such as textiles and apparel and sugar which were largely outside of

⁹ This was the estimate of total cost of the VER over the entire period of application relative to the estimated costs of a tariff. The imperfectly competitive framework used by Berry, Levinsohn and Pakes to reach this estimate differed substantially from the simple competitive framework of Figure 1. The point estimate of costs also had a very large standard error (also \$8.3 billion, p. 401).

any GATT agreement prior to the Uruguay Round. This casts doubt on the argument that NTBs only serve governments as a second-best means of circumventing GATT tariff bindings.

Before we turn to theories of political economy that may be better able to accommodate the prevalence of NTBs, we first consider the empirical evidence. The next section begins with a description of tests of the G-H theory that do not rely upon instrument choice. It then considers further whether instrument choice is a legitimate criteria for judging these model. Finally, we present stylized facts about the relative importance of non-tariff barriers that do not improve the terms of trade.

III. Empirical Evidence

A. *Existing tests*

The nature of the “test” provided in this paper is unorthodox. It is far more common to test a model through econometrics. This, of course, has the virtue that a well specified test will let us distinguish between the sort of random deviations from a model’s predictions that are to be expected from error terms and the sort of systematic deviations that lead us to question a theory. We begin to address this point by considering two prominent conventional tests of the G-H model, nearly contemporaneous papers by Goldberg and Maggi (Goldberg and Maggi 1999) and Gawande and Bandyopadhyay (Gawande and Bandyopadhyay 2000). Each of these aims to confront the G-H formulation with U.S. data. Each is drawn to the G-H model by its more precise and rigorous formulation, relative to its political economy predecessors. Each emerges with a generally sanguine view of the model, in each case because the addition of explanatory

terms to the G-H formulation offered little improvement. Each paper also qualified its empirical endorsement of the model by noting a puzzling result or two.

Oddly enough, each also uses coverage ratios of non-tariff barriers as the dependent variable to test this model of the level of tariff protection. Each is deliberate in this choice and the justifications they offer are informative. Goldberg and Maggi first argue that they avoid tariff measures because tariffs are set cooperatively (p. 1137). They note that the same might be said of VERs, so they use one version of the dependent variable in which only price measures, such as anti-dumping or countervailing duties, are counted.¹⁰ They proceed to note that it might be possible to construct a more general index of trade restrictiveness, but that this would require data they do not have.

“At any rate, we note that tariffs in the United States are very low (the average tariff is about 5 percent and vary little across sectors), whereas nontariff barriers are higher (the average coverage ratio in our data is 13 percent) and vary considerably across sectors. In addition, we suspect that coverage ratios understate the actual extent of protection... thus, the discrepancy between the magnitude of tariff and nontariff protection may be even larger.” (p. 1141, note 10).

Gawande and Bandyopadhyay offer a similar rationale:

The use of coverage ratios in place of what in the theory is an *ad valorem* tariff requires the belief that coverage ratios are positively correlated with their tariff equivalents across industries. The presumption becomes more credible when, as we do, price elasticities are included to control for this effect on the right-hand side. The computation of tariff-equivalents is an enormously expensive task, and, given the state of the art in computational general equilibrium, such computations are based on assumptions about market and production structures that are merely convenient rather than approximations to reality. (p. 145, note 9).

¹⁰ It is not clear that this remedies the problem of cooperation. A non-trivial number of U.S. antidumping cases are suspended or withdrawn, for example, when the relevant parties reach agreement. Further, the potential threat of an anti-dumping case could support a collusive outcome that has the effect of raising a

There is a curious inconsistency to these arguments. If it were true that the fraction of subsectors covered by a non-tariff barrier was sufficiently correlated with equivalent tariff levels to allow for careful empirical testing, then the rigorous derivations that attracted these authors to the G-H model would be unnecessary. In fact, we have no reason to believe that the levels of tariff protection suggested by the G-H model, dependent as they are upon terms of trade effects, should bear any relation to the levels of drastically different instruments such as VERs or an anti-dumping regime. It is entirely plausible that the level of protection (or even the breadth of protection, which coverage ratios measure) afforded by these other instruments is broadly related to factors such as import penetration or the existence of organized political lobbies, but that simply marks a return to the looser form of political economy realizing that preceded G-H.

Despite these obstacles, both papers support the G-H framework, in the sense that variables which are theoretically excluded by that framework are empirically excluded as well. Each paper has its own troubling estimate, however. Goldberg and Maggi estimate a large weight on general welfare relative to political contributions (.98 vs. .02). They explain: “This results seems consistent with the fact that trade barriers in the United States are quite low; even in 1983 the average coverage ratio was only 0.13, substantially smaller than the potential maximum of 1.” Elsewhere, however, they note that for at least one point estimate ((Goldberg 1995)), a coverage ratio of 7 percent in the auto industry corresponded to a 60 percent tariff equivalent. (p. 1141).

domestic price. If the threat is credible and not exercised, it is not clear that this would show up in a coverage ratio. See, for example, (Staiger and Wolak 1992).

Gawande and Bandyopadhyay pay greater attention to estimation of the political contribution process and ultimately express discomfort with their estimate of government welfare weights (the term ‘a’ in the G-H model). They report that their estimate

“is in conflict with the empirical evidence from computational general equilibrium studies that have attempted to assess the welfare loss from protection. They indicate that efficiency losses are many-fold greater than what lobbies spend to obtain protection... Our estimates of a suggest that (Political Action Committee) contributions are greater than deadweight costs, on average.” (p. 147)

The costly programs they cite, from which the CGE estimates are derived, include programs in which exporting countries allocate the bilateral quota rights. It is perhaps unsurprising that the high efficiency costs of these programs will not match well with the predictions of the G-H tariff model. Further, to the extent that those programs are very costly but cover a narrow range of goods, they will mislead estimation based on coverage ratios.

We conclude this consideration of empirical tests with a brief mention of a third empirical test (Maggi and Rodriguez-Clare 2000). They deal with the same class of models as this paper and apply the moniker “Standard Short-run Political Economy” (SSPE) models. They cite the G-H model as a central member of this class. While principally focused on the estimated effects of import penetration ratios, they argue that standard SSPE models are limited by the assumption that governments only have access to tariffs. By contrast, “Our approach here is to extend the standard analysis, which typically focuses on political influence by domestic producers, to consider also political influence by foreign exporters and domestic importers.” (p. 289).¹¹ They consider three parameters: the political influence of importers (not producers); the weight on foreign

¹¹ They note that this was also the approach of (Hillman and Ursprung 1988).

exporters; and the cost of public funds. If the second parameter is highest, a VER is chosen.¹²

Setting aside the plausibility of foreign representation in protection decisions, it suffices to note that this “extension” in fact marks a significant departure from the G-H model. Specifically, while the G-H model fits comfortably within the Bagwell-Staiger characterization of welfare, the Maggi-Rodriguez-Clare model would not (with sufficient weight on foreign export interests, the inequality in Equation (5) would be violated). Since this paper argues that the basic terms of trade prediction of that class of models fails to hold, being outside of the class is a good thing. There are, however, a number of different theoretical approaches that can avoid the terms of trade critique and we defer a fuller discussion of these approaches to Section 4.

B. Instrument Choice as a Test

At a facile level, one could say that most theories of protection could be discarded because they fail to provide a full explanation for both instrument and level. This would be unsatisfactory since the nature of economic analysis is to simplify. However, it is essential to check whether the omitted factors are orthogonal to the question at hand or intimately connected. Further, there is a distinction between theories that do not bother to explain instrument choice and those that are intrinsically incapable of being extended to

¹² There is recent work arguing that foreign lobbying is a significant factor in the determination of trade policy in the United States (Gawande, Krishna and Robbins, 2002). It uses data on payments to “foreign agents” in the United States as a proxy for otherwise prohibited direct political contributions from foreigners. There is reason to doubt, however, that these agents (lobbyists) are being used as conduits for funds as opposed to providing general representation. It is not clear what role there would be for non-pecuniary representation in a G-H model. Such an approach would seem to fit better with a model in which information played an important role.

explain it. To consider whether confronting the selected theories with NTBs constitutes a fair test, we briefly turn to the literature on instrument choice.

In a seminal paper on the topic, (Becker 1983) puts forward an argument very much in keeping with the class of models this paper critiques. He considers government policies more generally than just those on trade and argues that instruments will be chosen in an efficient fashion. The rationale is that there will be a surplus generated by the move from a less efficient to a more efficient instrument and that this will either present a direct additional gain to lobbying groups or diminish opposition making their original goal more attainable.

There is an interesting qualification that Becker offers to his broad assertions about efficiency. He writes:

“I have assumed that influence functions depend only on the characteristics of and the pressures exerted by political groups, and not on taxes and subsidies, the number of persons in each group, the distribution of income, or other variables. The ignorance of voters not only helps determine the influence of different characteristics and pressure, but may also make influence depend on other variables as well. For example, influence may depend on subsidies if voters mistakenly believe that certain subsidies (minimum wages or oil entitlements?) contribute to desired goals rather than to the incomes of particular groups. If influence functions were affected by taxes, subsidies, and other policies, the analysis in this paper might have to be significantly modified, including the conclusion that efficient taxes tend to dominate inefficient taxes... or that policies raising efficiency tend to have greater political support than policies lowering efficiency...” (p. 394)

That will, in fact, be the class of explanation favored in this paper. There is imperfect information among voters and they draw different signals from VERs than they do from tariffs.

Becker offers a subtle interpretation of efficiency which insulates him somewhat against the sort of *prima facie* evidence that this paper offers. Instruments are more efficient if the net outcome is more efficient. Thus, a tariff could be more efficient than a direct production subsidy if few users were able to take advantage of a tariff scheme while a subsidy scheme would be widely available. The deadweight losses would be greater for each instance of a tariff, but the decrease in the number of instances relative to subsidies would offset the cost.

In the trade policy literature, attention has mostly focused on the question of why tariffs are used in lieu of more efficient subsidies (Rodrik 1995, Section 4). Surveying a number of models that compare equilibria under different sets of policy instruments, Rodrik writes:

“In each of the...models, the comparison involves equilibria of different ‘policy regimes’, where each regime is characterized by the use of a specific policy (tariffs or production subsidies, say). What is often left vague is the political mechanism that governs the *choice* of one regime over another. One can think of this choice as being made in the first stage of a two-stage political economy model. This appears to be the implicit view in the previous papers, but the decision-making process for this first stage is not well specified in any one of them.” (p. 1473).

Grossman and Helpman’s work (Grossman and Helpman 1994) is among those that Rodrik surveys. It includes a section arguing that lobbies might well prefer tariffs to more direct subsidies since competition could be more fierce in the latter case. Implicit in the discussion is that the challenge to the model is likely to come from more efficient, not less efficient, instruments. Also, as Rodrik notes, the question is treated as separable.

It may be worth asking whether it is fair to subject theories that set out to explain tariffs to a test on their ability to explain VERs. We contend that it is. Grossman and

Helpman are describing “Protection for sale”, not “Tariffs for sale”. Bagwell and Staiger are offering a general description of the governance of the world trading system and asserting that terms of trade effects are central.

One should be able to neglect an explanation of NTBs under three possible assumptions. First, one might argue that conclusions that are drawn in the realm of tariffs can be readily extended to NTBs. A central purpose of this paper is to argue that this is generally not so. Second, it might be that the complications that exist in determining the levels of NTBs are readily separable from tariff determination, so the two can be examined separately. That has been standard practice, but it is hard to justify why the same polity would give primacy to terms of trade in tariff determination and willfully neglect it in determination of VERs. If VERs are adopted because tariffs are bound, then the determination of the levels of each instrument is not independent. Finally, one could assume that NTBs are a relatively minor exception to the standard practice of tariffs. We show in the next section that the reverse is a better description of the structure of U.S. trade policy.

C. Evidence on Non-Tariff Barriers

To the best of our knowledge, there does not exist any estimate that divides the totality of U.S. protection into different trade policy instruments. In fact, any attempt to do so would face some immediate obstacles. First, there is the omnipresent question of how one would weight the different instruments. If VERs covered 5 percent of tariff lines, accounted for 20 percent of consumer surplus loss and 50 percent of welfare costs, which figure could one use to assess their importance? We address this by offering multiple measures from secondary sources below. A second measurement question

concerns more complicated instruments such as anti-dumping policy or rules of origin. To the extent that the threat of a dumping action deters competitive pricing on the part of a foreign exporter, this will have the welfare effects of a VER but will be difficult to measure. Rules of origin in preferential trade agreements have been shown to afford protection to producers of intermediate goods within the PTA (see (Krueger and Krishna 1995)). We are unable to overcome this difficulty, which is equally problematic for the measurement of levels and for coverage ratios; one can only make rough guesses at the extent of bias. Finally, if we are to offer a “test” of the existing theories, it is worth considering what standard we might use to determine the power of the test. Given the bold prediction in Proposition 1 that countries with the objective functions of Equations 4 or 5 should never choose a VER or related instrument over a tariff, one might conclude that any sighting of a VER would constitute a rejection.¹³ However, without explicitly introducing an error term, it is desirable to allow for some aberrant behavior. This would pose a serious concern if NTBs were a minor element of U.S. protection. Given their prominence, we simply assert that while the cutoff line for rejecting the proposition is difficult to place precisely, it lies somewhere well short of the evidence.

To show this, we consider several sources on the structure of U.S. protection. First, and most recent, there is the official review of the United States under the World Trade Organization’s Trade Policy Review Mechanism (WTO 1999). It finds that the U.S. economy is generally open, particularly with regard to tariffs:

“Most imports either enter the United States duty free or are subject to very low tariffs, all except two of which are bound. Zero tariffs apply to nearly one third of national tariff lines and the simple

¹³ There is an interesting discussion of this general point at the beginning of (Leamer and Levinsohn 1995), who grapple with reconciling the abstractions of trade theory with the realities of data and whether one should take the theory too seriously or treat it too casually.

average MFN tariff rate has declined from 6.4% in 1996 to 5.7% in 1999; the average can be expected to fall to 4.6% once the Uruguay Round and (Information Technology Agreement) tariff cuts are fully implemented.” (p. xxi)

There are, however, tariff peaks that are substantially higher in sectors such as agriculture and food products, textiles, clothing and footwear.¹⁴

The report notes, without quantifying, the existence of bilateral quotas, particularly for textiles and apparel. It also documents 742 anti-dumping investigations between 1980 and 1998, of which 44% resulted in final affirmative findings (p. 67). From this, we can take only that a range of instruments are applied, without any particular sense of their relative magnitude.

Robert Feenstra provides a survey of estimates of costs stemming from U.S. import protection in the mid-1980s. (Feenstra 1992). Blending partial equilibrium and general equilibrium results, he estimates the total cost of U.S. protection to lie between \$15 billion and \$30 billion, compared to 1985 U.S. GNP of \$4 trillion (p. 166). He goes on to argue for reasons why this range might underestimate the costs of protection. For our purposes, though, it is interesting to note the decomposition of those costs. The surveyed studies suggested that between \$7.9 billion and \$12.3 billion of the costs were due to U.S. deadweight loss, while \$7.3 billion to \$17.3 billion were due to the loss of quota rents. This offers one measure of the relative importance of VERs and related instruments — they account for roughly half the cost of protection as compared to the costs that would be incurred with tariff equivalents. These quota rent transfers are the

¹⁴ Interestingly, in light of arguments about how well informed domestic agents might be about policies' impacts, the WTO Secretariat notes that only 1 in 7 duties are specific, but that specific duties account for 86 of the top 100 MFN tariffs (p. xxi). Their interpretation is that “such duties are intrinsically more opaque than *ad valorem* duties and can be used to conceal high *ad valorem* equivalents (AVEs).” (p. 48). They do note that the U.S. regularly publishes AVEs for its specific duties.

ones that are not supposed to exist at all under the objective functions we are considering. We get an even more striking measure if we compare the total cost of VERs to the total costs of tariffs. This latter figure is estimated to be between \$1.2 billion and \$3.4 billion, thus leaving roughly 90 percent of the cost of protection as attributable to a VER or related instrument.

In a separate study, Gary Hufbauer and Kimberly Elliott provide general equilibrium estimates of the costs of U.S. protection in 1990 (Hufbauer and Elliott 1994). They focus on 21 cases that they say account for roughly half the national net welfare cost of protection. They report that:

“The net national welfare gain from liberalization in these sectors amounts to an estimated \$10 billion, with more than two-thirds being quota rents recaptured from foreign exporters and producers, mostly in the textile and apparel sectors.” (p. 7)

In another version of their model, they allow for changes in the terms of trade and set the world supply elasticities for exports to the United States at 3.0, a value they deem conservative. They then calculate net national welfare changes incorporating increases in import prices. There are a range of cases for which liberalization would entail a terms-of-trade loss and would therefore provide support for the class of theories discussed in Section 2.¹⁵ For these cases the terms of trade losses totaled \$538 million, while there was an estimated net welfare loss from liberalization of \$426 million. For cases in which potential terms of trade losses were negated by the transfer of quota rents to foreigners,¹⁶

¹⁵ The sectors are ball bearings, benzenoid chemicals, canned tuna, ceramic articles, ceramic tiles, costume jewelry, frozen concentrated orange juice, glassware, luggage, polyethylene resins, rubber footwear, softwood lumber, women’s footwear (except athletic), women’s handbags and dairy products. p. 28.

¹⁶ These were sugar, apparel, textiles and machine tools. The estimates for apparel dwarf the other cases (\$2,413 million in foregone quota rents and \$7,712 million in total gain from liberalization).

the quota rents reclaimed under liberalization would total \$2,993 million, while the total welfare gain from liberalization would be \$9,374 million.

Thus, the theoretical implication of the class of models considered in Section 2 was that in international dealings, terms of trade should be of paramount importance. Instead, we see that for the most part, U.S. trade policy can be characterized as giving away quota rents. As noted above, given the transparency of tariffs and the opacity of some measures of protection that were not included in these studies, they probably understate the relative importance of instruments that forsake the terms of trade. Presumably, the rents are being foregone to achieve some other goal. In the next section we offer a brief description of models that could fit the stylized fact of pervasive NTBs.

IV. Alternative Explanations

There are a number of papers in the literature that either explicitly allow for VERs or offer promising approaches to political economy that might justify them. We do not attempt to argue for one over the other, only to group them into broad categories.

The first category is one in which foreign interests explicitly enter into the government objective function. Maggi and Rodriguez-Clare (2000), discussed earlier, allows the government to place some weight on foreign interests and finds that if the weight is sufficiently high, a VER may be adopted. Hillman and Ursprung (1988) present a model in which candidates compete for elective office and the probability of election increases with campaign contributions. Both domestic and foreign producer interests are allowed to make these contributions. They find that tariffs will be a divisive policy while VERs are not. Thus, contributions will be higher under VERs and candidates will prefer them to tariffs. The advantage of this approach is that one can use more conventional

modeling formulations. The disadvantage is that it is unclear why foreign interests should enter directly into government objective functions. One might imagine that direct contributions from foreign interests would either be illegal or impart a stigma. It seems more likely that the weight attached to foreign interests is a reflection of constraints imposed through threats of retaliation, for example.

The second category consists of models in which the more complicated structure of international negotiation helps shape instrument choice. (Feenstra and Lewis 1991) use a weighted social welfare function of the sort in Equation 2. However, they also posit international negotiations in which the foreign country is uncertain about the extent of domestic political pressure on the home country. They show how VERs may be preferable to tariffs in their ability to get the home country to accurately represent the pressures it faces for protection. In a model with imperfect competition (Rosendorff 1996) incorporates VERs and antidumping policy. Firms are engaged in Cournot competition, which undoes some of the puzzle about the use of VERs. As modeled, domestic firm profits rise with the VER relative to the optimal tariff so governments may prefer VERs. Rosendorff contrasts tariffs and VERs since these are the common outcomes of antidumping cases. However, a contrast between quotas and VERs might be more apt in a model of quantity competition. As in Feenstra and Lewis, the foreign government is uncertain about home country characteristics. Home is explicitly playing a game against foreign and Rosendorff solves for the Perfect Bayesian Equilibrium.

The third and final category consists of models in which domestic imperfect information plays an important role. While the models in the second category featured imperfect information on the part of the partner country, (Coate and Morris 1995) feature

domestic voters who are uncertain whether the politicians in office are good or bad. The politician's choice of instrument sends a signal about his type. Though this model does not explicitly address the determination of trade policy, it demonstrates a mechanism whereby political economy plays a substantially richer and more important role than it does under the Bagwell and Staiger interpretation.

V. Conclusion

This paper has argued that the central paradigm of recent theories of the political economy of trade policy is in conflict with the central feature of trade policy as practiced — a heavy reliance on instruments that forsake terms of trade gains, presumably in order to achieve domestic transfers. This has important implications not just for our understanding of trade policy formation, but also for our understanding of institutions such as the World Trade Organization that try to facilitate policy coordination.

Perhaps the most difficult aspect of modeling the political economy of trade is finding an interior solution. It is relatively easy to posit the existence of lobbies or other forces that have disproportionate power to sway policy. It is difficult to explain why these groups may be able to obtain only part of what they seek. One prominent attempt to solve this puzzle — the inclusion of additive general welfare in the Grossman and Helpman model — resulted in the prediction of a government that acted in unitary fashion and sought efficient policies.

The empirical evidence casually reviewed here suggests that opaque inefficient policies may be easier to implement than transparent and efficient ones. This argument is not new; Brock, Magee and Young described this as the principle of “optimal obfuscation.” However, it still lacks firm theoretical underpinnings. The provision of

such a theoretical foundation should allow the sort of rigorous analysis of trade policy that the Grossman and Helpman approach promised.

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