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The Effects of the Electoral Regime on Trade Policy

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The Effects of the Electoral Regime on Trade Policy

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Abstract

This paper studies how tariffs will vary with the mechanism used to elect that country's legislature. In particular, we study tariff policy under legislatures elected by a majoritarian election rule in single member constituencies and under a proportional, or party-list, rule. We develop a theoretical model in which office-seeking politicians' decisions regarding tariffs are determined by their electoral institution. We find that proportional systems have higher average tariffs than majoritarian systems, and that under both systems, sectors with higher levels of employment will recieve higher tariffs, but that the effect will be more pronounced under a proportional electoral rule. Finally, we test this model empirically, and find that these predictions are borne out by the data.

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1 Introduction

Ever since the first models showing the superiority of free trade have appeared, economists have asked why we do not then see more of it. A number of these papers, most notably Grossman and Helpman (1994) have produced explicit models where politics is the answer to this question, and many other papers, such as Stolper and Samuelson (1941) and Rogowski (1990) have hinted that the interplay between political blocs may hold the answer to the conundrum. A more recent literature has also focused upon the geographic concentration of industries (e.g. Krugman (1992)) and, in some cases, their correlation with political borders (e.g. Busch and Reinhardt (1999)). However, politics does not exist in a vacuum. These political forces can only act through a political mechanism, and thus the policy outcomes should depend on the policymaking mechanism. This paper focuses on an area that we believe has been neglected in this area of research—how certain aspects of political institutions, in this case the method of legislative representation, affect policy outcomes. Specifically, we develop a theory for countries that elect their legislators via a proportional representation system as well as a theory for those who elect their represenatives through a majoritarian system. We show that the average level of protection across economic sectors will be higher in a country that elects its legislators via a proportional system. We then test this prediction, as well as other predictions of the theory and find it in good accordance with the data.

There is a public finance literature that has focused upon the differences between countries that elect their legislators via majoritarian, or first-past-the-post, elections in geographic constituencies and those that choose them via proportional representation elections with party lists. For example, Milesi-Ferretti et al. (2002) note that in countries with proportional systems, government spending is composed primarily of transfers between different social groups, whereas in majoritarian systems, a larger percentage is composed of public goods. The mechanism behind this result is that in proportional systems, the constituencies of legislators are not geographic areas, but rather important social groups. On the other hand, under majoritarian regimes the legislators have a greater electoral incentive to target public good spending towards their own geographic constituencies—thus effectively excluding voters from other constituencies from its geographically concentrated benefit. Lizzeri and Persico (2000), however, devleop a theoretical model in which some public goods are more likely to be provided under a proportional regime. Finally, Persson and Tabellini (1999) develop a theoretical model describing how transfers, public good provision, and rents to politicians will vary with electoral regime. Persson and Tabellini (2003) also perform a number of empirical tests of the proposition that government type will affect the amount and type of government spending. Their results indicate that countries with proportional representation in their legislatures will spend both more money in total (and collect more in tax revenue) and spend more money on social

welfare programs and other types of transfer spending. However, they also point out many of the empirical difficulties in comparing policital institutions.

However, this literature, both theoretically and empirically, has not extended very far over into the realm of international trade. It would seem that a compelling case could be made that overall levels of trade could be considered something of a public transfer. Specifically, in an industrialized country which is likely relatively poorly endowed in labor and richly endowed in capital, high tariffs might be considered a transfer from capitalists to workers according to the logic of the Stolper-Samuelson model. On the other hand, tariffs on specific sectors might be understood as a type of public good for those geographic areas where industries from that sector are concentrated.

Rogowski (1987) does attempt to provide a comparative study of trade policy between proportional, majoritarian, presidential and parliamentary governments. Central to his argument is that proportional systems are likely to have smaller tariffs than majoritarian systems due to a lack of geographically particularistic interests that would lobby for them. Since free trade is widely held by economists to maximize overall social welfare in a country, a proportional electoral rule will lead to a government that is less concerned about specific regions and thus will want to pursue free trade. Willman (2003) makes a similar argument in a political model of how tariff policy is determined. Neither directly tests this theory, however, but Rogowski does point out that there is a correlation between between proportional systems and a high trade to GDP ratio. However, there may be multiple ways to explain such a correlation. Most importantly, a proportional electoral rule may be a system that is more suited to smaller and homogeneous countries. Smaller and homogeneous countries will have to rely more upon trade for outside goods and will likely have a high trade/GDP ratio regardless of its tariff policies. Hence, the direction of causation may be ambiguous.

Hiscox (2002) offers another method of thinking about comparative politics and trade. While his paper focuses only upon the U.S., its historical dimension does provide some interesting comparative insights. His argument is that in those points of American history where factor mobility was relatively low (as measured by differences in intersectoral rates of return) trade policy followed a Ricardo-Viner political economy model characterized by interindustry lobbying for protection. On the other hand, when factors of production were relatively mobile, a Stolper-Samuelson political economy model with competition between the owners of the different types of factors would result. His empirical data supported this contention.

Our idea is to take this insight by Hiscox and apply it to a situation where industries may be concentrated in geographic areas. Regardless of actual levels of factor mobility, if a legislator is representing a consituency that has only a small number of industries concentrated within it, the legislator might see the factors engaged in those industries as industry-specific. From his perspective,

if the factors have to (and are able to) switch industries, they will be forced to switch geographic areas as well, and he will lose constituents and their contributions. Obviously, if switching industries and geographic areas is difficult, then he will have to deal with the effects of unemployment in his constituency. Either way, he will have an interest in defending those industries concentrated in his geographic area.

On the other hand, if legislators are not representing geographic constituencies (or, at least, very large constituencies that are very well-diversified economically as happens under some proportional regimes) they be motivated by broader social welfare concerns. For example, a left wing legislator that puts a high welfare value on the utility of laborers may be inclined to raise tariffs high across the board in a country that is relatively poorly endowed with labor in order to raise the level of wages for workers. In general, we would not expect such a legislator to be as motivated by concern for the welfare of specific industries as a legislator elected by a majoritarian rule.

This paper, in section 2, starts out by deriving a model of general preferences for tariff protection and then translates these preferences into policy in both the majoritarian and proportional settings. It then makes observations about the structure of protection that we would expect to see in these countries and predicts how we would expect to see protection change if the electoral institutions were changed. In section 3, these predictions are empirically tested using cross-country panel data regressions. In section 4, we conclude and directions for further research are examined.

2 Model

2.1 Economics

Consider a small open economy. There are $N+1$ commodities in the economy; the zeroeth commodity is an amalgamation of all commodities that are not imported by the country under a free trade regime (including those that are exported), while the other N are industries that compete with imports in the domestic market. There exists a world price this period for commodities 1 through N of $\vec{p} \equiv (p_1, ..., p_n)$. The government has the ability to impose a tariff vector $\vec{\tau} = (1, \tau_1, ..., \tau_n)$ so that the domestic prices are $\vec{p}^d \equiv (p_0, p_1\tau_1, ..., p_N\tau_N)$.

2.1.1 Consumers

Agents have Cobb-Douglas utility functions over consumption. Thus, as consumers, their objective function is:

$$\max_{\vec{c}} \left\{ -\left(\frac{\prod_{n=0}^{N} c_n^{\gamma_n}}{\prod_{n=0}^{N} \gamma_n^{\gamma_n}} \right)^{-\zeta} \right\},$$

where $\sum_{n=0}^{N} \gamma_n = 1$ and $\zeta > 0$.[1] Intuitively, ζ tells us how the marginal utility of consumption changes with wealth. So for a society where agents have a large ζ, equality of income will be a greater concern since the marginal utility of consumption falls much more quickly with consumption.[2] Agents are subject to a budget constraint

$$\sum_{i=0}^{N} p_n^d c_n \leq w$$

where w is their wage, which will be solved for in the next subsection. Solving for consumption, we obtain a unique maximum with

$$c_n = \frac{w}{p_n^d} \gamma_n$$

and thus the welfare of the agent is

$$-\left(\frac{w}{\prod_{n=0}^{N} \left(p_n^d\right)^{\gamma_n}} \right)^{-\zeta}. \tag{1}$$

2.1.2 Firms

First, consider a classical economy under free trade. Goods are produced with a constant returns to scale Cobb-Douglas technology $F_n\left(l_n, k_n\right) = l_n^{\alpha_n} k_n^{1-\alpha_n}$.[3] The firm solves the problem

$$\max_{l_n, k_n} \left\{ p_n^d F_n\left(l_n, k_n\right) - w l_n - r k_n \right\}$$

where w is the wage and r the world interest rate. Thus, without tariffs, the economy reaches an equilibrium where

$$\begin{aligned} \alpha_n \frac{p_n^d F_n\left(l_n, k_n\right)}{l_n} &= w \\ \left(1 - \alpha_n\right) \frac{p_n^d F_n\left(l_n, k_n\right)}{k_n} &= r. \end{aligned}$$

Also note that profits in all industries are 0, so ownership of the firms is unimportant.

2.1.3 Effect of Tariffs

Now consider changing domestic prices by enacting a tariff policy, and further assume that the amount of labor in each industry is fixed.[4] (Alternatively, the relocation cost of switching industries

[1] This ensures that the agent's utility function over the composite consumption good satisfies the Inada conditions.

[2] Of course, for the agent's problem, any monotonic transformation of the utility function will produce the same optimal bundle of consumed goods. The exact form of the utility function becomes important for the development of a political model.

[3] We normalize the productivity of all of the industries in our country to 1. World prices, of course, will be set by other nations' productivity levels.

[4] This assumption is investigated in Wacziarg and Wallack (2004).

is "large" compared to the wage differentials induced by the tariffs, so workers are not willing to move.) Since short term labor is fixed at a maximal value, but capital is mobile, capital flows into the industry until the industry is maximizing profits with respect to capital. Unemployment is possible, but since prices are rising due to tariffs, the firms will use all of the labor available. Thus labor still retains its share of the income from that industry due to intraindustry competition for workers. So, if we change the price of good n by changing tariff policy, then the firm must solve

$$\max_{k_n} \left\{ p_n^d F\left(l_n, k_n\right) - r k_n - w_n l_n \right\}$$

due to intraindustry competition between firms, where each individual small firm acts as a price (and wage) taker. So the first-order condition of the firm gives us that:

$$k_n = \left(\frac{\left(1-\alpha_n\right) p_n^d}{r} \right)^{\frac{1}{\alpha_n}} l_n.$$

Hence, since a competitively set wage must be equal the marginal product of labor,

$$w_n\left(k_n\right) = \alpha_n p_n^d \left(\frac{\left(1-\alpha_n\right) p_n^d}{r} \right)^{\frac{1-\alpha_n}{\alpha_n}}.$$

Note that the wage is not only an increasing, but a convex function of the price. This happens because there are two effects on the wage of a worker when the price of his output good is raised. First, the increase in price causes his wage to go directly (and linearly) and there is also an indirect effect, as the increase in price causes more capital to enter the industry, increasing the marginal product of labor. Thus, using equation (1), the welfare of an agent in industry n is

$$-\left(\frac{\alpha_n p_n^d \left(\frac{(1-\alpha_n) p^d}{r} \right)^{\frac{1-\alpha_n}{\alpha_n}}}{\prod_{m=0}^{N} \left(p_m^d\right)^{\gamma_m}} \right)^{-\zeta}$$

Noting that $\vec{p}^{\,d} \equiv \left(p_0\tau_0, p_1\tau_1, ..., p_N\tau_N\right)$ where τ_0 is constrained to be 1,

$$u_n\left(\vec{\tau}\right) \equiv -\left(\frac{\alpha_n p_n \tau_n \left(\frac{(1-\alpha_n) p_n \tau_n}{r} \right)^{\frac{1-\alpha_n}{\alpha_n}}}{\prod_{m=0}^{N} p_m^{\gamma_m} \left(\tau_m\right)^{\gamma_m}} \right)^{-\zeta} \tag{2}$$

Also note that firms are still making zero profits, even with tariff protection, as all of the gains go to the workers.

2.2 Politics

Given this economic model, we now turn to the question of how tariffs will be set in a political equilibrium. To do this, we use a variant of the model of political competition given by Lindbeck

and Weibull (1987), where both sides of the political competion within each electoral region wish to maximize their chance of gaining a majority of the votes. This will lead, in equilibrium, to both sides committing to tariff policy choices which maximize the welfare of the constituents within the electoral district. However, the different electoral institutions, will lead to different outcomes, as they change the size of the electoral district.

For majoritarian regimes, Duverger's Law assures us that two-sided should be expected. (Cox 1997). For countries with proportional systems, however, we very often observe more than two parties. However, very commonly, these parties sort themselves out before the election into two party coalitions, each of which is vying for a majority of the electorate. Countries that follow this pattern have been identified in the Banks (1999) data set, and we will use only data from countries with a proportional electoral regime if they follow this pattern. Thus, for the purposes of the theoretical development given here, we will assume that the politicians within each district have already arrayed themselves into two distinct sides. We will call these sides parties, although in the proportional case they should be more appropiately thought of as coalitions of parties.

2.2.1 A Legislature with a Proportional Electoral Rule

Agents are assumed to have preferences over not only their consumption, but also the ideology of their represenative(s). An agent i of industry n, if party A wins, has utility given by

$$u_n\left(\tau^A\right) + \theta^A_{i,n} \text{ if } A \text{ wins}$$
$$u_n\left(\tau^B\right) + \theta^B_{i,n} \text{ if } B \text{ wins}$$

where $u_n\left(\tau^P\right)$ is the expected economic welfare of the agent given the tariff policies τ^P the winning party P has committed to propose and support, as defined in equation (2). $\theta^P_{i,n}$ denotes the utility that i obtains from having a party with P's ideology in power. The utility differential for agent i, $\theta^B_{i,n} - \theta^A_{i,n} \equiv \theta_{i,n}$ is distributed with a density function f (which has a distibution function F). We assume f is distributed symmetrically about 0, has full support, and is single-peaked. So the proportion of agents in industry n that vote for party A is $F\left(u_n\left(\tau^A\right) - u_n\left(\tau^B\right)\right)$. Hence the goal of party A is to solve

$$\max_{\vec{\tau}^A} \sum_{n=0}^{N} \pi_n F\left(u_n\left(\tau^A\right) - u_n\left(\tau^B\right)\right)$$

where π_n is the proportion of voters in industry n. In the proportional case, the winning party will get to enact its proposal, so party A solves:

$$\max_{\tau^A} \sum_{n=0}^{N} \pi_n F\left(u_n\left(\tau^A\right) - u_n\left(\tau^B\right)\right)$$

Taking first order conditions with respect to τ_h of the above expression, we find

$$\begin{array}{ll} \pi_h f\left(u_h\left(\tau^A\right)-u_h\left(\tau^B\right)\right)\left(\frac{1}{\alpha_h\gamma_h}-1\right)\left(\tau_h^A\right)^{-\zeta\frac{1}{\alpha_h}}- & \\ \sum_{n=1,\neq h}^{N}\pi_n f\left(u_n\left(\tau^A\right)-u_n\left(\tau^B\right)\right)\left(\tau_n^A\right)^{-\zeta\frac{1}{\alpha_n}} & =\pi_0 f\left(u_0\left(\tau^A\right)-u_0\left(\tau^B\right)\right) \end{array}$$

Party B solves the problem

$$\max_{\vec{\tau}^B}\sum_{n=0}^{N}\pi_n\left(1-F\left(u_n\left(\tau^A\right)-u_n\left(\tau^B\right)\right)\right)$$

$$\max_{\vec{\tau}^B}\sum_{n=0}^{N}\pi_n F\left(u_n\left(\tau^B\right)-u_n\left(\tau^A\right)\right)$$

due to the symmetry of f. Hence, as they solve the same problem, the two tariff proposals must coincide. Hence, the first-order equations reduce to

$$\pi_h\left(\frac{1}{\alpha_h\gamma_h}-1\right)\tau_h^{-\zeta\frac{1}{\alpha_h}}-\sum_{n=1,\neq h}^{N}\pi_n\tau_n^{-\zeta\frac{1}{\alpha_n}}=\pi_0$$

where we have dropped the superscript denoting party, since both parties propose the same thing in equilibrium. These first-order conditions correspond exactly to the first-order conditions we would have obtained simply by maximizing social welfare. These N equations characterize the equilibrium tariffs under a proportional electoral rule.[5] The solution to these first order conditions has the property that if π_h increases, and then if $\tau_h^{\zeta\frac{1}{\alpha_h}}$ increases by the same multiple, all of the first order conditions will still be satisfied. Thus we have that the tariff is increasing in as the proportion of people employed in that industry rises (while the proportion in other import-competing industries falls). Further, if we assume that $\frac{\pi_h}{\alpha_h\gamma_h}>1-\pi_h$, then we have the additional result that the tariff is falling with the consumption share.[6] This result then follows from the implicit function theorem. To see this, let $\hat{\tau}_h=\tau_h^{-\zeta\frac{1}{\alpha_h}}$. (Note that as $\hat{\tau}_h$ rises, τ_h falls.) Further, let $\hat{\gamma}_h=\gamma_h+\varepsilon$ and $\hat{\gamma}_{-h}=\gamma_{-h}-\beta_{-h}\varepsilon$, where $\sum_{n=0,\neq h}\beta_n=1$. (This is necessary to preserve the identity $\sum_{n=0}^{N}\gamma_n=1$.) Then our first order conditions can be written as a linear system of equations in $\hat{\tau}$, and the derivative of $\hat{\tau}$ with respect to ε, evaluated at $\varepsilon=0$, is found to be

$$D_\varepsilon\begin{bmatrix}\hat{\tau}_1\\ \vdots\\ \hat{\tau}_h\\ \vdots\\ \hat{\tau}_N\end{bmatrix}=\begin{bmatrix}\left(\frac{\pi_1}{\alpha_1\gamma_1}-\pi_1\right) & \cdots & -\pi_h & \cdots & -\pi_N\\ \vdots & \ddots & \vdots & & \vdots\\ -\pi_1 & \cdots & \left(\frac{\pi_h}{\alpha_h\gamma_h}-\pi_h\right) & \cdots & -\pi_N\\ \vdots & & \vdots & \ddots & \vdots\\ -\pi_1 & \cdots & -\pi_h & \cdots & \left(\frac{\pi_N}{\alpha_N\gamma_N}-\pi_N\right)\end{bmatrix}^{-1}\begin{bmatrix}-\frac{\pi_1\beta_1}{\alpha_1\gamma_1^2}\hat{\tau}_1\\ \vdots\\ \frac{\pi_h}{\alpha_h\gamma_h^2}\hat{\tau}_h\\ \vdots\\ -\frac{\pi_N\beta_N}{\alpha_N\gamma_N}\hat{\tau}_N\end{bmatrix}$$

[5] Note that generically there can be only one solution to the first order equations, as these equations are linear in the variables $\tau_h^{-\zeta\frac{1}{\alpha_h}}, h=1,...,N$.

[6] Note that this condition is quite reasonable. A stronger requirement is $\pi_h>\alpha_h\gamma_h$, which says that we expect the proportion of labor in an imported industry is greater than the consumption share of that industry multiplied by the labor share of that industry.

and the condition that $\frac{\pi_h}{\alpha_h \gamma_h} > 1 - \pi_h$ ensures the inverted matrix is positive definite. Thus, as the consumption share of an industry increases, its tariff will decrease (and the tariffs of the other industries will rise, since their consumption shares are rising at the rate β). Both of these results are intuitive: as the number of workers in an industry grows, politicians give greater weight to these workers, so the tariff on that industry increases, as the wage is an increasing function the tariff. Further, as the consumption share of the industry grows, keeping the price of the output in that industry small is more important in maximizing welfare, so tariffs will fall in that industry. Finally, we can not determine how labor share in the industry will affect tariff levels, as there are two competing effects. First, a larger labor share makes the tariff more effective at transferring wealth to the workers in that industry, but because of this, these workers are already wealthy at the current tariffs, and so (due to the concavity of the utility function) will recieve less consideration at the margin.

2.2.2 A Legislature with a Majoritarian Electoral Rule

We will assume that each legislator's district has a proportion of π_0 workers in the nonimported industries, and $1 - \pi_0$ workers in one of the imported indutries. So the incentives of each legislator from districts with the same imported industry are the same. However, since the other legislators have different incentives, it is necessary to model the process by which tariff policy is formed. We do this by considering a game between the legislators which has the form of a one-round closed rule game in Baron and Ferejohn (1989). However, this makes it awkward to formally construct an electoral model, since legislators now do not simple propose policies, but also vote on policies proposed by others, and it is unclear on what policy dimensions they can make binding commitments. Instead, we use the central result of the Lindbeck-Weibull model, that politicians will act so as to maximize the welfare of their constituents. Note that if we had made the assumption in the proportional case of welfare maximizing parties, we would have found exactly the same equilibrium tariffs.

The problem for a legislator from a district with industry n is to solve

$$\max_{\vec{\tau}} \left\{ (1 - \pi_0) u_n (\vec{\tau}) + \pi_0 u_0 (\vec{\tau}) \right\}$$

subject to the constraint that enough other legislators will vote for his proposal; otherwise, he may as well suggest free trade. For convenience, let the proposing industry be industry 1, and let the industries which are chosen by the proposing legislator to be part of his winning coalition be numbered $2, ..., I$. Hence for each industry $i = 2, ..., I$, the proposal must satisfy the constraint that

$$(1 - \pi_0) u_i (\vec{\tau}) + \pi_0 u_0 (\vec{\tau}) \geq (1 - \pi_0) u_i \left(\vec{0} \right) + \pi_0 u_0 \left(\vec{0} \right)$$

so that these legislators are weakly better off under the proposal than under free trade. Letting λ_i be the Lagrange multiplier for each of these constraints (and letting $\lambda_1 = 1$), we have that the proposer's problem is

$$\max_{\vec{\tau}} \left\{ (1-\pi_0) \sum_{i=1}^{I} \lambda_i u_i(\vec{\tau}) + \pi_0 u_0(\vec{\tau}) \sum_{i=1}^{I} \lambda_i \right\}$$

for suitably chosen Lagrange multipliers. Taking first order conditions with respect to τ_h, and assuming again that under free trade wages would be equalized across industries, we have

$$\frac{(1-\pi_0)\lambda_h}{\sum_{j=1}^{N}\lambda_j} \tau_h^{-\zeta\frac{1}{\alpha_h}} \left(\frac{1}{\alpha_h \gamma_h} - 1 \right) - \sum_{i=0,\neq h}^{N} \frac{(1-\pi_0)\lambda_i}{\sum_{j=1}^{N}\lambda_j} \tau_i^{-\zeta\frac{1}{\alpha_i}} = \pi_0$$

where $\lambda_i = 0$ for all $i > I$.

Let

$$\tilde{\pi}_i = \frac{(1-\pi_0)\lambda_i}{\sum_{j=1}^{N}\lambda_j};$$

we can think of the $\tilde{\pi}_i$'s as "pseudoproportions," as by subsitituting in, we have

$$\tilde{\pi}_h \left(\frac{1}{\alpha_h \gamma_h} - 1 \right) \tau_h^{-\zeta\frac{1}{\alpha_h}} - \sum_{n=1,\neq h}^{N} \tilde{\pi}_n \tau_n^{-\zeta\frac{1}{\alpha_n}} = \pi_0$$

which are essentially the same first-order conditions as in the case of the proportional legislature. We can see that once the proposer has decided that an industry should be a member of his coalition, the size of its tariff is no longer dependent on the size of the industry. However, larger industries, *ceteris paribus*, are more likely to be included in the coalition, since the proposer will want to include as few members of the coalition as possible, in order to minimize the effect on the prices consumers must pay in his district.[7] Thus, we expect a larger proportion to increase the tariff of an industry in expectation, by helping it to become a member of the coalition. However, if we can identify those industries which are members of the winning coalition, then we would expect that the size of these industries would play no further role in determining their tariff levels, unless being a larger industry makes it more likely to control the role of proposer.

Finally, note that although this model predicts that tariffs will be zero if the industry is not included in the coalition, we do not expect this to be the case in reality as we have ignored revenue effects from tariffs, so in a more complex model which took into account revenue effects, the tariffs in these industries would follow a Ramsey rule.

2.2.3 Comparison of Political Institutions

To compare the outcomes of the proportional legislature to the majoritarian legislature requires some simplifying assumptions. Let us assume that $\alpha_n = \alpha$ and $\gamma_n = \gamma$ for all $n = 1, ..., N$. (The

[7] For a theoretical treatment of this point in a more abstract setting, see the seminal work Riker (1962).

nonimported industry can have different parameters.) Then the first order conditions become

$$\frac{\hat{\pi}_h}{\tau_h^{\frac{1}{\eta}}}\left(\frac{1}{\alpha\gamma}-1\right)-\sum_{n=1,\neq h}^{N}\frac{\hat{\pi}_n}{\tau_n^{\frac{1}{\eta}}}=\pi_0$$

where $\eta=\alpha\zeta^{-1}$ and $\hat{\pi}$ stands for the proportion or pseudoproportion depending on the political system. So exploiting the symmetry of these equations, we have that

$$\tau_h=\left(\frac{\hat{\pi}_h}{C}\right)^{\eta}$$

where C is a constant. Now we shall assume that $\eta<1$.[8] Thus the average tariff level is

$$\begin{aligned}\bar{\tau} &\equiv \frac{1}{N}\sum_{n=1}^{N}\left(\frac{\hat{\pi}_h}{C}\right)^{\eta}\\ &= \frac{C^{-\eta}}{N}\sum_{n=1}^{N}\hat{\pi}_h^{\eta}\end{aligned}$$

which has an implicit constraint that $\sum_{n=1}^{N}\hat{\pi}_h=1-\pi_0$. Now note the highest tariff scenario for the majoritarian legislature is for λ_i to be the same for all i, since the average tariff is proportional to the weighted sum of a concave function of the proportion of laborers in that industry. So the average tariff will be smaller for the majoritarian regime if

$$\begin{aligned}\sum_{i=1}^{I}\left(\frac{(1-\pi_0)}{I}\right)^{\eta} &\leq \sum_{n=1}^{N}\pi_n^{\eta}\\ I^{1-\eta}(1-\pi_0)^{\eta} &\leq \sum_{n=1}^{N}\pi_n^{\eta}.\end{aligned}$$

This condition states that the tariff under a majoritarian regime will be smaller for "reasonable" distributions of labor supply to the various industries. For instance, if the number of agents working in each industry is the same, then the inequality is easily satisfied. Further, we know that I will be either the minimal number to form a winning coalition, or perhaps one more if the proposer is not large enough to replace any of the members of the winning minimal coalition and have it remain a mininal winning coalition. Thus, letting M be the number of industries required to form a minimal winning coalition, a sufficient condition for tariffs to be lower under a majoritarian regime is

$$(M+1)^{1-\eta}\leq\sum_{n=1}^{N}\left(\frac{\pi_n}{1-\pi_0}\right)^{\eta}.$$

This gives us a simple and very commonly satisfied condition to check to see if tariffs will necessarily be lower under a majoritarian regime.[9] This condition is not very intuitive, but it is a necessary

[8] This assumption is quite realistic, empirically. η is simply the labor share α divided by ζ, the coefficient of relative risk aversion plus one. Mankiw et al. (1992) measure α to be about .4, and the work of Garcia et al. (2003) gives an estimate of approximately 1.35 for ζ.

[9] This condition, for instance, holds for all of the countries in our data set..

condition that the increase in tariffs by choosing a worst-case scenario ($\lambda_i = 1$) under a majoritarian scheme is outweighed by the majoritarian scheme's advantage of giving some industries no protection at all.

To understand this result, consider that in a proportional system, each industry gets weighted by its proportion of workers, while in the majoritarian system, workers in importable industries are either given no consideration at all (becasue their legislators are not part of the winning coalition), or approximately twice the amount of consideration, since they are a much smaller coalition which eventually decides policy. (Workers in industry zero are weighted the same amount as before.) However, welfare of the workers in an industry is an increasing concave function of the tariff in their industry, and a decreasing, concave function of tariffs in other industries. Thus the amount the tariff rises on industries in the winning coalition is less than the amount the tariff falls on those not in the winning coalition. Consider a simple example where $\frac{1}{3}$ work in industry 1, and $\frac{1}{6}$ work in industry 2, and the rest work in industry 0. So calculating average tariffs, under a proportional regime the average tariff is $\frac{C^{-\eta}}{2}\left(\left(\frac{1}{3}\right)^{\eta}+\left(\frac{1}{6}\right)^{\eta}\right) = \frac{(6C)^{-\eta}}{2}\left(2^{\eta}+1^{\eta}\right) = \frac{(6C)^{-\eta}}{2}\left(2^{\eta}+1\right)$. Under a majoritarian election rule, the first industry dominates the legislature, so the average tariff is $\frac{C^{-\eta}}{2}\left(\left(\frac{1}{2}\right)^{\eta}\right) = \frac{(6C)^{-\eta}}{2}\left(3^{\eta}\right)$. So since $3^{\eta} < 2^{\eta}+1$ if $\eta < 1$, we have that tariffs will be lower under a majoritarian rule.

2.2.4 Summary

Before proceeding to the empirical tests, we summarize the empirical predictions of the model. To wit, we have found that under a proportional regime, we would expect that tariffs of imported goods that have domestic equivalents are rising in the labor share of those industries, and falling in the consumption share of those industries. Under a majoritarian regime, the expected tariff should also be higher for larger industries. Our most intriguing result, however, is that under fairly nonstringent conditions, we should expect tariffs to be higher under a proportional electoral rule.

3 Empirical Findings

3.1 Data Description

All data used in the following empirical tests comes from two primary sources. The first is the Trade and Production data set from Nicita and Olarreaga (2003), which allows us to obtain tariff, import and export data aggregated at the 3-digit ISIC level. For information on governmental institutions, we use the data set developed by Arthur Banks (1999), which allows us to create variables representing countries that have legislatures elected through majoritarian or proportional electoral

regimes as well as countries that have presidential instead of parliamentary forms of government.

Using this data, we are able to get several observations with all of the relevant variables from various Latin American and OECD countries from the 1980s and 1990s. These come from a broad cross-section of different regime types as outlined in the following tables:

Countries	majoritarian	proportional	total
presidential	2	15	17
parliamentary	6	11	17
total	8	26	34

Country-years	majoritarian	proportional	total
presidential	17	57	74
parliamentary	33	29	62
total	50	86	136

The variables that we will examine in the following regressions are:

- consshare – the percentage of consumption in a 3-digit sector in a given country-year to the total consumption in the same country-year, constructed from data provided by UNIDO
- imppenetrate – the penetration ratio of imports, as constructed from the Trade and Production data set
- imptotrat – the ratio of imports in a 3-digit sector in a given country-year to the average level of imports across 3-digit sectors in the same country-year, constructed from data from the Trade and Prodcution data set
- labratio – the ratio of employees in a 3-digit sector in a given country-year to the average level of employees across 3-digit sectors in the same country-year, constructed from data from the Trade and Production data set
- maj – a dummy variable that takes on a value of 1 if the legislature of the given country-year was elected by majoritarian voting, as reported by Banks
- pres – a dummy variable that takes on a value of 1 if the given country-year had a presidential form of government, as reported by Banks
- tartrains – the level of tariffs reported for a 3-digit sector in a given country-year, as reported by UNCTAD
- tarcombomean – the arithmetic mean of untariffs across 3-digit sectors in a given country-year
- tarratio – tartrains/tarcombomean

3.2 Countries with Proportional Electoral Rules

The major prediction that is derived from the section on legislatures with proportional electoral rules is that tariffs in a sector that employs a large number of workers relative to the other sectors in that country will tend to receive higher tariffs. These predictions are tested on tables #4-8. For each of these tables, six regressions are run. There are regressions done on the whole sample of countries, the subsample that just includes countries with proportional electoral rules, and countries with majoritarian electoral rules. In addition to these divisions, two different estimators are used upon each subsample. The first is a fixed-effects estimator that includes a dummy variable for each sector, and the second is a simple OLS estimator.

Table #4 reports the results of a simple test of this hypothesis, and we see that the initial results are not encouraging. For the total sample of countries, the coefficients on labratio are of the wrong sign and significant when fixed effects are used and insignificant when OLS is used. For the subsample of countries with proportional electoral rules, the results are similar.

While these results hardly support the hypotheses of our model, they do not definitively reject them either. The above section on politicians' strategies derives an important result that demonstrates that the optimal tariff for politicians to pursue will be decreasing in the consumption share of income in a given sector. Furthermore, as Wacziarg (2002) has demonstrated, consumption shares and employment shares by sector are positively correlated across country-years. Hence, it could be the case that the results from this simple regression could be attributed to an omitted variables bias.

Hence, tables 5 through 8 try to account for results including these partial effects between employment and consumption. There are two issues that must be dealt with here. The first is the endogeneity of consumption of goods in a sector with respect to tariff levels. While it may be true that consumption of a good increases pressures on the government to keep tariffs on that good low, it is obvious that that a higher tariff would decrease consumption of an imported good. Hence, two independent variables are used to represent consumption. The first measures the ratio of the imports in the given sector to the average of imports across sectors. The second measures the share of consumption in a sector of the total consumption in that country-year. While the first variable measures most closely the factor that we believe will drive our results, this variable also suffers most heavily from an endogeneity bias. The second variable is further removed from the theory but suffers less from an endogeneity problem. In fact, if agents have Cobb-Douglas utility functions as we assume in the model, then the consumption share by sector should not be affected by relative prices (though it would be a great act of faith to impose this assumption). The second issue was the possible existence of corner solutions for countries that did not import goods in a given sector.

It could be that such an observation resulted from the fact that the country was well-endowed with the factors necessary to produce goods from that sector with recourse to imports, or from very high tariffs that made importation impossible. Hence, we do two sets of regressions – one on the entire data sample and one that excludes all observations for which the import penetration ratio is less than 5%.

The results in these tables are more encouraging for the theory. In all cases when OLS is used for the subsample of proportional representation countries, the coefficients have their expected signs and are highly significant. In fact, this observation holds true even when the sample is expanded to all countries. Restricting ourselves to the subsample of sectors that have import penetration ratios of greater than 5% also improves the results by a modest amount. On the other hand, when a fixed-effects estimator is used for these tests, the results are more ambiguous. The signs are often reversed and results are insignificant. Therefore, we do have some empirical findings to indicate that our basic predictions about proportional representation countries are correct.

3.3 Countries with Majoritarian Electoral Rules

An implicit prediction from the model that we developed is that in a majoritarian setting, there will be a legislator who acts as a proposal-maker and will naturally propose a large tariff for an industry concentrated in his district. While it is hard to derive explicit empirical predictions for most of the bargaining that one would expect to take place in such a legislature, our proposal model suggests that there should be one industry or a small group of industries that will disproportionately benefit from being located in the proposer's district. There should also be some industries in the winning coalition put together by the proposer that would have a moderate level of protection, and some industries left outside of that coalition with little to no protection.

While we have not derived a means of testing all of these predictions, we would at a minimum expect to see an industry or small group of industries in a majoritarian country with very high tariffs. Hence as a means of testing this prediction, we regressed the ratio of the maximum sectoral tariff to the mean in each country-year on the majoritarian and presidential dummies. The results are reported in Table 9. This ratio is considerably higher in majoritarian countries than in PR countries. While this observation does not necessarily show us that these high tariffs are due to an agenda setter, we do know of at least one anecdotal case that agrees with our theory. The largest tariff in any sector in any country-year is the 350% U.S. tariff on tobacco products in 1996. At that time, the chairman of the Senate Foreign Relations Committee was Senator Jesse Helms of North Carolina, a state known for the strength of its tobacco lobby.

While we do not have a very explicit model of bargaining, other results (e.g. Baron and Ferejohn

(1989) and Groseclose and Snyder (1996)) lead us to believe that any coalition of legislators built to pass a tariff bill would include the "cheapest" legislators in addition to the proposer. In the sense of the paper, a legislator will be cheaper if his constituency is largely dependent upon one industry and if an industry in his constituency is also an important industry in other constituencies. The first result comes from the fact that the legislator will get a high utility even from having a relatively small tariff on that industry. The second result occurs because the proposer can then gather several legislators through the use of only one tariff. While we do not have measures for both of these variables, they are likely to be correlated with the labor share of that industry. Hence, much like in the PR case, a sector's tariff should be increasing in the employment share of that sector – though we may expect these results to be weaker. Tables 4-8 provide mixed results. When consshare is used as a covariate, the results are generally favorable. However, when it is not, the coefficient becomes negative – often significantly so.

3.4 Comparative Predictions

The major implication of this model is that countries with a majoritarian political system will have a lower average tariff rate than countries with a proportional representation system. A secondary implication is that in a majoritarian system where one legislator acts as an agenda-setter and buys a minimal-winning coalition while leaving a number of legislators without anything, there will be a greater variance of tariffs across industries than in a more proportional system.

Tests of these two hypotheses are reported in Table 1. The standard deviation of tariffs variable reports the standard deviation of tariffs across sectors in a given country-year. The mean value of tariffs reports the average level of tariffs across sectors for a given country-year. We regress these variables on dummy variables for majoritarian legislatures and presidential systems.[10]

Our results are encouraging for both of the hypotheses. In the two specifications for the mean value of tariffs that have the majoritarian dummy variable, the coefficient is significant and negative, as predicted. In the two specifications that have the presidential dummy variable, the coefficient is positive and significant. In the two specifications that have the standard deviations of tariffs as the dependent variable and the majoritarian dummy variable as an independent variable, the coefficients are significant and positive, and in the two specifications where the presidential dummy variable is included, the coefficients are significant and negative.

[10]While our theory says nothing explicit about the effect of a Presidential style of government, it seemed like a good control variable to use. Our prior was that a President would have a similar effect as a proportional system in that the President's "constituency" is the entire country. Hence, adding a President creates another actor who is likely to have the same incentives as a PR legislature. For a theoretical treatment of the effect of presidents, see Persson *et al.* (2000).

In order to ensure that our results are not being driven by a small number of countries having a disproportionate number of years included in the dataset, we test two additional specifications.[11] The first is a "between" estimator where the within country means of the dependent variable are regressed upon the within country means of the independent variables. As we see in Table 2, the between estimator does not change our basic results with regards to the mean value of tariffs. While the magnitudes of the coefficients are slightly smaller, they are still significant and of the expected sign. When it comes to the standard deviation of tariffs, however, the results are not quite as clear. A presidential system of government still significantly reduces the variation of tariffs across sectors, but there is no longer a statistically significant effect from the majoritarian dummy variable. We also use the random effects estimator, which allows error terms from observations from the same country to be correlated across time and performs the appropriate FGLS procedure The random effects results, as shown in Table 3, are quite supportive of our two hypotheses. All of the coefficients using this specification are of the expected sign and are statistically significant.

4 Summary and Extensions

We have developed a model of how economic forces mold political outcomes through institutions, and how differences in those institutions lead to different economic outcomes. We find that majoritarian rules tend to lead to lower tariff levels, even though the majoritarian institution seems to have greater difficulties with externalities, as the winning coalition puts no weight on the welfare of the agents not in their districts. However, it has long been recognized that free trade is welfare enhancing, particularly in this model as there is no revenue gained from the tariff. Thus, the argument can be likened to "economic judo," where the externality due to the inability of the legislature to take into account the effect on the world of tariffs through the reduction of the world rate of interest can be partially vitiated through a majoritarian legislature, where the winning coalition does not the consider the consequences of not raising tariffs on the industries not in the coalition, thus leading to lower tariffs overall. Finally, these results have found a large amount of support in cross country data on tariff policy.

Much work remains to be done however. Empirically, finding better instruments for consumption under free trade would be helpful. Even though there is no difference under Cobb-Douglas utility functions between consumption shares using different prices, for less regular utility functions this will not be the case. Computationally, we could solve the problem for countries given their labor and

[11] In addition to these two specifications, one could also use a fixed-effects model that estimates coefficients using only within country variation. However, because few countries have more than one observation and within country variations is relatively small, we opted to not use this technique.

consumption shares, which would not only give us quantitative predictions of tariff levels in various countries, but also provide better estimates of how large the effect of electoral rules on institutions is. It may also provide a theoretical justification for our earlier assertion that the coefficient of variance for tariff policy should be larger under a majoritarian regime.

Theoretically, the model can be expanded in a number of directions. One could inculde presidents in the policymaking process, possibly as a veto player—one whose vote must be acquired, and one who (presumably) cares about the welfare of all citizens. This might not matter for nations with proportional electoral rules, but could drive tariffs higher in nations with majoritarian rules. Alternatively, one could fit this model into an international framework, where countries bargain about their eventual tariff policy, knowing that while individual decisions about tariffs may not affect the world rate of interest, collective ones will. This may provide a powerful incentive for countries to agree to reduce tariff rates, as this encourages capital growth, which would help these national leaders through a greater tax base.[12] However, the structure of one's government as well as the size of the individual country may confer bargaining power. In particular, the static Nash outcome (where all countries take the world rate of interest as given) may be better for presidents of countries with proportional electoral rules (as in this case the incentives of their legislatures are more closely aligned with those of the president himself), giving the proportional countries more bargaining power. Finally, the type of political analysis developed here could be applied to other problems in political economy with greater confidence, as we now have some empirical evidence in support of this characterization.

[12]For an early discussion of optimal tariffs in an international bargaining context, see Johnson (1953).

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Table 1

	OLS			OLS		
	Mean Value of Tariffs	Mean Value of Tariffs	Mean Value of Tariffs	Standard Deviation of Tariffs	Standard Deviation of Tariffs	Standard Deviation of Tariffs
Majoritarian Government Dummy Variable	-3.826	-4.751		5.661	6.53	
	(0.700)**	(0.705)**		(1.882)**	(1.967)**	
Presidential Government Dummy Variable	2.867		4.025	-6.894		-7.514
	(0.677)**		(0.709)**	(1.753)**		(1.793)**
Combination of UNCTAD and WTO mean reported tariffs				1.535	1.25	1.264
				(0.211)**	(0.208)**	(0.196)**
Constant	10.535	12.435	8.498	-6.48	-7.5	-1.16
	(0.603)**	(0.428)**	(0.523)**	(2.660)*	(2.787)**	(2.046)
Observations	136	136	136	136	136	136
R-squared	0.34	0.25	0.19	0.30	0.21	0.25
Standard errors in parentheses * significant at 5%; ** significant at 1%						

Table 2

	Between			Between		
	Mean Value of Tariffs	Mean Value of Tariffs	Mean Value of Tariffs	Standard Deviation of Tariffs	Standard Deviation of Tariffs	Standard Deviation of Tariffs
Majoritarian Government Dummy Variable	-2.246	-2.863		-0.051		-0.688
	(1.063)*	(1.256)*		(1.932)		(2.316)
Presidential Government Dummy Variable	3.565		3.861	-7.390	-7.394	
	(0.927)**		(0.965)**	(1.915)**	(1.877)**	
Combination of UNCTAD and WTO mean reported tariffs				0.701	0.704	0.032
				(0.305)*	(0.281)*	(0.302)
Constant	9.274	10.782	8.633	4.940	4.900	9.027
	(0.643)**	(0.609)**	(0.597)**	(3.035)	(2.602)	(3.422)*
Observations	136	136	136	136	136	136
Number of Countries	34	34	34	34	34	34
R-squared	0.42	0.14	0.33	0.33	0.33	0.00
Standard errors in parentheses * significant at 5%; ** significant at 1%						

Table 3

	Random			Random		
	Mean Value of Tariffs	Mean Value of Tariffs	Mean Value of Tariffs	Standard Deviation of Tariffs	Standard Deviation of Tariffs	Standard Deviation of Tariffs
Majoritarian Government Dummy Variable	-3.315	-3.769		5.661	6.305	
	(0.911)**	(1.132)**		(1.882)**	(2.055)**	
Presidential Government Dummy Variable	3.032		3.790	-6.894		-7.514
	(0.838)**		(0.891)**	(1.753)**		(1.793)**
Combination of UNCTAD and WTO mean reported tariffs				1.535	1.317	1.264
				(0.211)**	(0.207)**	(0.196)**
Constant	10.189	11.638	8.802	-6.480	-8.038	-1.160
	(0.694)**	(0.597)**	(0.628)**	(2.660)*	(2.768)**	-2.046
Observations	136	136	136	136	136	136
Number of Countries	34	34	34	34	34	34
Standard errors in parentheses						
* significant at 5%; ** significant at 1%						

Table 4

	Total Sample		Just PR		Just Maj	
	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average
Ratio of sectoral employment to average	-0.139	-0.025	-0.070	0.029	-0.218	-0.108
	(0.024)**	(0.017)	(0.022)**	(0.017)	(0.055)**	(0.034)**
Constant	1.144	1.030	1.079	0.980	1.218	1.108
	(0.030)**	(0.027)**	(0.028)**	(0.027)**	(0.064)**	(0.051)**
Observations	2298	2298	1268	1268	1030	1030
Number of 3-Digit ISIC Sectors	28	28	28	28	28	28
R-squared	0.01	0.01	0.01	0.01	0.02	0.01
Standard errors in parentheses	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS
* significant at 5%; ** significant at 1%						

Table 5

	Total Sample		Just PR		Just Maj	
	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average
Ratio of sectoral employment to average	-0.139	0.014	-0.071	0.068	-0.199	-0.085
	(0.024)**	(0.019)	(0.022)**	(0.017)**	(0.056)**	(0.039)*
Ratio of imports to average imports	0.084	-0.097	0.017	-0.123	0.152	-0.041
	(0.030)**	(0.017)**	(0.031)	(0.016)**	(0.058)**	(0.034)
Constant	1.059	1.087	1.063	1.065	1.047	1.126
	(0.042)**	(0.029)**	(0.040)**	(0.028)**	(0.091)**	(0.053)**
Observations	2298	2298	1268	1268	1030	1030
Number of 3-Digit ISIC Sectors	28		28		28	
R-squared	0.02	0.01	0.01	0.05	0.02	0.01
Standard errors in parentheses	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS
* significant at 5%; ** significant at 1%						

Table 6						
	Total Sample		Just PR		Just Maj	
	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average
Ratio of sectoral employment to average	-0.114	0.085	-0.022	0.117	-0.243	0.073
	(0.055)*	(0.045)	(0.043)	(0.039)**	(0.134)	(0.085)
Share of sector in total consumption	-0.798	-5.492	-1.872	-4.182	2.371	-6.934
	(1.996)	(1.380)**	(1.436)	(1.190)**	(5.45)	(2.608)**
Constant	1.150	1.129	1.109	1.065	1.159	1.179
	(0.060)**	(0.046)**	(0.051)**	(0.047)**	(0.123)**	(0.071)**
Observations	899	899	374	374	525	525
Number of 3-Digit ISIC Sectors	28		28		28	
R-squared	0.01	0.02	0.01	0.03	0.01	0.03
Standard errors in parentheses	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS
* significant at 5%; ** significant at 1%						

Table 7						
	Total Sample when import penetration > 0.05		Just PR when import penetration > 0.05		Just Maj when import penetration > 0.05	
	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average
Ratio of sectoral employment to average	-0.128	0.054	-0.054	0.076	-0.247	0.009
	(0.019)**	(0.015)**	(0.021)**	(0.017)**	(0.035)**	(0.03)
Ratio of imports to average imports	0.050	-0.096	-0.001	-0.113	0.117	-0.064
	(0.023)*	(0.013)**	(0.029)	(0.015)**	(0.045)**	(0.025)**
Constant	1.057	1.042	1.018	1.014	1.124	1.08
	(0.033)**	(0.024)**	(0.039)**	(0.028)**	(0.065)**	(0.040)**
Observations	1943	1943	1086	1086	857	857
Number of 3-Digit ISIC Sectors	28		28		28	
R-squared	0.03	0.03	0.01	0.05	0.07	0.01
Standard errors in parentheses	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS
* significant at 5%; ** significant at 1%						

Table 8						
	Total Sample when import penetration > 0.05		Just PR when import penetration > 0.05		Just Maj when import penetration > 0.05	
	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average	Ratio of tariff to average
Ratio of sectoral employment to average	-0.132	0.148	-0.016	0.144	-0.468	0.172
	(0.041)**	(0.037)**	(0.045)	(0.041)**	(0.092)**	(0.064)**
Share of sector in total consumption	0.506	-5.904	-1.485	-4.347	10.477	-7.896
	(1.415)	(1.082)**	(1.430)	(1.155)**	(3.613)**	(1.960)**
Constant	1.120	1.090	1.040	1.000	1.131	1.159
	(0.042)**	(0.036)**	(0.050)**	(0.047)**	(0.078)**	(0.053)**
Observations	739	739	318	318	421	421
Number of 3-Digit ISIC Sectors	28		28		28	
R-squared	0.02	0.04	0.01	0.05	0.07	0.04
Standard errors in parentheses	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS	ISIC Fixed Effects	OLS
* significant at 5%; ** significant at 1%						

Table 9	
	Ratio of maximum tariff to average tariff
Majoritarian dummy variable	1.805 (0.662)**
Presidential dummy variable	-0.931 (0.665)
Constant	3.405 (0.641)**
Observations	119
R-squared	0.12
Standard errors in parentheses * significant at 5%; ** significant at 1%	