Political Ideology and Trade Policy: A Cross-country, Cross-industry Analysis

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Abstract

Research on political economy of trade policy has taken two diverging paths, with one strand of the literature focusing on special interest politics among factor owners in different industries, and the other strand emphasizing majority voting by voters from different classes. This paper incorporates the two approaches by examining the impact of government political ideology on the pattern of trade protection across industries. It presents an extension of the Grossman-Helpman "Protection for Sale" model (1994), which allows political ideology of the ruling party to affect the government's objective over political contributions and social welfare. The model shows that an increase in the pro-labor (left) orientation of the government results in more (less) trade restriction in labor-intensive (capital-intensive) industries. Using cross-country, cross-industry non-tariff barrier (NTB) data for 49 countries and 27 industries in the 90s, I find evidence supporting the model predictions. Pro-labor governments are also associated with higher NTB in low-wage and more volatile industries. These policy biases are only found in rich or democratic countries. Panel regressions using estimated proxies for trade barriers also support the main model predictions.

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1 Introduction

Anticipating the significant redistributive effects of international trade, political parties advocate trade policies according to their ideologies to gain support from their constituents. While there exists a vast literature on how bipartisan politics shape macroeconomic policies, few have studied their role in shaping trade policies.[1] Recently, a number of empirical studies explored how government political ideology affects the level of trade protection across countries. It is found that in capital-abundant countries, an increase in left orientation of the ruling party is associated with more trade protection.

While we have cross-country evidence about how the political orientation of the ruling party determines the aggregate level of trade protection, to my knowledge, no research has been done to investigate how it affects the structure of trade protection across industries. This paper complements the existing cross-country studies by examining whether trade policies implemented by a pro-labor (left-wing) government are systematically different from those by a pro-capital (right-wing) government across industries. Specifically, I extend the literature that focuses on the class cleavage between owners of different factor types, and examine whether leftist (pro-labor) governments are associated with more protection in labor-intensive industries, compared to rightist (pro-capital) governments that are associated with more protection in capital- and skill-intensive ones.

I adopt the consensual view that a left-wing government takes a pro-labor stance on policies, while a right-wing government takes a pro-capital stance.[2] To formalize the idea of how the political stance of the ruling party affects cross-industry protection patterns, I extend the "Protection for Sale" model by Grossman and Helpman (1994) to consider the impact of the government's political orientation on preferences over trade policies. In particular, a left-wing government attaches a relatively higher (lower) weight to the welfare of labor (capital owners) in its objective, compared to a right-wing government. The reason that a leftist government adopts a pro-labor stance can be because it aims to maximize the chance of winning an election, or it is genuinely more concerned about the welfare of labor. It is important to note that the model predictions are independent of the reasons for adopting a particular political stance.

The extension of the "Protection for Sale" model shows that in equilibrium, profits of the specific factor owners increase with protection, more so in the more capital-intensive industries. A higher weight attached

[1] Among these studies, Hibbs (1987), Alesina (1987, 1988), and Roubini and Sachs (1989) find that left-wing parties prefer to undertake expansionary fiscal policies to induce growth, while right-wing parties favor policies that maintain lower spending, lower inflation and balanced budgets.

[2] This approach was adopted, among others, by Blanchard (1985) and Alesina (1987) in developing models of monetary policy in a two-party political system, with the left-wing policy makers attaching a higher weight to unemployment relative to inflation. Alesina and Sachs (1988) find empirical evidence consistent with the predictions of the rational partisan model using U.S. data. Subsequently, Alesina and Roubini (1992) find empirical support using OECD data. Hibbs (1977) also shows that in 14 major industrialized countries that countries and periods with left-wing governments had lower unemployment and higher inflation than others.

to the welfare of capital owners by a right-wing government results in more trade restriction compared to a left-wing government, all else being equal. This prediction at the country level, however, masks an important variation of protection across industries, and therefore neglects the endogenous relationship between protection and the pattern of industrial specialization. Specifically, the model reveals that in sectors with higher labor intensity of production, the government's motive to protect specific capital owners' rents are weaker, because a higher cost share of labor reduces the elasticity of capital rents with respect to the level of protection. Thus, all else being equal, a leftist government imposes more trade restriction in labor-intensive industries (less restriction in capital-intensive and skill-intensive industries) compared to a rightist government.[3] These findings deepen our understandings about the positive relationship between left orientation and protection across countries documented in previous studies.

I test the theoretical predictions using a data set of trade barriers and government political ideology for 49 countries and 27 industries in the late 90s. By regressing a country's non-tariff barriers of each industry on interaction terms between a government's indicator of ideology and industry measures of factor intensities, I find strong evidence supporting the model's predictions. Specifically, I find that right-wing governments are associated with higher non-tariff barriers in capital- and human-capital intensive industries, compared to leftist and centrist governments. These industrial biases on trade protection are particularly pronounced in rich and capital-abundant countries. I also find that right-wing governments have lower trade barriers in low-wage and high job-turnover industries. All these results are robust to the inclusion of country and industry fixed effects, as well as the variables that control for the existing theories on the political economy of trade policy. Besides testing the theoretical model, this paper is the first study examining the determinants of trade protection in the 90s across industries for a large sample of countries.[4]

After exploring the connection between political ideology and the pattern of trade protection in the late 90s, I examine how government political ideology affects the changes in the pattern of trade protection across time. Since time-series trade policy data are not available for a large set of countries, I opt for estimating proxies for trade barriers. To this end, I estimate the gravity equation for each sector, controlling for factor-endowment differences between any country pair. Then I take the estimated country fixed effects as proxies for trade barriers for different time periods. Using a panel data set of these estimates and government ideology over the period 1980-1999, I find evidence that are largely consistent with the cross-sectional regression results, supporting the theoretical predictions that right-oriented governments are more protective in capital-intensive industries.

[3] Following Alesina and Rodrik (1991), I consider that a pro-capital stance generally favors owners of all sort of growth-producing assets, including physical capital, human capital, and proprietary technology. Pro-labor policies, on the other hand, favor the unskilled workers.

[4] Lee and Swagel (1997) use a cross-country, cross-sector data set to test several political economy theories of trade policy. Their data set is for the late 80s.

This paper is organized as follows. The next section reviews the related literature. Section 3 outlines the theoretical argument of the paper. Section 4 formalizes the empirical strategy. Section 5 describes the data set used in the analysis. Section 6 presents the empirical results and the final section concludes.

2 Literature Review

There is a vast literature on the political economy of trade policy.[5] Over the past twenty years, the theoretical literature on endogenous trade protection has taken two diverging paths from the early literature, with one focusing on special interest politics among factor owners across industries (industry lines), the other emphasizing majority voting by voters from different classes (class-cleavage models). The seminal "Protection for Sale" model by Grossman and Helpman (1994) belongs to the first strand of the literature. Thanks to their contribution of micro-founding the theory of political economy of trade policy, most of the recent empirical studies on trade protection have taken a more "structural" route.[6] Because detailed industry-level data are needed for structural estimation, these empirical studies have mainly focused on a few developed countries. An exception is the study by Mitra, Thomaskos and Ulubaşoğlu (2002), who find evidence supporting the Grossman-Helpman model using industry data from Turkey.

The other path of the theoretical literature on trade policy emphasizes the role of class cleavage among owners of different factors. Based on the Heckscher-Ohlin framework, the seminal work by Rogowski (1990) associates parties with factors of production, and argues that if a country is relatively abundant with land and capital, the left-wing party would favor trade protection while the right-wing party would vote for freer trade. This sharp prediction remains untested until recently by a series of papers by Dutt and Mitra (2002, 2005, 2006). Based on a cross-country sample in the 80s, Dutt and Mitra find that the relationship between a government's left-orientation and countries' levels of trade protection is non-monotonic, and depends on the country's relative capital abundance. Specifically, they show that left-wing governments are associated with lower trade barriers than right-wing governments if both countries are sufficiently labor abundant. However, in capital-abundant countries, imports tend to be more labor-intensive, and a leftist government will be more protective. My paper is closely related to Dutt and Mitra (2002, 2005, 2006). On the theoretical front, I also assume that a government chooses trade policies to maximize the political support function, which is a weighted sum of the welfare of capitalists and workers. Different from their work that adopts a more reduced-form approach to formalize the impact of political ideology on trade policies, my model is

[5] Readers are referred Rodrik (1995) of a review on the theoretical literature, and Gawande and Krishna (2003) for a review on the empirical one.

[6] The early empirical studies testing the Grossman-Helpman (1994) model include Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000). Both of them find support for the model using industry data from the U.S. Subsequent studies also test the model using data from other countries, such as Mitra, Thomaskos and Ulubasoglu (2002) who use data from Turkey, and McCalman (2001) who uses data from Australia, among others.

built on the Grossman and Helpman (1994) framework with political contributions being the main channel through which ideology of the government shapes trade policies. On the empirical front, I provide evidence to complement the findings of Dutt and Mitra by testing the class-cleavage theory along the industry lines. In particular, I examine whether government political ideology also shapes the structure of trade protection across industries, in addition to the documented cross-country variation.

It is worth emphasizing that the results of this paper are consistent with the empirical studies on individuals' trade preferences using survey data, such as Balistreri (1997), Beaulieu (2002a, 2002b), and Scheve and Slaughter (2001), among others. These authors show that for Canada and the U.S., factor types of the individuals have been the dominant determinant of preferences for or against trade protection.

Because of the dichotomy of the literature on endogenous trade policy, to date, most empirical studies on trade protection use either single-country cross-industry data (i.e., empirical studies on specific-factor models), or cross-country aggregate data (i.e., empirical studies on class-cleavage models). An exception is Lee and Swagel (1997), who test various early theories on trade protection, using a cross-country, cross-industry data of trade barriers and production in the 80s. I also use a data set with a similar structure, but my goal is to examine whether the predictions of the class-cleavage theory, which have so far been verified at the country level, are observed along the industry lines.

3 Theoretical Model

In this section, I introduce the theoretical model that underlies the empirical analysis. The model is largely based on the "Protection for Sale" model of Grossman and Helpman (1994). The discussion will remain succinct and focus more on the extension to the original model. Readers interested in the details are referred to the original paper.

Consider a small, open economy with L individuals, who have identical quasi-linear preferences over N non-numeraire goods and one numeraire good. Individuals maximize $U = c_0 + \sum_{j=1}^{N} u_j(c_j)$, where c_0 is consumption of the numeraire and is traded freely at price of 1. $u_j(c_j)$ is a concave function of consumption of good j. The indirect utility of an individual is

$$V(\mathbf{p}, I) = I + S(\mathbf{p}),$$

where $\mathbf{p}$ is the domestic price vector; I is the individual's income and $S(\mathbf{p})$ is her consumer surplus, which equals $\sum_{j=1}^{N} (u_j(d_j(p_j)) - p_j d_j(p_j))$. Without loss of generality, international prices of all goods are normalized to 1.

On the production side, the numeraire good is produced using labor as the only input, with unit labor requirement normalized to 1. For the non-numeraire industries, goods are produced according to a constant returns to scale production function $f_j\left(\overline{K}_j, L_j\right)$ that requires both labor and capital as inputs. While capital is industry-specific, labor is assumed to be freely mobile across industries. Thus, the price of the numeraire pins down the nominal wage rate of all workers to 1. As such, the return to the specific capital for industry j is

$$\pi_j\left(p_j\right) = \max_{L_j}\left[p_j f_j\left(\overline{K}_j, L_j\right) - L_j\right],$$

where $\pi_j\left(p_j\right)$, and $\pi_j'\left(p_j\right) > 0$.

It is assumed that import tariffs and export subsidies are the only policy instruments that the government can use to achieve its objective. Moreover, all tax revenue is assumed to be distributed back to L individuals equally.

The specific capital used for production of good j are owned by $H_j < L$ individuals.[7] For simplicity, I assume that each specific factor owner owns a unit of labor, which is then supplied to any industries inelastically. Quasi-linear preferences imply that total welfare of the owners of specific factor j equals the sum of the returns to their specific capital, labor income, consumer surplus, and tariff revenue rebates. Specifically, the welfare of industry j's capital owners is

$$W_j\left(\mathbf{p}\right) = \pi_j\left(p_j\right) + H_j\left[1 + S\left(\mathbf{p}\right)\right] + \frac{H_j}{L}T\left(\mathbf{p}\right),$$

where $T\left(\mathbf{p}\right)$ represents tariff revenue.

Trade taxes or subsidies in different industries are determined by the interaction between the government and organized lobbies from different industries, taking the form of a "menu auction" discussed in Bernheim and Whinston (1986). The organized lobbies in an industry influence the government's trade policies by paying contributions. In turn, the government implements policies to maximize its welfare function, which is a weighted sum of social welfare and contributions from lobbies. An industry may have no organized lobbies to influence trade policies. The government's objective function is

$$\max_p G\left(\mathbf{p}, \gamma\right) = \sum_{j \in J} C_j\left(\mathbf{p}, \gamma\right) + a\sum_{j=1}^{N}\widehat{W}_j\left(\mathbf{p}, \gamma\right)$$

where J is the set of organized lobbies; $C_j\left(\mathbf{p}, \gamma\right)$ is the contribution schedule of the lobby group representing industry j, a is the weight the government attaches to aggregate welfare relative to aggregate political

[7] Notice that as in the original Grossman-Helpman (1994) model, these specific-factor owners do not necessarily work in sector j.

contributions. In other words, a higher a is associated with a lower affinity to political contributions offered by the lobbies.[8]

Importantly, I extend the Grossman-Helpman framework (1994) by allowing the political orientation of the ruling party to affect the government's objective. In particular, different government political ideologies are associated with different weights, γ, attached to the returns to capital and labor income in the government's objective. More specifically, if the ruling party of the government is pro-labor (left), the government puts a higher weight on the welfare of the workers, while the pro-capital government (right) puts a higher weight on the welfare of the capital owners. To capture this factor-specific bias of the government, I express the government's valuation of group-j specific factor owners' welfare, admittedly in an abstract fashion, as

$$\widehat{W}_j(\mathbf{p},\gamma) = \gamma\pi_j(p_j) + H_j[1+S(\mathbf{p})] + \frac{H_j}{L}T(\mathbf{p}),$$

where γ represents a country's position on a unidimensional political orientation. If government k is more right-oriented than government k', then $\gamma_k > \gamma_{k'}$. For simplicity, I normalize the range of γ so that $\gamma \geq 1$. The first order condition of the government's problem yields

$$\frac{p_j - 1}{p_j} = -\Lambda(\delta_j,\gamma,a,\lambda)\left(\frac{dm_j}{dp_j}\frac{p_j}{m_j}\right)^{-1}\left(\frac{y_j}{m_j}\right), \tag{1}$$

where $\Lambda(\delta_j,\gamma,a,\lambda) = \frac{\delta_j\gamma-\lambda+(\gamma-1)a}{(\lambda+a)}$. $\lambda_j = \sum_{j\in J}\frac{H_j}{L}$ is the share of the population who own some specific capital for organized industries. $m_j = d_j(p_j)L - y_j$ is the value of imports in industry j. $\delta_j = 1$ if industry j is organized, 0 otherwise. By construction, the tariff function converges to the original Grossman-Helpman modified "Ramsey Rule" when $\gamma = 1$ (i.e., very pro-labor government). Based on equation (1), the ad valorem tariff, $t_j = p_j - 1$, equals

$$t_j = -\Lambda(\delta_j,\gamma,a,\lambda)\left(\frac{dm_j}{dp_j}\right)^{-1} y_j.$$

Industries differ in labor intensity of production. For tractability, I assume that production functions take the Cobb-Douglas form, $f_j\left(\overline{K}_j, L_j\right) = L_j^{\alpha_j}\overline{K}_j^{1-\alpha_j}$, where $0 > \alpha_j > 1\ \forall j$. Industries with a higher j are

[8] The government's objective function can be rewritten as

$$\max_p G(p,\gamma) = \sum_{j\in J}[(1+a)(W_j(p,\gamma) - B_j)] + a\sum_{j\notin J}W_j(p,\gamma)$$

where $W_j(p,\gamma) - C_j(p,\gamma) = \min\{W_j(p,\gamma), B_j\}$, and B_j is a constant. Grossman and Helpman (1994) and Mitra (1999) discuss how B_j can be solved for.

more labor-intensive. As such, the profit function of industry j is

$$\pi_j\left(p_j, \overline{K}_j\right) = A\left(\alpha_j\right) p_j^{\frac{1}{1-\alpha_j}} \overline{K}_j,$$

where $A\left(\alpha_j\right) = \left(1-\alpha_j\right) \alpha_j^{\frac{\alpha_j}{1-\alpha_j}}$.

Assumption 1 $\ln\left(p_j \alpha_j\right) < \alpha_j - 1$, $\forall j \in \{1, 2...N\}$

The assumption requires the return to specific capital to be decreasing in labor intensity of production. When the cost share of labor in a given sector is larger (higher α), a larger fraction of revenue goes to the workers, implying a lower return to specific capital per unit of sales. It is important to note that the assumption is always held when $p_j \approx 1$ (i.e. when the domestic price is not very different from the international price of good j).[9]

The ad valorem tariff for industry j now becomes (see Appendix A for derivation)

$$t_j\left(\gamma, \alpha_j\right) = \Lambda\left(\delta_j, \gamma, a, \lambda\right)\left[-\frac{d_j'\left(p_j\right) L}{\overline{K}_j}\left[p_j\left(1-\alpha_j\right)\right]^{1-\frac{1}{\alpha_j}} + \frac{\left(1-\alpha_j\right)}{\alpha_j p_j}\right]^{-1}. \tag{2}$$

Assumption 2 $1 \leq \gamma \leq 1 + \frac{\lambda}{a}$.

This assumption requires that a government's pro-capital stance is restrained. Under this assumption, import tariffs are positive for organized industries (i.e., if $\delta_j = 1$), and negative for unorganized ones (i.e., if $\delta_j = 0$). These are consistent with the main predictions in Grossman and Helpman (1994). If an industry is organized for lobbying activities, the government protects the industry so as to maximize a weighted sum of political contributions and social welfare. On the other hand, if an industry is not organized for lobbying activities, there is no political contributions from that industry. Profits for the specific capital in the industry, thus, are not valued as much by the government as for the organized industries.

Differentiating equation (2) with respect to α gives (see appendix):

$$\begin{aligned} \frac{\partial t_j\left(\gamma, \alpha\right)}{\partial \alpha} \quad &< \quad 0 \text{ if } t_j\left(\gamma, \alpha\right) > 0 \\ &> \quad 0 \text{ if } t_j\left(\gamma, \alpha\right) < 0. \end{aligned} \tag{3}$$

The return to capital (π_j) is increasing in the domestic price, and thus the level of import tariffs on the goods. However, the positive impact is smaller when production becomes more labor-intensive. This is

[9] When $p_j = 1$, $\ln \alpha_j$ is always smaller than $\alpha_j - 1$. Denote ρ_j the price elasticity of the return to the specific factor j (π_j). This assumption requires that $\frac{d\rho_j}{d\alpha_j} > 0$ does not offset the negative effects due to a larger share of revenue paid to the workers in the more labor-intensive sectors.

because all else being equal, the return to capital (per unit of sales) is decreasing in labor intensity. Thus, with a higher level of labor intensity of production, lobbying incentive for protection decreases. In organized industries where import tariffs (export subsidies) are positive in equilibrium (as shown in equation (2)), the level of the tariffs is lower in the more labor-intensive industries (i.e., higher α).

In unorganized industries, however, the government would impose import subsidies (or export taxes in the case of net exports) instead of tariffs, as in Grossman and Helpman (1994), to enhance the consumer surplus in those industries. Because output and thus imports are more responsive to changes in import subsidies (or export taxes) when production becomes more labor-intensive, the degree of import promotion (negative t_j) is smaller (less negative) in the more labor-intensive industries. In short, labor intensity exerts an alleviating effect on both import protection and promotion.

Now consider the situation that the government becomes more pro-capital. This can be due to a transition from a left to a right ruling party after an election, or that the ruling party has changed its position on the ideology spectrum. The following cross partial shows how ideology affects the relationship between labor intensity of production and the level of trade protection:

$$\frac{\partial^2 t_j(\gamma, \alpha)}{\partial \gamma \partial \alpha} > 0 \quad \forall \alpha. \tag{4}$$

It is important to note that this inequality holds regardless of whether the industry is organized or not (i.e. independent of δ_j). For organized industries ($t_j > 0$), a higher cost share of labor has weaker alleviating effects on protection when the government becomes more pro-capital. Thus, a pro-capital government imposes more restriction on imports than a pro-labor government, especially in the more capital-intensive industries. For the same reason, for unorganized industries ($t_j < 0$), a higher cost share of labor has weaker alleviating effects on import promotion under a more pro-capital government. The pro-capital government implements a relatively lower level of import subsidies (conditional on positive imports) than a pro-labor government to enhance consumer surplus, especially in the more capital-intensive industries.

Although the model so far considers only one type of workers, but the theoretical argument can be generalized to a setting with different labor types. Suppose there are two types of workers, unskilled and skilled, with the latter being partially industry-specific. If we take the common view that a pro-capital stance generally favors owners of all sort of growth-producing assets, including physical and human capital, while a pro-labor stance favors unskilled workers,[10] a combination of human capital and physical capital can be viewed as a single specific factor for production. As such, the above theoretical argument based on inequality (4) can be summarized by the following testable hypothesis.

[10] See Alesina and Rodrik (1991) for an argument.

Hypothesis All else being equal, an increase in the left orientation (pro-labor bias) of the government results in more trade restriction in labor-intensive industries, and less trade restriction in capital and skill-intensive industries.

Suppose there are multiple industries indexed by j, with higher j corresponding to higher labor intensity. Let TB_j^L and TB_j^R be the trade barrier in industry j set by a left and a right government, respectively. The hypothesis says that $\frac{TB_j^L}{TB_j^R}$ is increasing in j.

4 Empirical Strategy

The main hypothesis of the paper is tested using the following reduced-form specification:

$$\begin{aligned} \ln(1+NTB_{cj}^*) &= \alpha + \beta_1 Ideology_c \times k\_int_j + \beta_2 Ideology_c \times h\_int_j \\ &\quad + \mathbf{X_j}\boldsymbol{\gamma} + f_c + f_j + \epsilon_{cj} \\ \text{where } NTB_{cj} &= \left\{ \begin{array}{c} NTB_{cj}^* \text{ if } NTB_{cj}^* > 0 \\ 0 \text{ otherwise.} \end{array} \right\} \end{aligned} \tag{5}$$

where c and j stand for country and industry, respectively. α is a constant, and $f's$ are fixed effects.

The dependent variable is the natural logarithm of one plus the coverage ratio of non-tariff barrier (NTB) (to be discussed in Section 5). I use NTB as the dependent variable, instead of the tariff level because tariffs have been falling significantly and remained bounded by the World Trade Organization (WTO) requirements across countries, especially in the late 90s when many countries were already WTO members. Therefore, NTBs have become a more important instrument for governments to protect trade. Supporting this claim, Table 2 shows that in the 90s, the average standard deviation of NTBs across countries within the same industry is 11.77%, while that for tariffs is only 1.95%. Furthermore, according to Goldberg and Maggi (1999), tariff levels are often determined cooperatively by governments in regional trade agreements and the WTO (the GATT before 1995). Related to the present discussion, cooperative efforts by governments in tariff formation restrict a government from using tariffs to reflect its political stance. For these reasons, NTB has been the main dependent variable used in the existing literature examining trade protection across industries.[11]

I use log value of $1 + NTB$, instead of its level, to avoid results driven by outliers. Using the level of

[11] For instance, Trefler (1993) investigates the negative impact of NTBs on imports. Goldberg and Maggi (1999) and Gawande and Bandyopadhyay (2000) use NTB as their dependent variables to test the Grossman-Helpman (1994) model, which essentially provides analytical solutions to sector-specific ad valorem tariffs.

NTB as the dependent variable yields qualitatively similar and significant results. Similarly, log values are used for non-dummy regressors.[12] The measure of NTB is a non-negative left-censored limited variable. To correct for the downward bias of ordinary least squares estimation due to selection bias at $NTB = 0$, I estimate equation (5) using a Tobit model.[13]

The explanatory variables of interest are two interaction terms between a government's ideology and an industry's factor intensities, $Ideology_c \times k\_int_j$ and $Ideology_c \times h\_int_j$, where k_int_j and h_int_j stand for capital and human-capital (skill) intensity of industry j, respectively. Ideally, the best measure for $Ideology_c$ is a continuous variable that measures the precise position of political orientation of a country. However, a continuous measure is not available for a large set of countries, let alone the difficulty of quantifying political bias. Thus, I use dummy variables to represent the degree of political orientation. Considering a dichotomous classification of political ideology ("Left" or "Right"), I replace $Ideology_c$ by a dummy variable, $Left_c$, which equals 1 if country c's government is under a left-wing party's control during the sample period, and equals 0 if it is under a right-wing party's control. If I further distinguish governments holding a neutral political stance from the two extreme positions, then I can add an extra dummy variable, $Center_c$ to denote a government that is neither left or right. Details about the construction of political orientation dummies will be discussed in detail in Section 5.

Based on the assumption of constant returns to scale production, factor intensities of an industry are measured as the average cost shares of corresponding inputs in total value-added of the industry (to be discussed in Section 5). Factor intensities (k_int_j and h_int_j) of an industry are assumed to be the same across countries. In other words, I treat factor intensities of production as intrinsic properties of production, which do not vary across countries. I obtain these measures using data of U.S. manufacturing industries, because of the lack of sectoral production data for a large sample of countries. The assumption of constant factor intensities across countries have been adopted by many empirical studies in international trade.[14] Although the assumption seems rigid, only a weak form of the assumption is needed to hold in the data. Specifically, as long as the industrial ranking of factor intensities is stable across countries, the proposed effects of the model can still be identified.[15] Moreover, with three factors of production, the condition of constant returns to scale implies $k\_int_j + h\_int_j = 1 - l\_int_j$. As such, the interaction term with l_int_j

[12] Lee and Swagel (1997) also use a log functional form for estimation, with $\ln(1+NTB)$ of a sector as the dependent variable.

[13] For instance, when import penetration is 0 (rarely happens in the data set I am using that has 27 ISIC 3-digit industries), NTBs are constrained to be 0.

[14] The approach of using sector measures constructed using U.S. data originates from Rajan and Zingales (1998). In their study of the differential impacts of countries' financial development on sectoral growth, they use sector measures of dependence on external finance, which are constructed using data of U.S. publicly-listed firms. Subsequent empirical studies on countries' comparative advantage have adopted the same approach. See Romalis (2003), Levchenko (2007), Nunn (2007) and Manova (2007), among others.

[15] However, if there exists factor intensity reversal across countries, the identification assumption does not hold, and the regression results could be wrong. Readers should interpret the empirical findings in the paper with this caveat in mind.

is excluded from the regressions because of perfect collinearity, unless specified otherwise.

The main hypothesis of this paper predicts a negative coefficient on $Left_c \times k\_int_j$, i.e. $\beta_1 < 0$. A negative β_1 means that all else being equal, a left-wing government has relatively lower NTBs in capital-intensive industries than a right-wing government. The coefficient on $Left_c \times h\_int_j$, β_2, is also predicted to be negative. Notice that stand-alone factor intensities, k_int_j and h_int_j, are not included as independent variables because they are subsumed in industry fixed effects, f_j. Similarly, the stand-alone term $Left_c$ is excluded as a regressor.[16]

To confirm that my results are not driven by other determinants of trade protection, I include a vector of control variables for the existing theories on trade policy, $\mathbf{X_j}$, suggested by Lee and Swagel (1997). These controls will be discussed in detail in Section 6.2.

5 Data

Data on tariff and non-tariff barriers (NTB) are obtained from UNCTAD indirectly through the World Bank's "Trade, Protection and Production" data set (Nicita and Olarreaga, 2006), which contains data on production and trade protection for 27 industries (ISIC (Rev. 2) 3-digit classifications), and 74 countries in the late 90s. The measure of NTB of an industry is the percentage of imports value subject to non-tariff measures that have an unfair protection impact. Core non-tariff measures used to construct the NTB measures are (i) price controls, (ii) finance controls, and (iii) quantity controls. To check the robustness of the regression results, I use an alternative measure of NTB, which is the percentage of tariff lines (at the HS 6-digit level) that are subject to non-tariff measures of protection. Similarly, the measure of tariffs in each industry is an import-weighted average of tariff rates applied on goods entering the country.[17] For each country, data on NTBs are only available for one year in the 90s (mostly in 1999), while tariff data can be available for multiple years. As such, I take tariff data from the year closest to the year for which NTB data are taken. Table 1 lists the aggregate measures of trade protection of the countries in the sample, and from which year the measures are taken. Table 2 lists the averages of trade protection for a cross-section of industries. Data on wages, employment, output, value-added, imports, and exports at the industry level are also taken from the same data set.

Data for government ideology are adopted from the Database of Political Institutions (DPI) (Beck et al., 2001). Following Dutt and Mitra (2005, 2006), for countries with political systems classified as presidential, I

[16] Alternatively, I can use $Left_c \times l\_int_j$ as the explanatory variable of interest, where l_int_j stands for labor intensity. The coefficient is predicted to be positive. I include two interaction terms so that I can study the impact of political ideology on trade protection in skill-intensive sectors, which has been largely ignored in previous empirical literature.

[17] Applied rates take into account the available data for preferential schemes (i.e. the applied average tariff takes the tariff rates for each partner exporting to the destination country for which the measure is constructed.)

use the political orientation indicator ("Left", "Center" and "Right") of the chief executive (that of the chief executive's party) to represent the government ideology.[18] For countries with political systems classified as parliamentary, I use the political orientation indicator of the largest government party; and for those with political systems classified as assembly-elected presidential, I use the average of the political orientation indicators between the chief executive and the largest government party. Then I use the following procedure to denote the ideology of the government. For each country, I record the time series of ideology of the government in the 10 years preceding the year from which I take the NTB data (including the year itself). A country is coded as left-wing (center, right-wing) if a left-wing (center, right-wing) government has been in office for at least 6 years during the 10-year period. A country that has left and right governments in office for exactly 5 years respectively will be coded as center.[19] To check robustness of the empirical results, I also construct an indicator of government political ideology based a 5-year horizon before the year from which the NTB data are taken. A country is coded as left-wing (center, right-wing) if a left (center, right-wing) government has been in the office for at least 3 years. Other rules used in the construction of the baseline ideology indicator are applied here. Table 1 shows the list of countries in the sample along with their government ideology and political systems. The construction of the sectoral factor intensity and country factor endowment measures is standard, which is described in detail in Appendix B.

6 Results

6.1 Baseline

To test the hypothesis of the paper that left-wing governments are associated with lower trade protection in capital and human-capital intensive industries than right-wing ones, I regress an industry's measure of non-tariff barriers (NTBs) in each country on interactions between the country's ideology and capital and human–labor intensities of the industry, respectively.[20] As discussed in Section 5, the core NTB measure is the share of imports within an industry that are subject to non-tariff protective measures by the government. As a first pass, I use a dummy variable, $Left$, which equals 1 for left-wing governments, and 0 for centrist and right-wing governments, as the measure of ideology. Therefore, the coefficients on the interaction terms are interpreted as differential impact of factor intensities on NTBs between the left and the non-left governments.

As reported in column (1) of Table 3, the coefficient on the interaction between the "left" dummy and

[18] According to the documentation for the DPI data set, a party (or an executive) is considered right-oriented if it is defined as conservative, Christian democratic, or right-wing. A party is considered left-oriented if it is defined as communist, socialist, social democratic, or left-wing. A party is defined as center when party position can best be described as centrist (e.g. party advocates strengthening private enterprises in a social-liberal context).

[19] These include Brazil, Finland, Lithuania, Netherlands, Poland and South Africa. Bolivia and Ukraine had a left and a right government in office for exactly 4 years, and a center government for 2 years. They are also coded as center.

[20] Labor intensity is excluded because of perfectly collinearity with the other two factor intensities by construction.

capital intensity of an industry is negative and significant at the 5% significance level. Similarly, a negative and significant coefficient (also at 5% significance level) is found on the interaction term for skill intensity. These results suggest that compared to countries with centrist and right-wing governments in control, left-wing governments tend to have lower NTBs in both capital- and skill-intensive industries. The stand-alone terms for government ideology and industry factor intensities are not included, as they are subsumed in country and industry fixed effects.

In column (2), in addition to the interaction terms for "left" orientation, I include interactions between the dummy for "centrist" governments and capital and skill intensities of an industry, respectively. The coefficients on the "center" interactions are negative and significant at the 10% significance level, suggesting that relative to right-wing governments, centrist governments also appear to command lower NTBs in capital- and skill-intensive industries. The coefficients on the interaction terms for left-wing governments continue to be negative and significant (now at 1% significance level). These results imply that leftist and centrist governments adopt political stances on trade protection different from right-wing governments along the industry dimension. Importantly, for a given factor intensity measure, the coefficients on the interaction terms between leftist and centrist governments are not statistically different. In other words, I find no evidence showing that leftist and centrist governments set NTBs differently across industries, suggesting that I can treat them together as a group on a unidimensional ideology scale for trade policy setting. Thus, in order to gain efficiency, in the remaining regressions, I include only the interaction terms for right-wing governments, and compare the structure of trade protection across industries between right-wing and non-right-wing governments.

With only interactions with the right-wing dummy included, column (3) reports positive and significant (at 1% significance level) coefficients on the interaction terms, implying that countries with dominant control by right-wing governments throughout the 90s are associated with higher NTBs in capital and skill-intensive industries in the late 90s. The impact of political ideology on protection is economically significant. For example, holding everything else equal, if a ruling party switches its political stance from non-right to right, the resulting difference in changes in NTBs between the apparel sector ($k\_int = 0.585$; 25th percentile in capital intensity) and the printing and publishing sector ($k\_int = 0.700$; 75th percentile in capital intensity) will be about 7 percentage points.[21]

In column (4), I drop country fixed effects, and include the stand-alone dummy for right-wing governments, and its interactions with the two factor intensity measures. First, I find that right-wing governments on average have lower NTBs across all industries. This is consistent with the findings of Milner and Judkins (2004), who show that right-wing parties on average announced positions more favorable for free trade in

[21] The magnitude of the effects equals $\beta \times (k\_int^{75\%} - k\_int^{25\%}) = 0.63 \times (0.700 - 0.585) = 0.0713$.

their electoral manifestos than left parties in OECD countries between 1945 and 1998. Consistently, by regressing a country's weighted average of NTBs on its ideology index, Dutt and Mitra (2005) find a positive relationship between a government's left-orientation and trade protection in capital-rich countries. Importantly, the coefficients on the two "right" interaction terms remain significant, and are quantitatively similar to those in column (3) when country fixed effects are controlled for. The McFadden's adjusted R-squared is 0.18, compared to 0.49 in column (3) when country fixed effects are included. This comparison suggests that country characteristics alone account for a substantial variation of NTBs across countries and industries.

Finally, column (5) reports the regression results with industry fixed effects excluded, but country fixed effects added back in as regressors. Without industry fixed effects, I include an industry's capital and skill intensities as independent variables. The coefficients on the interaction terms are positive and significant, while those on the two stand-alone terms for factor intensities are both negative and significant. These results suggest that while capital and skill-intensive industries on average receive less protection across the board, they are relatively more protected under the rule of a right-wing government. The equity theory that emphasizes governments' redistribution motives are supported. It is worth emphasizing that a relatively higher adjusted R-squared compared to the one in column (4) when country fixed effects are excluded implies that country characteristics alone explain more of the variation of NTBs than industry characteristics.

I conduct two robustness checks for the baseline results. First, I use the political ideology of the dominating party over the 5 years before NTBs were set, instead of 10 years, to construct the baseline measure. Using this indicator of political ideology, I implicitly assume that NTBs were determined by the government in a relatively short run. In Table 4, I conduct the analogous empirical analyses of Table 3, using the new indicator of political ideology. The coefficients on the interaction terms have the same signs as the corresponding ones in Table 3, with comparable magnitude. Importantly, all coefficients on the interaction terms remain statistically significant (at least 10% significance level). In columns (2) and (3), the coefficients on the interaction terms become less significant when country or industry fixed effects are excluded, compared to the ones in Table 3. Since Table 3 shows that unobserved country and industry characteristics account for a substantial variation in NTBs across countries and industries, the more significant results in column (1) can be employed to conclude that the significant relationship between ideology and protection is robust to the choice of the time horizon used to construct the ideology indicators.

For the second robustness check, I use the fraction of Harmonized-System 6-digit categories within an ISIC industry that are subject to non-tariff protective measures as an alternative dependent variable. As reported in Table 5, the results remain qualitatively the same. In sum, from Tables 3 through 5, I find strong evidence showing that government ideology has a significant impact on the structure of NTBs across industries, with factor intensities of production playing a pivotal role in shaping the cross-industry variation.

6.2 Controlling for Existing Hypotheses

The early literature on political economy of trade policy proposes various industry characteristics that affect the level of trade protection. Table 6 reports the results of the regressions (as in Table 3) that include a number of controls for existing hypotheses on trade protection.

First, it was suggested that large industries are more able to lobby for trade protection, either because these industries employ a large fraction of the electorate (Caves, 1976), or serve as an important source of government revenue. To this end, in column (1), I include an industry's employment share as a control for political importance. This is of course an imperfect measure. For instance, one can argue that a small industry occupied by mostly state-owned enterprises in a given country may have more political power than a larger industry.[22] Nevertheless, using industry size as a proxy for political importance is best I can do for a large number of countries.

Second, governments sometimes adopt trade policy to enforce equity and social justice. Existing studies find that in developed countries, low-wage and low-productivity industries ("weak" industries) are associated with more trade protection (Baldwin, 1985; Lee and Swagel, 1997). To control for these determinants of trade protection, I also include in column (1) an industry's 10-year average of wages as a control.

Third, the literature of interest group models (Findlay and Wellisz, 1982; Hillman, 1982, Grossman and Helpman, 1994) predicts that an industry's import penetration and export propensity are important determinants of trade protection. These models predict that industries with a larger share of exported output receive more trade protection. On the contrary, early theories on political economy of trade policy argue that industries that are more threatened by import competition would lobby harder for protection, with the exporting industries less concerned about "retaliating" imports.[23] With no prior about which prediction is right in reality, I include an industry's (10-year) average import penetration, measured by the ratio of imports to domestic use, and its average export-output ratio as controls.

Finally, I include $\ln(1 + tariff)$ as an exogenous determinant of NTBs in column (1), similar to Lee and Swagel (1997).[24]

As reported in column (1), I find that larger industries receive less trade protection, consistent with the conjecture that free-riding among firms can be more severe in large industries, in which lobbyists are less likely to take political actions to lobby for protection. I find no evidence to support the equity theory, nor

[22] In addition, it is possible that firms in smaller industries find it easier to organize political action groups to lobby for protection. A recent study by Bombardini (2008) shows that industries with a more dispersed firm size distribution receive a more trade protection in the U.S. Recent empirical studies on U.S. trade policy have used more direct measures, such as an industry's political contribution or fraction of workers belonging to unions to proxy for political importance (Goldberg and Maggi, 1999; Gawande and Bandyopadhyay, 2000).

[23] For instance, based on the U.S. non-tariff barriers, Trefler (1993) finds that sectors with growing import penetration receive more protection.

[24] For the U.S., Ray (1981) finds no feedbacks from NTBs to tariffs.

do I find any relationship between import penetration and NTBs across industries. A higher export share is associated with less protection, supporting the argument that industries facing less import competition demand less for protection. A positive and significant point estimate on the tariff term suggests that tariffs and NTBs were used as complements in trade protection.

Next, in column (2), I replace an industry's average wage rate by its average value-added per worker to proxy for the "weakness" of an industry. Parallel to this, I use an industry's value-added share instead of employment share to capture political importance. I find a negative relationship between value-added shares and NTBs across industries, but no relationship between an industry's labor productivity and its level of NTBs.

Governments are often under political pressure to protect industries that have declining comparative advantage relative to other countries. Therefore, we should expect higher protection for declining (sunset) industries, especially those employing workers with long job tenure and industry-specific skills. To this end, in column (3), in addition to the levels of wage and per-worker value-added, I add in an industry's (10-year) average annual growth rates. Out of these three variables, only the coefficient on wage growth is significant. However, its sign is opposite to what was predicted by the early literature.[25] Next, in column (4), I include the change in an industry's import penetration to control for the demand for protection. I find no evidence that higher import penetration affects trade protection.[26]

In sum, although I do not find evidence consistent with all predictions of the early theoretical literature, I always find significant evidence for the class-cleavage theory that right-wing governments are associated with higher trade protection in capital and human-capital intensive industries, compared to non-right-wing governments (columns (1) through (4)).[27] There results are not driven by other previously proposed determinants of trade protection.

In column (5), I repeat the exercise in column (1) by using factor intensity measures constructed based on a 4-factor production function (as discussed in Section 5). In addition to labor, capital and human capital intensities as industrial characteristics determining the structure of trade protection, right-wing governments appear to be associated with higher trade protection in material-intensive industries. Finally, in column (6),

[25] It should be noted that when both country and sector fixed effects are included in the regressions, Lee and Swagel (1997) also find no evidence that low-wage or less productive sectors receive more trade protection.

[26] Trefler (1993) also finds no significant relationship between the level of import penetration and NTB in the same sector, using industry data from the U.S. in the 80s, although he finds a strong positive relationship between an increase in import penetration and the level of NTB.

[27] Notice that one important determinant that I do not control for is a sector's demand and supply elasticities. Grossman and Helpman (1994) show that trade barriers are more likely to exist for goods with lower own price elasticity of demand. The reason is that trade barriers on goods with inelastic demand will result in a relatively smaller deadweight loss. Similarly, the higher the foreign price elasticity of supply, the more effective trade policy is and the more likely a government is to protect domestic production from import competition. Since detailed elasticity data for a large sample of countries and sectors are not available, I rely on sector fixed effects to capture the impact of elasticities on trade protection, under the assumption that the elasticities of demand and supply of goods in the same sector are constant across countries.

I estimate a model with all controls discussed from columns (1) to (3) included, as well as the three factor intensity measures interacted with the dummy for right-wing governments. The main empirical results of the paper remain robust.

6.3 Other Industrial Characteristics for Workers' Interests

The paper so far has focused on factor intensities as the industry characteristics driving the relationship between governments' political ideology and trade policy. The insight of left-wing government's association with pro-labor trade policies can be tested using other industrial characteristics related to the importance of labor interests. First, pro-labor trade policies of left-wing governments should imply more protection in low-wage or low-skill industries. I add an interaction term between a country's indicator of right-wing political ideology and the log of average real wage in an industry to the specification in column (1) of Table 5 . As reported in column (1) of Table 7, a positive and significant coefficient (at 5% significance level) on the new interaction term suggests that relative to left-wing and centrist governments, right-wing governments are associated with more protection in high-wage industries. This result supports the general theme of the paper that government political ideology is reflected in trade policy along the industry lines.

Since higher wages in an industry may well be reflecting higher labor productivity. In column (2), I examine whether right-wing governments' protection of high-wage industries is motivated by the consideration of long-run growth. Using value-added per worker as the measure of labor productivity, I find no evidence showing that right-wing governments tend to protect productive industries more than leftist and centrist governments. This result, together with the positive coefficient on the interaction term in column (1), implies that rightist governments protect industries where workers receive rents.

Next, I examine employment risks in an industry as a determinant of trade protection. Job and skill losses associated with deindustrialization remain a major concern of governments in developed countries, especially when pro-labor governments are in control. Pro-labor governments are expected to be more concerned about layoffs, particularly for workers who have acquired firm or industry-specific skills. To test this hypothesis, I interact the dummy for right-wing governments with an industry's proxy of specific-skill intensity, measured by the average returns to firm-specific skills by Tang (2008). The coefficient on the interaction term is negative but insignificant. Similarly, workers in industries with high job turnovers are more vulnerable to shocks arising from economic integration, and would receive more protection from a leftist government. Column (4) includes an interaction term between the "right" dummy and an industry's average gross job flow rate constructed by Davis, Haltiwanger and Schuh (1996). A negative and significant coefficient on the interaction term supports the claim that relative to right-wing governments, left-wing governments tend to

protect workers from employment risks.

6.4 Different Samples

In Table 8, I examine whether the observed structure of trade protection across industries is found in different samples of countries. First, I divide the sample into the OECD and the non-OECD groups. Only in the sample of OECD countries do I continue to find the proposed relationship between government ideology and the structure of protection across industries (columns (1) and (2)). The natural next step is to consider subsamples of rich (per capita GDP above the median of the sample) and poor countries (per capita GDP below the median of the sample). Consistent with the "OECD" exercise, I find a strong relationship between government ideology and protection patterns for the rich, but not the poor sample (columns (3) and (4)). An explanation is that poor countries usually need capital for growth, and impose less restriction on capital-intensive imports.

Next, I separate the sample into groups of capital-abundant (capital endowment above the median in the sample) and capital-scarce countries, respectively. Using the capital-rich sample, I continue to find that right-oriented governments have relatively higher protection in capital and skill intensive industries (columns (5)). No such relationship is observed in the capital-poor sample (columns (6)). On the contrary, right-wing governments in capital-scarce countries appear to be associated with lower protection in capital-intensive industries than the left-wing governments. These observations are consistent with the findings from the sample of poor countries, in which ideology does not appear to affect trade policy.

Finally, I consider the division of countries into democracies and non-democracies. The consensual view is that democracies are more concerned about social welfare than political contribution, compared to non-democracies. Therefore, if capitalists and skilled workers are associated with more political power, right-wing policy bias to capital and human-capital intensive industries is expected to be more pronounced in non-democratic countries. In columns (7) and (8), I find no evidence supporting this conjecture. I find that in democratic regimes, right-wing governments protect capital-intensive industries more, while in non-democratic regimes, skill intensive industries receive more protection.

6.5 Embedding the Framework into Dutt and Mitra (2006)

As discussed in Section 2, the class-cleavage theory predicts that in a country endowed with abundant land and capital, the leftist party favors trade protection while the right party votes for freer trade (Rogowski, 1990). This theory was recently tested by Dutt and Mitra (2002, 2005, 2006) for a sample of countries in the 80s. They show that left-wing governments are associated with higher trade barriers in capital-abundant

countries because of more intense import competition in labor-intensive industries, but liberalize more in labor-abundant countries. Their idea can be summarized by the following equation:

$$\frac{\partial TB}{\partial Ideology} = a + b\,(K/L)\,,$$

where TB stands for trade barriers, and $Ideology$ measures the degree of left orientation of a government. The authors find empirical support for the theoretical prediction that $a < 0$ and $b > 0$. Embedding my empirical specification into their framework will yield important predictions. In particular, the difference in trade barriers in industry j between left-wing and right-wing governments, all else equal (especially holding (K/L) constant), can be formalized as:

$$TB_j^R - TB_j^L = \left(a^R - a^L\right) + \left(b^R - b^L\right) \times (l\_int_j) + \left(c^R - c^L\right) \times (K/L) + \left(d^R - d^L\right) \times (K/L)\,(l\_int_j)\,, \quad (6)$$

where 'L' and 'R' stand for left and right, respectively.

So far, I found empirical results to sign $\left(a^R - a^L\right)$ and $\left(b^R - b^L\right)$. Table 3 shows that right-wing (left-wing) governments tend to have lower (higher) protection, suggesting that $\left(a^R - a^L\right) < 0$. Moreover, positive coefficients on the interactions between "right" and capital and skill intensities suggest that $\left(b^R - b^L\right) < 0$.

Now consider the signs of $\left(c^R - c^L\right)$ and $\left(d^R - d^L\right)$. The Heckscher-Ohlin model predicts that when a country becomes more endowed with capital, it will import more labor-intensive goods. The intention to protect the interests of labor, therefore, increases across all political parties, with left-wing governments being more protective. As such, increasing a country's capital endowment will increase the divergence of trade policy preferences between left-wing and right-wing parties. This effect of increasing capital endowment implies $\left(c^R - c^L\right) < 0$. Moreover, when more imported goods are labor-intensive, the demand for protection in labor-intensive industries increases, while that for capital-intensive industries declines. Thus, the views on trade policy of the left and the right parties diverge even more for labor-intensive industries, implying $\left(d^R - d^L\right) < 0$. In sum, the conjecture is that all coefficients in equation (6) are negative, implying that all else being equal, a right-wing government has lower NTBs than a left-wing government in all industries. The important message is that the difference in NTBs between a right and a left government increases with industry labor intensity, with an increased capital endowment of a country enlarging the differences.

To test these hypotheses, I rewrite equation (6) into the following econometric specification:

$$\begin{aligned} \ln(1+NTB^*_{cj}) &= \alpha+\beta_1 Right_c\times l\_int_j+\delta_1\ln(K/L)_c\times l\_int_j \\ &\quad +\delta_2 Right_c\times\ln(K/L)_c\times l\_int_j \\ &\quad +\boldsymbol{\gamma}\mathbf{X_j}+f_c+f_j+\epsilon_{cj} \qquad (7) \\ \text{where } NTB_{cj} &= \left\{\begin{array}{c} NTB^*_{cj} \text{ if } NTB^*_{cj}>0 \\ 0 \text{ otherwise.} \end{array}\right\} \end{aligned}$$

where c and j continue to stand for country and industry, respectively. The structure of the equation is very similar to specification (7).

To be consistent with Dutt and Mitra (2005, 2006), who consider a two-factor open economy, I use $(1-k\_int_j)$ as the measure of labor intensity, instead of separating labor into skilled and unskilled as I have done so far. Then I estimate equation (7) with three interaction terms: $Right_c\times l\_int_j$, $\ln(K/L)_c\times l\_int_j$ and $Right_c\times\ln(K/L)_c\times l\_int_j$, where $\ln(K/L)_c$ stands for the log of per-capita capital endowment.[28] The prediction of $d^R-d^L<0$ implies $\delta_1>0$ and $\delta_2<0$.

Table 9 shows the results of the Tobit estimation of equation (7). All regressions include the controls for existing theories on trade policy included in column (1) of Table 5. Since Table 3 already showed that right-wing governments are more open to trade (i.e., $a^R<a^L$), instead of adding country-level variables to sign $a's$ and $c's$, I include industry and country fixed effects. In column (1), the coefficient on $Right\times l\_int$ is insignificant. An explanation is that since the regression results so far show that right-wing governments protect skilled-intensive industries relatively more than left-wing governments, mixing high-skilled and low-skilled workers in the measure of labor intensity may weaken the findings that a rightist government protects unskilled workers relatively less than a leftist government.

The point estimates on $\ln(K/L)\times l\_int$ and $Right\times\ln(K/L)\times l\_int$ support the theoretical predictions, and are significant at 1% and 5% levels, respectively. In particular, I find supporting evidence that in capital-rich countries, labor-intensive industries demand for more trade protection, and are therefore more protected from imports, because of import competition. Furthermore, I find that left and right-wing governments diverge more on trade policies in capital-rich countries, particularly in labor-intensive industries.

Next, I separate the skilled and the unskilled from the labor intensity measure as I have done so far in the paper. As such, I extend the two-factor economy model of Dutt and Mitra (2005, 2006), and consider the effects of political ideology on NTBs across industries with varying capital and skill intensities. In column (2), I repeat the exercise for column (1) by adding separate interaction terms for capital and skill intensities. First,

[28] When I use the level of K/L instead, results remain significant.

independent of the effects of a country's factor endowment, I find that right-wing governments are associated with higher NTBs in capital-intensive industries (a positive and significant coefficient on $Right \times k\_int$). Moreover, I find that an increase in a country's capital endowment reinforces the policy bias in capital-intensive industries by a right-wing government (a positive and significant coefficient on $Right \times \ln(K/L) \times k\_int$). This suggests that in capital-rich countries, where more imported goods are labor-intensive, a left-wing government is more likely to protect labor interests than a right-wing government.

The coefficient on $Right \times h\_int$ remains significant and positive. The coefficients on other interactions with h_int, however, are insignificant. This is not surprising given that a higher level of capital endowment should have little effects on trade of skill intensive goods. Therefore, in column (3), instead of interacting an industry's skill intensity with a country's measure of capital endowment, I interact it with a country's human capital endowment. Nevertheless, the coefficients on the human-capital intensity interaction terms remain insignificant, despite the fact that the coefficients on capital-intensity interactions continue to be significant. In other words, with my framework incorporated in Dutt and Mitra's (2005, 2006), the class-cleavage theory is verified along the capital-labor line across industries, but not along the skilled-unskilled line.

6.6 Panel Evidence

Restricted by the availability of non-tariff barrier data, I can only examine the relationship between political ideology and the structure of protection in the late 90s. To go beyond cross-sectional analysis, I opt for the only feasible option, which is to estimate trade barriers across time. Hiscox and Kastner (2008) have created proxies for country-level trade barriers using country-year fixed effects from estimating the gravity model. I use the same method to construct proxies for trade barriers at the industry level for a large set of countries across time.[29] In particular, I estimate the gravity equation by ISIC (Rev. 2) 3-digit industry for each 5-year periods between 1980-1984 and 1995-1999. Besides standard geographical variables for gravity estimation, I control for factor-endowment differences between a country pair and include country fixed effects in the estimation. Then I use the (negative) beta coefficients on the country dummies from each regression by sector as the proxies for trade barriers at the country-sector level for four 5-year periods. Details about estimating the gravity equation at the sector level and constructing proxies for trade barriers are discussed in Appendix B. Figure 1 plots the (import-weighted) average of the estimates against the (import-weighted) average of actual non-trade barriers across countries between 1995 and 1999. It shows a strongly positive relationship between the two measures.

Using estimated trade barriers, I go beyond the cross-country cross-industry analysis and examine the

[29] Levchenko and Do (2007) also estimate gravity equations sector by sector at the ISIC (Rev. 2) 3-digit level to construct proxies for trade patterns due to exogenous geographical variables.

relationship between political ideology and the structure of trade protection across time. In addition to the advantage of analyzing the time-series correlation, using trade barrier estimates, which include policy instruments other than tariffs and non-tariff barriers for trade restriction, allows me to test the model's predictions over a broader set of policies.

Table 10 reports the regression results using estimated trade barriers as the dependent variables. All regressions include country, industry and period fixed effects. Similar to the method I use to construct political orientation index above, in columns (1) through (4), I use the average of the political orientation in the 10 years before the 5-year period from which trade barriers are estimated to construct the index of a country's political orientation. When the skill and capital intensity interaction terms are included in the regressions separately, countries with right political orientation are found to be more protective in both capital- and skill-intensive sectors. When both factor intensity interactions are included (column (3)), only the coefficient on the capital-intensity interaction continues to be significant (at the 10% level). When industry-level controls are also controlled for, both interaction terms become insignificant.

To test robustness of the results for capital intensity, I use the 5-year orientation averages before the period from which trade barriers are estimated to construct the political orientation indices. As shown in columns (5) and (6), the coefficient on the capital-intensity interaction term is now statistically significant at the 5% level, while skill intensity interaction continues to be insignificant. One reason why I obtain stronger results than in columns (3) and (4) can be that I use 5 years of data to estimate trade barriers, which implicitly leave a significant time lag for the effects of political orientation to be revealed in observed trade policies.

An advantage of using time-series proxies is that one can examine how political ideology affects the evolving pattern of protection across time. The theoretical model predicts higher level of protection in capital- and skill-intensive industries during the period when a right-oriented party rules the country. In columns (7) and (8), I use the change in the average of the estimated trade barriers from the first 5-year period to the second 5-year period as the dependent variable. As shown in column (7), I find a positive and significant coefficient (at the 1% level) on the capital-intensity interaction term. However, no significant results are found for the skill-intensity interaction. It is important to note that these findings remain largely robust (significant at the 5% level) when sector-level variables for competing hypotheses discussed in Section 6.2 are controlled for (column (8)).

In sum, panel regression results are largely consistent with the more significant results from the cross-sectional analysis. This support is found, however, only for capital-intensive sectors, but not for skill-intensive ones. The traditional view about the tension between capitalists and workers over trade policies is supported by panel data.

7 Conclusions

This paper extends the class-cleavage theory of trade policy from a cross-country framework to a cross-industry one, and examines whether political ideology can shape the structure of trade protection across industries. An extension of the Grossman and Helpman's "Protection for Sale" model (1994) shows that left-wing (pro-labor) governments tend to set higher trade barriers in labor-intensive industries, and lower trade barriers in capital-intensive and skill-intensive industries than right-wing (pro-capital) governments.

Using a cross-country, cross-industry data set for the late 90s, I find evidence supporting these predictions. The empirical results are robust to controlling for the existing theories of trade policy, as well as country and industry fixed effects. The ideology bias is stronger in capital-abundant countries. I also find that left-wing governments are associated with higher trade barriers in low-wage and high job-turnover industries. Panel regression results based on estimated trade barriers show that right-wing governments are more protective in capital-intensive industries, but not in skill-intensive ones.

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9 Appendix

9.1 Appendix A - Derivation

To solve for equation (1), we need to solve the government's maximization problem. To this end, I first solve for the closed-form solution of $\frac{\partial G(\gamma,\mathbf{p})}{\partial p_j}$:

$$\begin{aligned}
\frac{\partial G(\mathbf{p},\gamma)}{\partial p_j} &= \frac{\partial}{\partial p_j}\left[\sum_{j\in J} C_j(\mathbf{p},\gamma) + a\sum_{j=1}^{N}\widehat{W}_j(\mathbf{p},\gamma)\right] \\
&= \frac{\partial}{\partial p_j}\left[(1+a)\sum_{j\in J}\frac{\partial\widehat{W}_j(\mathbf{p},\gamma)}{\partial p_j} + a\sum_{j\notin J}\frac{\partial\widehat{W}_j(\mathbf{p},\gamma)}{\partial p_j}\right] \\
&= \sum_{j\in J}\left[(1+a)\frac{\partial\widehat{W}_j(\mathbf{p},\gamma)}{\partial p_j}\right] + \sum_{j\notin J} a\frac{\partial\widehat{W}_j(\mathbf{p},\gamma)}{\partial p_j} \\
&= \sum_{j=1}^{N}(\delta_j+a)\frac{\partial}{\partial p_j}\left[\gamma\pi_j(p_j) + H_j[1+S(\mathbf{p})] + \frac{H_j}{L}T(\mathbf{p})\right] \\
&= [\delta_j\gamma - \lambda + (\gamma-1)a]\,y_j + (\lambda+a)\left[(p_j-1)\frac{dm_j}{dp_j}\right]
\end{aligned}$$

where m_j stands for the volume of imports, and is equal to $d_j(p_j)L - y_j$. $\delta_j = 1$ if industry j is organized, and 0 otherwise. $\lambda \equiv \sum_{j\in J}\frac{H_i}{L}$ represents the fraction of the population owning a specific factor for an organized industry. The first order condition of the government's problem implies

$$\frac{p_j-1}{p_j} = -\left[\frac{\delta_j\gamma - \lambda + (\gamma-1)a}{(\lambda+a)}\right]\left(\frac{dm_j}{dp_j}\frac{p_j}{m_j}\right)^{-1}\left(\frac{y_j}{m_j}\right).$$

Given profit function $\pi_j(p_j,\overline{K}_j) = \max_{L_j}\left[p_j f_j(L_j,\overline{K}_j) - L_j\right]$ and production function: $f_j(\overline{K}_j,L_j) = L_j^{\alpha_j}\overline{K}_j^{1-\alpha_j}$, I can solve for the profit function as:

$$\pi_j(p_j) = p_j^{\frac{1}{1-\alpha_j}}\overline{K}_j,$$

where $A(\alpha_j) = (1-\alpha_j)\,\alpha_j^{\frac{\alpha_j}{1-\alpha_j}}$. Notice that under Assumption 1, $\frac{d\pi_j(\mathbf{p})}{d\alpha} = \frac{p_j^{\frac{1}{1-\alpha_j}}A(\alpha_j)}{(1-\alpha_j)^2}[\ln\alpha_j p_j] < 0$.

Further, by Hotelling's Lemma, the supply curve of industry j can be derived as $y_j(p_j) = \pi'(p_j) = (\alpha_j p_j)^{\frac{\alpha_j}{1-\alpha_j}}\overline{K}_j$. The slope of the supply curve is $y_j'(p_j) = \frac{\alpha_j^{\frac{1}{1-\alpha_j}}}{1-\alpha_j}p_j^{\frac{2\alpha_j-1}{1-\alpha_j}}\overline{K}_j$. Thus, the ad valorem tariff in

industry j, t_j, can be expressed as:

$$\begin{aligned} t_j &= -\Lambda\left(\delta_j,\gamma,a,\lambda\right)\left(\frac{dm_j}{dp_j}\right)^{-1} y_j \\ &= -\Lambda\left(\delta_j,\gamma,a,\lambda\right)\frac{\left(\alpha_j p_j\right)^{\frac{\alpha_j}{1-\alpha_j}}\overline{K}_j}{d_j'\left(p_j\right)L - \frac{\alpha_j^{\frac{1}{1-\alpha_j}}}{1-\alpha_j}p_j^{\frac{2\alpha_j-1}{1-\alpha_j}}\overline{K}_j} \\ &= -\Lambda\left(\delta_j,\gamma,a,\lambda\right)\left[\frac{d_j'\left(p_j\right)L}{\overline{K}_j}\left(\alpha_j p_j\right)^{-\frac{\alpha_j}{1-\alpha_j}} - \frac{\alpha_j}{\left(1-\alpha_j\right)p_j}\right]^{-1}, \end{aligned}$$

where $\Lambda\left(\delta_j,\gamma,a,\lambda\right) = \frac{\delta_j\gamma-\lambda+(\gamma-1)a}{(\lambda+a)}$. Under Assumption 2, $t_j > 0$ if $\delta_j = 1$ and $t_j < 0$. The impact of higher α on $t_j\left(\gamma,\alpha\right)$ is

$$\frac{\partial t_j\left(\gamma,\alpha\right)}{\partial\alpha} = \frac{-\frac{\Lambda(\delta_j,\gamma,a,\lambda)}{1-\alpha_j}\left[\frac{d_j'(p_j)}{\left(\alpha_j p_j\right)^{\frac{\alpha_j}{1-\alpha_j}}}\frac{L}{\overline{K}_j}\left[1+\frac{\ln(\alpha_j p_j)}{1-\alpha_j}\right]+\frac{1}{p_j(1-\alpha_j)}\right]}{\left[\frac{d_j'(p_j)}{\left(\alpha_j p_j\right)^{\frac{\alpha_j}{1-\alpha_j}}}\frac{L}{\overline{K}_j}-\frac{\alpha_j}{(1-\alpha_j)p_j}\right]^2}$$

Under Assumption 1, when $\delta_j = 1$, $\frac{\partial t_j}{\partial\alpha} < 0$ and $t_j > 0$; when $\delta_j = 0$, $\frac{\partial t_j}{\partial\alpha} > 0$ and $t_j < 0$. It is clear that $\frac{\partial^2 t_j(\gamma,\alpha)}{\partial\gamma\partial\alpha} > 0$, regardless of the value of δ_j.

9.2 Appendix B - Data Appendix

9.2.1 Factor Intensity Measures

The measures for factor intensities are constructed based on a panel data set of US manufacturing industries (456 of them at the 4-digit SIC level) from Bartelsman and Gray's (1996). I use a 3-factor constant returns to scale production function (labor, capital, human-capital) to construct the three measures of factor intensities. Capital intensity (k_int) is 1 minus the share of total payroll in value added. Human-capital intensity (h_int) is the ratio of non-production worker payroll to value added.

With constant returns to scale in production, labor intensity, l_int takes the residual of value added, which equals $1 - h\_int - k\_int$. Due to perfect collinearity of the three factor intensity measures, l_int is always excluded from the regressions, unless specified otherwise. The original industry data are disaggregated at the 4-digit SIC level. For each 4-digit category, I first calculate the averages of the intensity measures over 1990-1996, the last year from which data are available. Using a publicly available concordance file in Feenstra and Lipsey (2005), I map each SIC category uniquely to an ISIC category.[30] Then the average of factor intensity measures across all 4-digit categories within the same ISIC category is used as the measure

[30] The mapping rule requires that an ISIC category chosen to be mapped to a SIC sector has to be the one that shares the most HS product lines with that SIC sector among all ISIC categories.

for that ISIC industry.[31] I also consider a 4-industry production function with materials as an additional input of production. Material intensity (m_int) is defined as the ratio of material costs to the sum of value added and material costs. Measures of labor, capital and human capital intensities for a 4-factor production function are obtained by multiplying $1 - m\_int$ to the corresponding intensity measures derived based on a 3-factor production function.

9.2.2 Other Country-level Measures

In the following empirical analysis, I also use countries' indices of democracy, measures of factor endowment and real GDP per capita. I adopt a country's democracy index from the Freedom House (Gastil) database. The original indices of democracy range from 1 to 7, with a higher value associated with a lower extent of democracy. I rescale the index to range between 0 and 1, with a higher value associated with more democracy. Data on countries' physical capital endowment are adopted from Caselli and Feyrer (2007). Physical capital is constructed using the perpetual inventory method using times-series data on real investment. Data on countries' per capita human capital are adopted from Caselli (2005), which is defined as the average years of schooling with Mincerian non-linear returns to education. Finally, I take data on real GDP per capita from the Penn World data set by Summers and Heston (2006). While endowment measures are available for the year 1996, data on democracy and GDP are available for every year. For time-varying data, such as per-capita GDP, I compute their averages over the 10 years preceding the year from which NTB data are taken. For panel regression analysis, I use bilateral trade data from Feenstra and Lipsey (2005), geographic data from Centre d'Etudes Prospectives et d'Informations Internationales (CEPII), and time-varying factor endowment data from Klenow and Rodriguez-Clare (2005) to estimate the gravity equation at the sector level, so that time-series proxies for trade barriers at the sector level can be estimated. Details of this estimation will be discussed in Section 6.6 below.

9.2.3 Estimating Sectoral Trade Barriers from the Gravity Model

To estimate the industry-specific trade barriers for a large set of countries for multiple periods, I extend the approach used by Hiscox and Kastner (2008) to estimate the gravity equation at the industry level for every 5-year period since 1980. Levchenko and Do (2007) also estimate the gravity equation at the industry level to construct predicted sectoral volume of trade based on exogenous geographic characteristics. Similar to their specification, which is based on the original work by Frankel and Romer (1999), I control for a large set of geographic variables in my estimation specification. The regression specification is the following:

[31] Alternatively, I can use the median of the intensity measures at the 4-digit SIC level as my ISIC measure. The piecewise correlation between the measure using the mean and that using the median is about 0.98.

$$
\begin{aligned}
\ln\left(M_{icd}/Y_c\right) \quad = \quad & \alpha_i + \beta_i^1 ldist_{cd} + \beta_i^2 lpop_d + \beta_i^3 larea_d + \beta_i^4 ly_d + \beta_i^5 \ln\left(K_c/K_d\right) + \beta_i^6 \ln\left(H_c/H_d\right) \\
& + border_{cd} \left(\begin{array}{c} \beta_i^7 + \beta_i^8 ldist_{cd} + \beta_i^9 lpop_d + \beta_i^{10} larea_d \\ + \beta_i^{11} ly_d + \beta_i^{12} \ln\left(K_c/K_d\right) + \beta_i^{13} \ln\left(H_c/H_d\right) \end{array} \right) \\
& + \phi_{ic} + \varepsilon_{icd}
\end{aligned}
$$

where i, c and d stand for industry, importing country and exporting country, respectively; M_{icd} stands for the current dollar value of the volume of imports from country d to c in industry i; Y_d is the nominal GDP of country d. α_i is the constant; $ldist_{cd}$ is the log distance between the two countries, defined as the weighted distance between the major cities in the two countries; $lpop_d$ is the log of population of the exporting country; ly_d stands for the log nominal GDP of the exporting country; $border_{cd}$ is a dummy that takes the value of 1 if the two countries share the same border. Because my purpose is to capture policy-determined trade barriers, I extend Levchenko and Do (2007) by including also the (log) ratios between importing and exporting countries' endowments of capital ((K_c/K_d)) and labor (L_c/L_d), respectively. It is important to note that these measures are from Klenow and Rodriguez-Clare (2005), which vary across years. Thus, the time-varying endowment measures can capture dynamic comparative advantage across countries due to factor accumulation. Following Frankel and Romer (1999), all stand-alone terms besides the fixed effects are interacted with the border dummy, as it is believed that trade elasticities with respect to the geographic factors are substantially different for countries that share the same border.

ϕ_{ic} is the fixed effect of each importing country. I use this estimate as the proxy for trade barriers due to the policies implemented by country c in industry i. ε_{icd} is the error term.

To increase the sample size and enhance the quality of the data because of missing data, 5-year averages for dependent and independent variables are used in the estimation. I estimate the regression sector by sector, for four 5-year periods (1980-84, 1985-89, 1990-1994, 1995-1999). The standardized beta coefficients on ϕ_{ic} are used as proxies for trade barriers, which capture the impact of country c's policies on imports in standard-deviation terms. Since estimated $\widehat{\phi}_{ic}$ captures the positive impact of a country's policies on imports, relative to the excluded country, I multiply $\widehat{\phi}_{ic}$ by -1 so that a higher value corresponds to more protection. In each 5-year period, if a country imports from less than 5 countries in an industry, the estimated trade barrier is discarded.

Table 1 (Country Indicators of Government Ideology and Measures of Protection)

Country	Ideology	Political System	Import-weighted NTB (%)	Import-weighted Tariffs (%)	Year NTB taken	Year Tariff taken
India	Left	Parliamentary	39.079	21.764	1997	1997
El Salvador	Right	Presidential	30.461	7.669	1997	1997
Argentina	Right	Presidential	27.845	11.603	1999	1999
Brazil	Center	Presidential	25.220	13.539	1999	1999
Ecuador	Left	Presidential	22.997	12.051	1999	1999
New Zealand	Right	Parliamentary	22.655	2.998	1999	1999
China	Left	Assembly	20.328	15.114	1997	1997
Greece	Left	Parliamentary	19.545	3.675	1999	1999
Portugal	Right	Parliamentary	18.596	3.438	1999	1999
Denmark	Left	Parliamentary	18.389	3.212	1999	1999
Taiwan	Right	Assembly	17.711	5.322	1999	1999
Italy	Center	Parliamentary	17.676	3.462	1999	1999
United States	Left	Presidential	17.581	1.909	1999	1999
Colombia	Center	Presidential	17.554	10.237	1999	1999
Germany	Right	Parliamentary	17.132	3.309	1999	1999
Switzerland	Right	Parliamentary	16.251	0.000	1996	1996
Chile	Right	Presidential	15.693	9.933	1999	1999
United Kingdom	Right	Parliamentary	15.312	3.140	1999	1999
Romania	Center	Parliamentary	14.858	9.017	1999	1999
France	Left	Parliamentary	14.529	3.404	1999	1999
Uruguay	Right	Presidential	14.397	13.186	1999	1999
Sweden	Left	Parliamentary	14.032	2.957	1999	1999
Austria	Left	Parliamentary	13.864	3.039	1999	1999
Netherlands	Center	Parliamentary	13.417	3.185	1999	1999
Spain	Left	Parliamentary	13.349	3.302	1999	1999
Finland	Center	Parliamentary	13.098	2.799	1999	1999
Ethiopia	Left	Presidential	12.872	17.08	1995	1995
Ireland	Center	Parliamentary	12.338	2.874	1999	1999
Australia	Left	Parliamentary	10.737	4.249	1999	1999
Hungary	Left	Parliamentary	10.599	4.695	1999	1997
Poland	Center	Presidential	10.501	3.935	1999	1999
Japan	Right	Parliamentary	10.319	2.969	1996	1996
Tunisia	Left	Presidential	10.230	26.83	1999	1998
Peru	Right	Presidential	7.086	12.597	1999	1999
Philippines	Center	Presidential	6.741	7.842	1998	1998
Mexico	Left	Presidential	6.530	6.678	1999	1999
Mauritius	Left	Parliamentary	6.440	28.198	1995	1995
Iceland	Right	Parliamentary	6.014	3.526	1996	1996
Turkey	Right	Parliamentary	5.398	6.080	1997	1997
Slovenia	Left	Parliamentary	4.290	11.828	1999	1999
Lithuania	Center	Presidential	3.627	3.032	1999	1997
Bolivia	Center	Presidential	2.846	9.000	1999	1999
South Africa	Center	Assembly	2.627	5.356	1999	1999
Norway	Left	Parliamentary	2.594	0.459	1996	1996
Thailand	Right	Parliamentary	1.669	35.865	1994	1993
Guatemala	Right	Presidential	1.344	6.775	1998	1998
Honduras	Right	Presidential	0.586	8.782	1998	1995
Korea, Rep.	Right	Presidential	0.201	7.657	1996	1996
Ukraine	Center	Presidential	0.083	6.275	1997	1997

Note: Sorted by non-tariff barriers

Table 2 (Sectoral Measures of Protection and Factor Intensities)

ISIC Code	Industry	Import-weighted NTB (%)	Std Dev. NTB (%)	Import-weighted Tariffs (%)	Std Dev. Tariffs (%)	Capital Intensity	Human-Capital Intensity
311	Food Products	24.436	8.823	9.109	1.907	0.773	0.082
313	Beverages	23.802	33.230	5.686	2.975	0.772	0.102
314	Tobacco	4.934	34.596	28.864	3.193	0.850	0.059
321	Textiles	43.220	12.344	9.702	3.336	0.599	0.127
322	Apparel, ex. Footwear	45.353	17.869	9.346	4.277	0.585	0.130
323	Leather products	27.931	9.520	6.315	2.350	0.602	0.140
324	Footwear, ex rubber/ plastic	49.634	17.406	9.327	4.312	0.589	0.119
331	Wood products, ex. Furniture	38.447	8.700	2.434	2.382	0.556	0.131
332	Furniture, ex. Metal	0.107	17.626	1.288	0.396	0.590	0.142
341	Paper and products	1.364	7.381	2.719	1.064	0.627	0.125
342	Printing and publishing	1.706	6.596	1.719	2.301	0.700	0.163
351	Industrial chemicals	15.404	7.016	5.007	1.534	0.735	0.111
352	Other chemicals	11.041	8.502	2.649	2.259	0.752	0.126
353	Petroleum refineries	36.750	10.845	3.947	3.856	0.749	0.097
354	Misc. petroleum and coal products	13.533	6.729	2.987	1.501	0.700	0.117
355	Rubber products	5.652	10.500	4.568	0.747	0.582	0.133
356	Plastic products	11.483	11.737	7.296	1.469	0.628	0.134
361	Pottery, china, earthenware	18.850	12.245	5.934	1.761	0.605	0.114
362	Glass and products	0.532	9.294	5.248	0.683	0.624	0.134
369	Other non-metallic mineral products	3.914	9.734	3.247	1.013	0.612	0.141
371	Iron and steel	26.070	6.660	4.231	1.702	0.559	0.146
372	Non-ferrous metals	4.567	6.898	2.473	1.338	0.626	0.135
381	Fabricated metal products	6.288	9.391	3.947	0.935	0.578	0.168
382	Machinery, ex. Electrical	7.954	6.410	2.693	0.990	0.576	0.192
383	Machinery, electrical	10.705	9.858	3.251	0.869	0.616	0.180
384	Transport equipment	13.067	10.767	4.338	2.456	0.576	0.174
385	Professional & scientific equipment	8.199	7.120	2.741	1.168	0.609	0.208
	Average	16.850	11.770	5.595	1.955	0.643	0.134

Table 3 (Baseline Results)

This table examines whether government political ideology affects the structure of trade protection across sectors with different factor intensities. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier) (Import-Weighted)					
	(1) Left Interacted	(2) Center Interacted	(3) Right Interacted	(4) Right - no country FE	(5) Right - no industry FE
Right x k-intensity			0.630***	0.632**	0.615**
			(2.63)	(2.36)	(2.33)
Right x h-intensity			1.699***	1.750***	1.686***
			(2.94)	(2.71)	(2.64)
Left x k-intensity	-0.501**	-0.717***			
	(-2.12)	(-2.68)			
Left x h-intensity	-1.282**	-1.888***			
	(-2.24)	(-2.92)			
Center x k-intensity		-0.505*			
		(-1.72)			
Center x h-intensity		-1.426**			
		(-2.00)			
Right				-0.671***	
				(-2.81)	
k-intensity					-0.261*
					(-1.67)
h-intensity					-1.340***
					(-3.51)
Country FE	Y	Y	Y	N	Y
Sector FE	Y	Y	Y	Y	N
Num. of Obs.	1313	1313	1313	1313	1313
Log Likelihood	-170.67	-169.075	-169.453	-365.897	-307.242
LR chi-squared	623.394***	626.583***	625.827***	232.94***	350.249***
McFadden's Adj. R-sq.	0.485	0.485	0.489	0.179	0.257

Notes:
1) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
2) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 4 (Using Political Ideology of the Controlling Party in the Previous 5 Years)

This table examines whether government political ideology affects the structure of trade protection across sectors with different factor intensities. Different from Table 3, government political ideology equals the ideology of the party with dominating control (3+years) in the previous 5 years. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier)			
	(1)	(2)	(3)
Right x k-intensity	0.497**	0.504*	0.486*
	(2.15)	(1.94)	(1.91)
Right x h-intensity	1.145**	1.230**	1.153*
	(2.05)	(1.96)	(1.87)
Right		-0.504**	
		(-2.17)	
k-intensity			-0.259
			(-1.53)
h-intensity			-1.253***
			(-3.04)
Country FE	Y	N	Y
Sector FE	Y	Y	N
Num. of Obs.	1313	1313	1313
Log Likelihood	-170.774	-305.851	-368.052
LR chi-squared	623.187***	353.032***	228.63***
McFadden's Adj. R-sq.	0.484	0.254	0.173

Notes:
1) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
2) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 5 (Dependent Variable = HS-line Weighted Non-Tariff Barriers)

Using HS-line weighted non-tariff barrier as the dependent variable, this table shows results of the analogous regressions in Table 3. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier) (HS-line-Weighted)			
	(1)	(2)	(3)
Right x k-intensity	0.476**	0.496**	0.459**
	(2.31)	(2.05)	(2.00)
Right x h-intensity	1.258**	1.349**	1.239**
	(2.52)	(2.31)	(2.23)
Right		-0.525**	
		(-2.42)	
k-intensity			-0.316**
			(-2.32)
h-intensity			-1.422***
			(-4.28)
Country FE	Y	N	Y
Sector FE	Y	Y	N
Num. of Obs.	1313	1313	1313
Log Likelihood	-51.554	-291.561	-201.453
LR chi-squared	715.332***	235.318***	415.534***
McFadden's Adj. R-sq.	0.683	0.214	0.389

Notes:
1) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
2) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 6 (Controlling for Existing Hypotheses)

This table adds a set of control variables to the baseline regressions to control for existing hypotheses. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier) (Import-Weighted)						
	(1) Baseline Controls	(2) Alt. Comp. Adv. Measures	(3) Declining Industries	(4) Δ Import Penetration	(5) (1) w/ Material Intensity	(6) (4) w/ Material Intensity
Right x k-intensity	0.884***	0.937***	1.238***	1.279***	1.562***	2.468***
	(3.31)	(3.47)	(4.03)	(4.18)	(3.17)	(4.30)
Right x h-intensity	2.296***	2.519***	2.580***	2.660***	4.278***	5.278***
	(3.62)	(3.93)	(3.54)	(3.66)	(3.78)	(4.00)
Right x m-intensity					1.664***	2.697***
					(3.14)	(4.31)
Employment Share	-0.046***		-0.048***	-0.043***	-0.046***	-0.043***
	(-3.95)		(-3.64)	(-3.23)	(-3.96)	(-3.20)
Value-added Share		-0.032***				
		(-2.66)				
Wage	0.024		-0.052	-0.058	0.025	-0.054
	(0.65)		(-0.85)	(-0.95)	(0.67)	(-0.88)
Value-added / Worker		0.054**	0.032	0.034		0.032
		(2.29)	(0.94)	(1.00)		(0.93)
Wage Growth			1.188***	1.164***		1.167***
			(4.19)	(4.11)		(4.13)
(Value-added / Worker) Growth			-0.16	-0.155		-0.155
			(-0.76)	(-0.74)		(-0.74)
Import/ Dom. Use	-0.016	-0.012	-0.021	-0.014	-0.016	-0.014
	(-1.23)	(-0.95)	(-1.47)	(-0.93)	(-1.25)	(-0.97)
Δ(Import/ Dom. Use)				-0.124		-0.127
				(-1.26)		(-1.29)
Export/ Output	-0.018**	-0.015	-0.023**	-0.020*	-0.019**	-0.021**
	(-2.01)	(-1.64)	(-2.21)	(-1.94)	(-2.08)	(-2.04)
ln(1+Tariff)	0.068***	0.090***	0.068***	0.065***	0.068***	0.066***
	(3.84)	(4.86)	(3.53)	(3.34)	(3.81)	(3.36)
Country FE	Y	Y	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y	Y	Y
Num. of Obs.	963	940	774	770	963	770
Log Likelihood	-97.844	-92.553	-54.165	-50.934	-97.654	-49.997
LR chi-squared	507.472***	489.635***	468.518***	471.031***	507.852***	472.905***
McFadden's Adj. R-sq.	0.508	0.504	0.562	0.566	0.507	0.567

Notes:
1) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
2) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 7 (Other Sector Characteristics that Reflect Labor Interests)

This table tests whether right-wing governments set lower non-tariff barriers in sectors where workers' demand for protection is higher. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier) (Import-Weighted)				
	(1)	(2)	(3)	(4)
Interaction	ln(wage)	ln(value-added)	Specific Skills	Job Turnovers
Right x k-intensity	0.514*	0.975***	1.288***	0.789**
	(1.67)	(3.04)	(4.26)	(2.00)
Right x h-intensity	1.868***	2.550***	2.015***	1.328*
	(2.84)	(3.96)	(3.15)	(1.93)
Right x ln(wage)	0.128**			
	(2.40)			
Right x ln(value-added)		-0.006		
		(-0.21)		
Right x Spec. Skills			-0.030	-0.027
			(-0.38)	(-0.35)
Right x Job Turnover				-1.393***
				(-2.81)
Controls	Employment Share, Wage, Import/Domestic Use, Exports/Output			
Country FE	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y
Num. of Obs.	963	940	738	738
Log Likelihood	-94.603	-93.051	-24.796	-21.419
LR chi-squared	513.955***	488.639***	421.726***	428.481***
McFadden's Adj. R-sq.	0.514	0.500	0.600	0.612

Notes:
1) All regressions include a full set of controls as in Table 6, column (1).
2) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
3) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 8 (Different Samples)

This table repeats the baseline regressions with controls (Table 6 column (1)) over different sub-samples. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier) (Import-Weighted)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Samples:	OECD	Non-OECD	Rich	Poor	High K/L	Low K/L	Democracy	Non - democracy
Right x k-intensity	1.582***	-0.111	1.341***	0.081	2.772***	-1.244***	0.873**	-0.003
	(4.26)	(-0.33)	(4.02)	(0.23)	(7.84)	(-3.53)	(2.38)	(-0.01)
Right x h-intensity	3.225***	0.733	2.915***	1.179	4.204***	-0.61	1.436	1.363*
	(3.55)	(0.91)	(3.58)	(1.42)	(5.01)	(-0.73)	(1.60)	(1.67)
Controls	----------Employment Share, Wage, Import/Domestic Use, Exports/Output----------							
Country FE	Y	Y	Y	Y	Y	Y	Y	Y
Sector FE	Y	Y	Y	Y	Y	Y	Y	Y
Num. of Obs.	453	510	529	434	519	444	500	463
Log Likelihood	29.888	-32.774	-3.214	-7.417	-6.527	-14.979	14.836	-13.79
LR chi-squared	406.959***	285.338***	388.576***	238.452***	361.597***	279.707***	376.105***	311.161***
McFadden's Adj. R-sq.	0.867	0.487	0.689	0.571	0.656	0.567	0.762	0.600

Notes:
1) All regressions include a full set of controls as in Table 6, column (1).
2) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
3) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 9 (Incorporating Dutt and Mitra (2006))

This table incorporates Dutt and Mitra's (2006) idea by interacting government political ideology with a sector's factor intensities and a country's per capita factor endowment. Tobit regression results (left-censored at 0) are shown.

Dependent Var: ln(1+Non-Tariff Barrier) (Import-Weighted)			
Interaction	(1) Labor intensity	(2) Capital & skill intensities	(3) Adding Human Capital Endowment
Right x l-intensity	0.061		
	(0.28)		
Right x ln(K/L) x l-intensity	-0.434**		
	(-2.31)		
ln(K/L) x l-intensity	0.249***		
	(4.71)		
Right x k-intensity		0.568**	0.587**
		(2.00)	(2.07)
Right x ln(K/L) x k-intensity		0.442*	0.466**
		(1.81)	(2.41)
ln(K/L) x k-intensity		-0.327***	-0.253***
		(-4.11)	(-4.50)
Right x h-intensity		2.316***	0.931
		(3.46)	(0.40)
Right x ln(K/L) x h-intensity		0.057	
		(0.10)	
ln (K/L) x h-intensity		-0.228	
		(-1.37)	
Right x ln(H/L) x h-intensity			1.767
			(0.66)
ln(H/L) x h-intensity			-0.614
			(-0.39)
Controls	Employment Share, Wage, Import/Domestic Use, Exports/Output		
Country FE	Y	Y	Y
Sector FE	Y	Y	Y
Num. of Obs.	852	852	852
Log Likelihood	-60.729	-53.256	-54.105
LR chi-squared	483.878***	498.824***	497.125***
McFadden's Adj. R-sq.	0.565	0.580	0.577

Notes:
1) All regressions include a full set of controls as in Table 6, column (1).
2) t-statistics are in parentheses. ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
3) LR chi-squared stands for likelihood-ratio chi-squared, which tests the difference between the full model and the constant only model.

Table 10 (Panel Regression Results)

This table uses estimated trade barriers from the gravity equation as dependent variables. The "Right" dummy is constructed based on the ideology of the government 10 years or 5 years before the year for which trade barriers are estimated. Dependent variable in column (7) and (8) are first-difference in estimated trade barriers. Ordinary least squares regression are shown.

Dependent Var.	**Estimated Trade Barriers**						**Δ Estimated Trade Barriers 1st 5 and 2nd 5 years**	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Time Horizon for Ideology	Ideology in the previous 10 years				Ideology in the previous 5 years			
Specification	Capital Intensity Only	Skill Intensity Only	Both Intensities + No Controls	Adding Controls from Table 6	Both Intensities + No Controls	Adding Controls from Table 6	No Controls	Adding Controls from Table 6
Right x k-intensity	0.0131***		0.0181*	0.0127	0.0226***	0.0187*	0.0178***	0.0165**
	(2.67)		(1.90)	(1.17)	(2.70)	(1.89)	(2.62)	(2.10)
Right x h-intensity		0.0383**	-0.0274	0.0258	-0.0361	-0.006	0.0245	-0.0333
		(1.96)	(-0.70)	(0.61)	(-1.04)	(-0.16)	(0.87)	(-1.04)
Fixed Effects Included	Y	Y	Y	Y	Y	Y	Y	Y
Controls Included	N	N	N	Y	N	Y	N	Y
Num. of Obs	3348	3348	3348	2539	4193	3139	4995	3693
R-sq	0.618	0.618	0.618	0.687	0.569	0.619	0.174	0.198

Notes:
1) Controls include employment share, wage, import/domestic use, exports/output.
2) t-statistics, based on robust standard errors, are in parentheses.
3) ***, ** and * denote 1%, 5% and 10% significance levels, respectively.
4) All regressions include country, sector and year fixed effects.
5) The sample contains only 42 of the 49 countries included in the above cross-sectional analysis, because sectoral imports data are available for 42 of them.

Figure 1: Plot of import-weighted average of estimated trade barriers against import-weighted average of non-trade barriers in late 90s.