

# POLITICAL IDEOLOGY AND ENDOGENOUS TRADE POLICY: AN EMPIRICAL INVESTIGATION

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*Abstract*—In this paper, we investigate empirically how government ideology affects trade policy. The prediction of a partisan, ideology-based model (within a two-sector, two-factor Heckscher-Ohlin framework) is that left-wing governments will adopt more protectionist trade policies in capital-rich countries, but adopt more pro-trade policies in labor-rich countries, than right-wing ones. The data strongly support this prediction in a very robust fashion. There is some evidence that this relationship may hold better in democracies than in dictatorships, though the magnitude of the partisan effect seems stronger in dictatorships.

## I. Introduction

POLITICAL ideology has been conceptualized in a number of ways, giving rise to a multiplicity of meanings and interpretations. One view is that it stands for the self-defined notions of public interest and altruistic goals of politicians and political parties, which form the basis for most of economic policymaking (Kau & Rubin, 1979). Another view is that the interests of constituents and ideological preferences of politicians are interrelated, with the former probably determining the latter (Peltzman, 1984; Alt, 1986).<sup>1,2</sup> However, in between these two extremes is the position that both pure altruistic, public-interest motivations and constituents' interests are important determinants of the ideological positions of political parties and politicians (Kalt & Zupan, 1984).<sup>3,4</sup>

In this paper, we investigate how trade policy depends on the political ideology of the government (the party or the ruler in power). We examine how trade policy varies with the extent of the government's leftist (pro-labor, as opposed to pro-capital) orientation. Our analysis is independent of

which of the above definitions of ideology one adopts. A left-wing party adopts a prolabor stance either because its constituents are workers whose welfare they need to care about to be guaranteed their support in votes and political contributions, and/or because they really place a high weight on egalitarianism. Similarly, a right-wing party may be taking care of its constituents, the capitalists, and/or may truly believe in providing incentives for capital accumulation to foster growth and generate jobs. In our analysis, we just assume that a government that is more left-oriented places a higher weight on the welfare of workers relative to that of capitalists, which can be consistent with any or all of the above reasons. This is consistent with the findings of Hibbs (1977), who shows in his cross-sectional investigation of 14 major, industrialized countries (as well as in his time series analysis of U.S. and U.K. data) that countries (and periods) with left-wing governments had lower unemployment and higher inflation than others.<sup>5</sup> This cross-country evidence provides support for his *partisan* theory according to which politicians are "partisan"—left-wing and right-wing governments have different objective functions, the former attributing a higher cost to unemployment relative to inflation than the latter. Alesina (1987) develops his *rational partisan* theory using a two-party model in which the left-wing party attaches a higher weight to unemployment relative to inflation (and a higher target inflation rate) in its loss function than the right-wing party.<sup>6</sup> Hibbs and Vasilatos (1982) and Hibbs, Rivers, and Vasilatos (1982), in different studies of survey data for the United States and the United Kingdom, show that the electorate's preferences and concerns about macroeconomic issues are class-related, with blue-collar groups being relatively more concerned about unemployment and white-collar groups being more concerned about inflation.<sup>7</sup> Magee, Brock, and Young (1989) have also argued that in the United States, the low-unemployment-high-inflation combinations under Democratic presidents benefit workers (debtors), and the opposite combinations under Republican presidents benefit capitalists (creditors).<sup>8</sup> Thus, it is fairly standard in the

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<sup>1</sup> Peltzman (1984) finds empirical support for this position using Senate voting records across a wide range of issues.

<sup>2</sup> Alt (1986) writes: "... class-party modelers from Kalecki to Hibbs say, ... parties are policy-oriented, ideological agents of their supporters. ...".

<sup>3</sup> Empirically, Kalt and Zupan (1984) find the effects of both pure "ideology" and the constituents' interests to be fairly important in Senate voting (on strip-mining controls).

<sup>4</sup> For an informational aspect to ideology, see Glazer and Grofman (1989).

<sup>5</sup> Also, see Alt (1985), who analyzes data from 14 western industrial nations between 1960 and 1983 and finds that unemployment falls (rises) following a change from a right-wing (left-wing) to a left-wing (right-wing) government.

<sup>6</sup> Alesina and Roubini (1992) find empirical support for the rational partisan model using OECD data.

<sup>7</sup> In fact, for the United Kingdom, they also find that manual working class voters are far more supportive of Labor governments than of Conservative governments.

<sup>8</sup> This is the standard textbook argument in macroeconomics that a sudden increase in the inflation rate benefits debtors at the expense of creditors.

political economy literature to use left-wing (right-wing) and prolabor (procapital) interchangeably.<sup>9,10</sup>

In this paper, we use the political support function approach of Hillman (1989) and Van Long and Vousden (1991) in a two-sector, two-factor (capital and labor) Heckscher-Ohlin framework.<sup>11</sup> The government's objective function, also called the political-support function, is a weighted sum of the welfare of workers and capitalists.<sup>12</sup> Maximization of this objective function yields the political-economy equilibrium tariff. In this model, the effect of an increase in the leftist orientation of the government is studied by increasing the weight on labor welfare relative to capital welfare in the government's maximand. This increase in the labor-welfare weight results in policies that are more prolabor and that make the domestic terms of trade move in favor of the labor-intensive sector. In a capital-abundant country, the labor-intensive good is the importable good, and therefore an increase in the leftist orientation of the government will result in a rise in import protection. In a labor-abundant country, however, the capital-intensive good is the importable and the labor-intensive good is the exportable. Therefore, an increase in leftist orientation in such a country that calls for a change in the domestic price ratio in favor of the labor-intensive exportable good will result in a decline in import protection. It is exactly this prediction about cross-country variation in trade policy that we are able to investigate empirically, using cross-country data on government ideology (left, center, or right), capital abundance, and diverse measures of trade restrictions and openness.

It is important to note here that in this kind of Heckscher-Ohlin framework, a left-wing (right-wing) government may

<sup>9</sup> See, for instance, Magee, Brock, and Young (1989) or Persson and Tabellini (2000). The tradition of linking political parties to classes or factors can be traced back to traditional theories of party systems, where classification is generally in terms of capitalists versus workers, urban versus rural, or the like (see Lipset & Rokkan, 1967)).

<sup>10</sup> See also the work by Garrett (1998), Swank (2002), and Adsera and Boix (2002) on the effects of partisanship on different kinds of economic policies. Using OECD data, Garret looks at how globalization has changed the way in which fiscal policy responds to partisanship, and Swank looks at how the response of welfare expenditure to globalization depends on the nature of the state and the relative strengths of interest groups. Adsera and Boix model the endogenous trade regime (free trade versus autarky) as well as government size and show the possibility of multiple equilibria—autarky (free trade) with small (large) government, and an authoritarian free-trade, small-government regime.

<sup>11</sup> There are other approaches to modeling endogenous trade policy. See Rodrik (1995) for an excellent and comprehensive survey of the political economy literature on trade policy.

<sup>12</sup> Grossman and Helpman (1994) use their political-contributions approach to provide micro foundations to the political-support function approach. Furthermore, the political-contributions approach and the associated objective function of the government in terms of contributions and aggregate welfare can be derived from a model of electoral competition (Grossman & Helpman, 1996), which also shows the possibility of nonconvergence of party platforms. In this sense we are using a reduced-form approach. In terms of the approach taken by Grossman and Helpman (1994), an increase in the weight on labor welfare in our framework can be, interpreted for instance, as a switch in power from a right-wing government receiving contributions from the capital lobby to a left-wing government receiving contributions from the labor lobby.

want to make the import tariff negative in a labor-abundant (capital-abundant) country if free trade is considered the neutral situation (arising from equal weights on labor and capital). However, in the real world there are possibly other components of the tariff (arising from other factors or considerations) which are, in combination, always positive enough to make the overall, observed tariff levels positive in countries of all degrees of capital abundance or scarcity, and with governments of all ideologies. Holding these other effects constant with respect to ideology, the overall import tariff can rise or fall with left-wing ideology to the extent that the positive or negative component that we focus on becomes more positive or more negative.

We perform our empirical investigation using three separate measures of relative factor endowments (capital per worker), constructed using different methods and under different assumptions. In looking at the effects of ideology, we allow it to change direction and magnitude as the relative factor proportions change when we move across countries.<sup>13</sup> Across all measures of trade restrictiveness and using different measures of the capital-labor ratio, we find strong evidence in favor of the above-mentioned prediction of the impact of ideology: an increase in the left-wing ideology, holding constant the economy's overall relative endowments, does in fact raise trade barriers in capital-abundant economies and lower them in capital-scarce economies.<sup>14</sup> Further, this result is extremely robust to the use of controls, to the treatment of the relative capital and labor endowments as endogenous to trade policy, to the correction of measurement errors in the ideology measure, and to controlling for differences in the endowments of other factors of production.

It is important to note here that our results are consistent with the results of econometric studies (using micro-level survey data) on individual-level trade policy preferences such as Balistreri (1997), Beaulieu (2001), and Scheve and Slaughter (2001). These authors find that for both Canada and the United States in recent years, factor type has been

<sup>13</sup> In addition to using ideology as a variable, an interaction term between ideology and the capital-labor ratio is used to endogenously determine from the data the threshold capital-labor ratio where the trade-restrictiveness–ideology relationship changes sign or direction.

<sup>14</sup> Besides the above explanation that relies on the Stolper-Samuelson theorem and right-(left-)wing parties being aligned to capital (labor), there is an alternative explanation based on the ideological preferences of right-(left-)wing parties for lower inflation (unemployment). Right-wing governments that dislike inflation tighten monetary policy, exacerbating unemployment. To mitigate the costs of recession in import-sensitive sectors, they may favor protectionism. Though this would explain the protectionist instincts of right-wing governments in capital-scarce economies, it would imply that right-wing governments are protectionist in capital-abundant countries as well—a proposition clearly rejected by our empirical findings. A third explanation relies on the relationship between trade openness and government spending (see Rodrik, 1998; Garrett, 1998; and Adsera & Boix, 2002). If lowering trade barriers requires a substantial increase in government spending (to insure against income risk/volatility), it is quite possible that right-wing governments are not willing to move in that direction, especially in developing nations, where tax systems are not advanced enough to raise revenues at reasonable cost. We thank an anonymous referee for this explanation.

the dominant determinant of support for or opposition to trade barriers. Individuals owning proportionally more of the scarce factors favor trade barriers, whereas those owning proportionally more of the abundant factors do not like protection. Mayda and Rodrik (2001) also find, using cross-country survey data, that protrade preferences are related to individual human-capital levels in the manner predicted by the Heckscher-Ohlin model. Besides the above individual-level, revealed-preference evidence for the Stolper-Samuelson theorem (on which this paper's main proposition rests), there are papers that have found support for it using data on political action committee (PAC) contributions and congressional voting patterns.<sup>15</sup>

Thus, our results uncover a robust empirical regularity in the relationship between trade protection and political ideology, thereby making a contribution to the literature on the political economy of trade policy,<sup>16</sup> as well as to the one on cross-national variation in protection.<sup>17</sup> Our findings suggest that a left-wing government that is generally more interventionist and believes in state control of the economy may surprisingly have a preference for free trade.

## II. Theoretical Framework

We now present an outline of a model that is presented in detail in Dutt and Mitra (2002). Consider a two-factor, two-sector, small-open, Heckscher-Ohlin economy. Both goods require both capital and labor in their production, carried out under constant returns to scale. On the demand side, individual preferences are taken to be identical and homothetic. For simplicity, we assume that there are two kinds of factor owners, workers (who only own labor) and capitalists (who only own capital). We also assume that tariff revenues are distributed in proportion to the factor incomes earned by individuals. The government chooses the level of the import tariff to maximize its objective function,

<sup>15</sup> See, for instance, Beaulieu (2002), Baldwin and Magee (1998), and Beaulieu and Magee (2000). In contrast, earlier studies (using older data for the United Kingdom and the United States, respectively) by Irwin (1996) and Magee (1978) find that industry of employment was the major determinant of individual-level trade policy preferences.

<sup>16</sup> There are two studies, namely O'Halloran (1994) and Magee, et al. (1989), that link partisanship to protection levels. However, they only look at time series, aggregate-level evidence for the United States for the periods 1877–1934 and 1900–1983, respectively, and find that Republicans (Democrats) have tended to raise (reduce) tariffs. This is not totally inconsistent with the Heckscher-Ohlin model; for the United States, at least until the end of World War I, was relatively poor in capital and rich in labor and land. By the 1970s, owing to the change in the country's comparative advantage, the two parties had switched sides as regards trade but not as regards factors of production (see Rodrik, 1995, and Ray, 1987). This switch is not obvious upon casual observation, because changes in macroeconomic conditions complicate matters (see Magee et al., 1989; O'Halloran, 1994; and Rodrik, 1995). There is also an interesting paper by Schonhardt-Bailey (1991) on the lack of partisanship with respect to trade policy in nineteenth-century Britain. Finally, Hiscox (2001), in his study of six western nations, looks at how historically the nature and structure of partisanship on the trade issue changes over time and depends on the extent of intersectoral factor mobility, which itself keeps changing.

<sup>17</sup> See Rodrik (1995) for a discussion of the importance of (and the need for) empirical work on cross-country variations in protection.

which is a weighted sum of the aggregate welfare of workers and capitalists. Our main comparative-static exercise here is to see how this tariff varies with the government's weight on the welfare of workers (relative to that of capitalists). This leads us to the following proposition, whose empirical validity we test in this paper:

**Proposition.** Holding other things constant, an increase in the left orientation (pro-labor bias) of the government leads to more restrictive or less open trade policies in capital-abundant countries, and leads to less restrictive or more open trade policies in capital-scarce ones.

This result is very intuitive. An increase in leftist orientation always results in redistributive policies that would benefit labor. In a capital-abundant country, the importable is the labor-intensive good, and an increase in redistribution from capital to labor is brought about by an increase in the bias of policies in favor of the importable sector. In a labor-abundant economy, the importable sector is the capital-intensive one, and hence more redistribution toward labor requires policies that are more biased against the importable sector.<sup>18</sup>

## III. Econometric Methodology

As the comparative-static result of the previous section shows, in countries with high  $K/L$  ratios, left-wing ideology of the government and trade restrictiveness should be positively related, but when  $K/L$  is low there is an inverse relationship between these two variables. A priori, we do not know at what level of  $K/L$  this relationship changes sign. The following specification takes care of this problem by allowing the data to tell us the exact location of this turning point:

$$TR_i = \alpha_0 + \alpha_1 Ideology_i + \alpha_2 Ideology_i \times (K/L)_i + \alpha_3 (K/L)_i + X_i \beta + \epsilon_i, \quad (1)$$

where  $TR_i$  is the extent of trade restrictions in country  $i$ ,  $Ideology_i$  is a measure of the extent of the government's left-wing ideology,  $(K/L)_i$  the capital-labor ratio, and  $X_i$  is a row vector of control variables.<sup>19,20</sup> The inclusion of  $K/L$  as a separate variable [in addition to  $Ideology$  and  $Ideology \times (K/L)$ ] allows  $\partial TR_i / \partial (K/L)_i$  and the variable component of

<sup>18</sup> Though the predictions are not as precise once we allow for more than two factors, one can argue that the above proposition is not as specific to the two-factor framework as it appears. See Dutt and Mitra (2002) for a more detailed argument.

<sup>19</sup> We could not find any nonmonotonicities with respect to  $K/L$  by including an additional term in  $(K/L)^2$ . We did not detect any nonlinearities (at 15% and even higher levels of significance) in any of our variables ( $K/L$ , ideology, their cross product, and other control variables) when we performed the Ramsey reset test for all our regressions, both with and without controls.

<sup>20</sup> In our estimation, we use the capital-labor ratios in natural logs (whose use results in very few outliers) and not in levels (whose use results in a very large number of outliers).

$\partial TR_i / \partial Ideology_i$  to differ in sign. Otherwise, they are restricted to having the same sign.

Taking the partial derivative of  $TR_i$  with respect to  $Ideology_i$ , we have

$$\frac{\partial TR_i}{\partial Ideology_i} = \alpha_1 + \alpha_2(K/L)_i. \quad (2)$$

The prediction of the comparative-static exercise of the previous section is that  $\alpha_1 < 0$  and  $\alpha_2 > 0$  such that  $\alpha_1 + \alpha_2(K/L)_i \geq 0$  as  $(K/L)_i \geq (K/L)^*$ , where  $(K/L)^* = -\alpha_1/\alpha_2$  is the turning point capital-labor ratio determined endogenously from the data, given our estimating equation.<sup>21</sup> Another requirement for the prediction to hold is that  $(K/L)^*$  should lie within the range of values of  $(K/L)$  in the data set, that is,  $(K/L)^{\text{MIN}} < (K/L)^* < (K/L)^{\text{MAX}}$ .

We first run the basic (without controls) ordinal and cardinal versions (explained in detail in section V A) of the above estimating equation. We then add controls such as democracy and special dummies for east Asia, for oil countries, and for sub-Saharan African countries to see whether our results are robust to their inclusion.<sup>22</sup> Hausman tests suggested the endogeneity of the capital-labor ratio with respect to trade protection. We therefore performed two-stage least squares regressions to control for such endogeneity. We also take advantage of the fact that some of our measures of protection have a time series dimension to create a panel data set and validate our results using a fixed-effects model with time-specific and comprehensive region-specific effects. Furthermore, we investigate whether this model works better in democracies than in dictatorships, and where the magnitude of this predicted relationship is stronger. A number of other robustness checks are also performed (explained in detail in section VI).

#### IV. Data Sources and Some Basic Statistics

Our dependent variable is trade protection, and our independent variables of interest are a measure of ideological orientation (left-, center-, and right-wing), the capital-labor ratio, and indicators for democracy and political rights. The cross-sectional analysis averages all variables for the decade of the 1980s; the panel analysis covers the time period 1980–1989. For running our regression in changes, the change in each variable is calculated as its average value in the eighties minus its average value in the seventies.

To test for the robustness of our results, we use a variety of trade policy measures: total import duties collected as a percentage of total imports (*IMPORT DUTY*), an average

tariff rate calculated by weighing each import category by the fraction of trade in that category (*TARIFF*),<sup>23</sup> a coverage ratio for nontariff barriers to trade (*QUOTA*), an indirect measure of trade restrictions [the magnitude of trade flows relative to GDP, denoted  $(X + M)/GDP$ ], and the newly available Hiscox-Kastner measure. For the panel analysis, only *IMPORT DUTY*,  $(X + M)/GDP$ , and the Hiscox-Kastner measure are used, because these are the only measures for which data are available over time. *IMPORT DUTY* and  $(X + M)/GDP$  are taken from the World Development Indicators, *TARIFF* and *QUOTA* (both available for only one point in time for each country in the 1980s) are taken from Barro and Lee (1994), and the Hiscox-Kastner measure of protection is taken from Hiscox and Kastner (2002).

The data on political orientation are obtained from the Database of Political Institutions (DPI) (Beck et al., 2001), which is a large cross-country database of political institutions that covers 177 countries over 25 years, 1971–1995. We use the ideological orientation (left, center, or right) of the chief executive (that of the chief executive's party or, when considered appropriate, that of the chief executive himself/herself) for political systems classified as presidential in the database, that of the largest government party for systems classified as parliamentary, and the average of these two orientations for systems classified as assembly-elected president.<sup>24</sup> We also verified the robustness of our results by using the ideological orientation of the chief executive for political systems that are classified as assembly-elected president instead of using an average measure.

The data on capital-labor ratios are obtained from Easterly and Levine, who use aggregate investment and depreciation data to construct capital-per-worker series for 138 countries. To check for and ensure the robustness of our results we also use the Easterly-Levine capital-per-worker data that are based on disaggregate sectoral investment and depreciation data to arrive at more accurate measures. However, the country coverage for the second measure is much smaller.<sup>25</sup>

<sup>23</sup> The variable is referred to as tariffs, although it includes all import charges, such as duties and customs fees.

<sup>24</sup> For details regarding the coding of parties as left, right, and center, see Beck et al. (2001). However, an important thing to note in the context of this paper is that their definition of these three categories is not based on trade policy orientation, but rather on how much the party advocates "the strengthening of private enterprise" (which could be interpreted as implicitly procapital) versus the extent to which "it supports a redistributive role for the government" (pro-labor). See also some of the original sources Beck et al. (2001) cite.

<sup>25</sup> We also tried the Nehru-Dhareshwar data on capital in conjunction with the data on labor (defined as population between ages 15 and 64), to calculate an alternative measure of capital-labor ratio. The data on capital stock at 1987 domestic prices are converted into 1987 constant dollars using the 1987 exchange rate. However, this results in a number of outliers (both unrealistically high capital-labor ratios for countries such as Argentina, and in the results of multivariate outlier tests) owing to appreciated exchange rates. The results (with and without the inclusion of these outliers) here bear out our predictions as well.

<sup>21</sup> We will first give ideology a categorical interpretation and subsequently check if it may be given a cardinal interpretation as well. If ideology has an exclusively categorical (dummy variable) interpretation, then the derivatives shown here are not meaningful. However, the coefficients will still have similar interpretations, enabling the calculation of critical capital-labor ratios where the relationships switch sign.

<sup>22</sup> We have also tried using, in addition to these controls, a dummy for Latin America. The results remain completely unaffected.

TABLE 1.—EASTERLY-LEVINE (AGGREGATE) REGRESSION WITH DUMMIES

	Left versus Nonleft				Left versus Center versus Right			
	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP
<i>Left</i>	-0.574*** (0.181)	-1.225*** (0.477)	-12.075 (10.204)	114.692*** (48.577)	-0.734*** (0.194)	-1.51*** (0.553)	-13.189 (11.507)	75.762* (49.907)
<i>Left</i> × capital-labor ratio	0.055*** (0.017)	0.115*** (0.045)	1.247 (1.011)	-11.914*** (5.183)	0.072*** (0.018)	0.142*** (0.053)	1.365 (1.17)	-7.972* (5.441)
<i>Center</i>					-0.365 (0.373)	-1.526*** (0.644)	-4.092 (24.58)	-164.819* (111.235)
<i>Center</i> × capital-labor ratio					0.039 (0.034)	0.141*** (0.06)	0.406 (2.287)	15.904 (11.451)
Capital-labor ratio	-0.08*** (0.014)	-0.116*** (0.042)	-3.645*** (0.736)	18.432*** (4.974)	-0.097*** (0.016)	-0.143*** (0.05)	-3.762*** (0.934)	14.49*** (5.237)
Constant	0.952*** (0.155)	1.391*** (0.45)	45.217*** (7.604)	-144.551*** (47.31)	1.112*** (0.169)	1.676*** (0.529)	46.331*** (9.194)	-105.621*** (48.644)
No. of observations	67	66	65	88	67	66	65	88
R <sup>2</sup>	0.32	0.15	0.35	0.32	0.34	0.19	0.35	0.35
F-statistic	14.07***	2.7***	12.9***	13.88***	12.6***	1.8*	7.58***	8.45***
Critical capital-labor ratio	10.4	10.6	9.7	9.6				
Joint test for cardinality (F-statistic)					0.38	0.62	0.55	1.32*

Standard errors in parantheses; \*\*\*significant at 5% level, \*\*significant at 10% level, \*significant at 15% level.

For a measure of democracy, we use the Freedom House (Gastil) measure of democracy, which provides a subjective classification of countries on a scale of 1 to 7 on political rights, with higher ratings signifying less freedom. Finally, as instruments, the additional variables used are the natural logarithm of the savings rate and the population growth rate obtained from the World Development Indicators. Note that the population growth rate and the savings rate are parameters in the Solow growth model, in which the steady-state per capita capital stock is determined endogenously.

The summary statistics for our data and the correlation matrix for our basic protection measures can be found in Dutt and Mitra (2002).

## V. Results

### A. Regressions Using Conventional Trade Policy Measures

*OLS Regressions:* We first show that our basic theoretical prediction is supported when we give ideology an exclusively ordinal or categorical (dummy variable) interpretation. Under this interpretation, our estimating equation is

$$\begin{aligned}
 TR_i = & \alpha + \beta_0 left_i + \beta_1 left_i (K/L)_i \\
 & + \gamma_0 center_i + \gamma_1 center_i (K/L)_i \\
 & + \theta (K/L)_i + \epsilon_i,
 \end{aligned} \tag{3}$$

where  $left_i = 1$  (0 otherwise) if the  $i^{\text{th}}$  country has a left-wing government, and  $center_i = 1$  (0 otherwise) if the  $i^{\text{th}}$  country has a centrist government. Both  $\beta_0$  and  $\gamma_0$  are predicted to be negative, whereas  $\beta_1$  and  $\gamma_1$  are predicted to be positive. Also, theory predicts that the  $\beta$ 's are greater in magnitude than the respective  $\gamma$ 's. Next, we perform tests to check if, in fact, the ideology measure can be treated as

cardinal, where it takes the value 1 if the government is right-wing, 2 if it is centrist, and 3 if it is left-wing. Under this interpretation, equation (1) is our estimating equation. In order for the cardinal specification (a special case of the ordinal specification) to be the correct one,

$$\beta_0 = 2\gamma_0 \quad \text{and} \quad \beta_1 = 2\gamma_1$$

should hold simultaneously.<sup>26</sup> If we cannot reject this joint hypothesis, then there are efficiency gains from treating ideology as a cardinal measure, with equal distances between right and center and between center and left.

In table 1, we present our first set of cross-section results.<sup>27</sup> In the first four regressions, we use a single dummy variable that takes the value 1 for left-wing governments (and 0 otherwise) to represent ideology. For the last four columns we have another dummy for *center* that additionally distinguishes countries with centrist governments from those with right-wing ones. Classification of political ideology was done as follows: The time period of our study is the decade of the 1980s. Any country that had a left-wing (centrist right-wing) government in office for at least 6 years was coded as left (centrist, right). There were three countries in our sample (Bolivia, New Zealand, and Norway) that had a left-wing and a right-wing government for exactly 5 years each during the 1980s, and one country

<sup>26</sup> Note that the test of cardinality versus ordinality is performed strictly in distance terms. We cannot and do not perform a test of levels of right, left, and center in terms of each other, because regression results are independent of scale and origin of the variable. For example, if instead of a 1, 2, 3 scale we had a 0, 1, 2 or a 5, 6, 7 scale, only the constant term would change, and all the slope coefficients would remain unchanged. On the other hand, if we had a 2, 4, 6 scale, the slope coefficients would be halved (and thus the interpretations of results would remain unchanged).

<sup>27</sup> In these results and the ones that follow in the rest of this paper, all standard errors are White-corrected.

TABLE 2.—EASTERLY-LEVINE (AGGREGATE) REGRESSION WITH AND WITHOUT CONTROLS

	Regressions without controls				Regressions with Controls			
	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP
<i>Ideology</i>	-0.394*** (0.095)	-0.783*** (0.263)	-10.011* (6.22)	58.493*** (25.975)	-0.36*** (0.113)	-0.93*** (0.307)	-9.938* (6.49)	47.005** (25.921)
<i>Ideology</i> × capital-labor ratio	0.04*** (0.009)	0.073*** (0.025)	1.043* (0.652)	-6.209*** (2.819)	0.035*** (0.011)	0.087*** (0.029)	1.027* (0.679)	-4.857** (2.806)
Capital-labor ratio	-0.138*** (0.023)	-0.221*** (0.07)	-5.327*** (1.543)	25.228*** (8.022)	-0.138*** (0.025)	-0.253*** (0.076)	-5.014*** (1.53)	23.041*** (7.988)
Political rights (Gastil)					0.003 (0.009)	-0.001 (0.02)	-0.216 (0.604)	-3.8*** (1.224)
Sub-Saharan Africa					-0.054 (0.063)	0.031 (0.127)	2.353 (3.016)	21.47*** (7.972)
East Asia					-0.067 (0.043)	-0.238** (0.136)	1.694 (2.506)	5.671 (5.006)
Oil					0.076** (0.044)	-0.094 (0.066)	2.498*** (1.437)	5.955 (16.591)
Constant	1.518*** (0.242)	2.5*** (0.745)	61.389*** (15.12)	-206.722*** (75.454)	1.531*** (0.266)	2.87*** (0.818)	58.587*** (15.598)	-180.358*** (75.306)
No. of observations	67	66	65	88	66	65	64	87
$R^2$	0.34	0.2	0.36	0.31	0.38	0.25	0.36	0.4
$F$ -statistic	22.47***	3.52***	12.31***	11.22***	11.34***	2.06***	6.48***	7.47***
Critical capital-labor ratio	9.9	10.7	9.6	9.4	10.3	10.7	9.7	9.7

Standard errors in parentheses; \*\*\*significant at 5% level, \*\*significant at 10% level, \*significant at 15% level.

(Ecuador) that had a left-wing and a right-wing government for exactly 4 years each, and a centrist government for a year.<sup>28</sup> These countries we classified as centrist.<sup>29</sup> There was no other country that had the decade of the 1980s split up into all three types (left, right, and center). As the first four columns of table 2 show, left-wing governments are more protectionist in capital-abundant countries, but less protectionist in labor-abundant countries.<sup>30</sup> The critical capital-labor ratio varies from 9.6 for  $(X + M)/GDP$  to 10.6 for *QUOTA*, not far from the mean and median capital-labor ratios. Though the result for *IMPORT DUTY* is somewhat weak in terms the significance of the individual coefficients, the model as a whole is significant. The  $R^2$ 's for these regressions range from 0.15 to 0.35.

In the next four columns, we use two dummies (two intercept dummies as well as their interactions with the capital-labor ratio)—one for *left* and one for *center*. Here we can see that our results do not change qualitatively from the first four columns. Generally, left-wing governments are more protectionist than right-wing in capital-abundant countries, but less protectionist in labor-abundant countries. This result also holds for centrist versus right-wing governments with *QUOTA* as the dependent variable. The two critical capital-labor ratios (not shown in the table—one for

right versus center and another for right versus left) per regression are all around 10, again very close to the mean and median  $K/L$ . As before, the model as a whole is significant, and the  $R^2$  ranges from 0.19 to 0.35.

Importantly, we see here that we cannot reject the hypothesis that ideology can be treated as cardinal (i.e., the joint hypothesis that  $\beta_0 = 2\gamma_0$  and  $\beta_1 = 2\gamma_1$ ) for any of the measures except  $(X + M)/GDP$ . Thus, we replace these ideology dummy variables with a cardinal measure of ideology to obtain more efficient parameter estimates. Therefore, for most of the rest of the paper we will treat ideology as cardinal. In order to provide further accuracy to our cross-sectional ideology measure, we recoded the ideological orientation of the government of each country for each single year to reflect the extent to which the relevant government authority can be classified as leftist—left was coded as 3, center as 2, and right as 1. For our cross-sectional regressions here, we take the average of this variable for the 1980s. Therefore, our ideology variable in the regressions is best interpreted as the extent to which the policy and decision-making authority can be considered left-wing, with higher numbers signifying a more leftist orientation. In addition to being a cardinal variable (that will yield more efficient estimates, because the cardinality hypothesis cannot be rejected) as opposed to being an ordinal variable, this variable, in our cross-sectional regressions, captures the variation in the proportion of years a country had regimes of various ideologies (which our ordinal variables do not).

Tables 2 and 3 present the regression results (with and without controls) for our main estimating equation [equation (1) in section III of this paper] with the cardinal

<sup>28</sup> For Ecuador, we have data for only 9 out of the 10 years in the decade of the 1980s.

<sup>29</sup> To check for the robustness of this classification, we tried the following permutations: (a) classifying these three countries as left-wing, (b) classifying them as right-wing, and (c) dropping them from the sample. Our results are robust to all such variations.

<sup>30</sup> We have similarly performed regressions where we look at right versus nonright nations; we find that right-wing governments are more protectionist than nonright ones in labor-abundant countries. The relationship is reversed for capital-abundant countries.

TABLE 3.—EASTERLY-LEVINE (DISAGGREGATE) REGRESSION WITH AND WITHOUT CONTROLS

	Regressions without Controls				Regressions with Controls			
	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP
<i>Ideology</i>	-0.392*** (0.165)	-0.996*** (0.514)	-9.448 (11.526)	91.587** (47.726)	-0.392*** (0.166)	-1.634*** (0.438)	-12.703 (9.178)	66.465 (48.571)
<i>Ideology</i> × capital-labor ratio	0.042*** (0.017)	0.095** (0.051)	0.98 (1.179)	-10.144** (5.293)	0.041*** (0.017)	0.157*** (0.044)	1.245 (0.954)	-7.401 (5.373)
Capital-labor ratio	-0.154*** (0.037)	-0.277** (0.147)	-6.498*** (2.832)	38.141*** (14.502)	-0.129*** (0.047)	-0.389*** (0.156)	-4.795** (2.692)	33.349*** (14.879)
Political rights (Gastil)					0.008 (0.013)	-0.009 (0.03)	0.368 (0.708)	-5.608*** (1.784)
Sub-Saharan Africa					0.073 (0.075)	0.303*** (0.128)	9.142*** (4.368)	28.573** (16.101)
East Asia					0.034 (0.051)	-0.352** (0.191)	-0.337 (2.074)	13.598** (7.968)
Oil					0.086*** (0.032)	-0.093** (0.05)	6.068*** (1.674)	-24.318*** (7.587)
Constant	1.588*** (0.369)	3.005*** (1.499)	70.507*** (28.044)	-313.06*** (133.005)	1.315*** (0.488)	4.166*** (1.604)	53.413** (27.268)	-258.669** (137.695)
No. of observations	37	36	38	44	36	35	37	43
R <sup>2</sup>	0.43	0.3	0.45	0.28	0.46	0.5	0.55	0.39
F-statistic	11.8***	2.83**	7.63***	4.93***	18.79***	11.08***	14.18***	4.39***
Critical capital-labor ratio	9.3	10.5	9.6	9	9.6	10.4	10.2	9

Standard errors in parentheses; \*\*\*significant at 5% level, \*\*significant at 10% level, \*significant at 15% level.

measure of ideology. Table 2 corresponds to the Easterly-Levine aggregate capital-labor ratio, and table 3 to the Easterly-Levine disaggregate capital-labor ratio. The sample size, which ranges from 35 to 89, depends on the country coverage of the data on the different variables used.

In table 2, all our regression models as a whole are significant at the 5% level. In addition, as predicted, we obtain a negative sign for ideology and a positive sign for the interaction term for *TARIFF*, *QUOTA*, and *IMPORT DUTY*, where these coefficients are individually as well as jointly significant. For  $(X + M)/GDP$  (a measure of openness), as predicted, the signs are reversed and significant. The table also reports the critical capital-labor ratio at which the relationship between trade protection and left-wing ideology switches from negative to positive. This critical ratio ranges from 9 [for  $(X + M)/GDP$  without controls] to 10.5 [for *QUOTA* without controls]. These values are very close to the median and mean capital-labor ratios in the sample.<sup>31</sup> The  $R^2$  ranges from 0.2 (in the case of quota without controls) to 0.38 (in the case of tariffs with controls). The results are the strongest and most robust for *TARIFF* and *QUOTA*, which are the most direct measures of trade restrictions.

Even though our model can explain less than 40% of the cross-country variation in protection, we still are able to analyze the magnitudes of some of the partial derivatives of protection with respect to ideology. For example, let us consider two capital-scarce countries, Bangladesh ( $K/L = 7.34$ ) and Senegal ( $K/L = 7.17$ ). Whereas Bangladesh had a

right-wing government ( $Ideology = 1$ ), Senegal had a left-wing government ( $Ideology = 3$ ) in the 1980s. At the average of the two  $K/L$  ratios ( $K/L = 7.255$ ), from our tariff regression without controls, we have  $\partial TARIFF/\partial Ideology = -0.1$ . Bangladesh had a *TARIFF* of 0.41, and Senegal had a *TARIFF* of 0.19, a difference of 0.22, resulting in a slope of *TARIFF* with respect to ideology of approximately  $-0.11$ , which is very close to the estimated slope from our regression. Let us now compare two capital-abundant countries, Canada ( $K/L = 11.12$ ) and the United States ( $K/L = 11.2$ ). While the United States had  $Ideology = 1.2$  (average for the 1980s), Canada had  $Ideology = 1.8$ . At the average of the two  $K/L$  ratios ( $K/L = 11.16$ ), from our tariff regression without controls, we have  $\partial TARIFF/\partial Ideology = 0.05$ . Canada had a *TARIFF* of 0.046, and the United States had a *TARIFF* of 0.02, a difference of 0.026, resulting in a slope of *TARIFF* with respect to  $Ideology$  of 0.043, which is very close to the estimated slope from our regression. Brazil, Korea, Algeria, Costa Rica, Jamaica, and Guyana, which have capital-labor ratios close to the critical values, also have roughly similar tariff rates even though the political ideologies of their governments are quite different.

In table 3, which uses the disaggregate capital-labor ratio, our estimates ( $Ideology$ ,  $K/L$ , and the interaction term) have the right signs and are significant, except for the *IMPORT DUTY* regressions, where  $Ideology$  and the interaction term are insignificant<sup>32</sup> (even here they do have the correct signs, and the model as a whole is significant at the 5% level and accounts for up to 45% of the cross-country variation). The  $R^2$  ranges from 0.28 for the  $(X + M)/GDP$  regression

<sup>31</sup> Of course, the critical capital-labor ratio is itself an estimate and has a standard error. For most of our regressions, the 2-standard-error confidence interval around this estimate includes the median and mean capital-labor ratios.

<sup>32</sup> Notice that the country coverage for the disaggregate capital-labor ratio is nearly half that for the aggregate capital-labor ratio.

TABLE 4.—COUNTRIES (TARIFF-IDEOLOGY RELATIONSHIP)

Negative Relationship	Positive Relationship
Madagascar	Uruguay
Ethiopia	Taiwan
Uganda	Portugal
Mozambique	Algeria
Sierra Leone	Mexico
Burkina Faso	Argentina
Angola	Cyprus
Guinea	Trinidad & Tobago
Tanzania	Greece
Senegal	Venezuela
Bangladesh	United Kingdom
Benin	Ireland
Pakistan	Japan
China	Spain
Congo	Denmark
Sri Lanka	Austria
Zimbabwe	Sweden
El Salvador	New Zealand
Papua New Guinea	Canada
Thailand	Belgium
Zambia	Netherlands
Guatemala	Italy
Mauritius	United States
Nicaragua	France
Paraguay	Finland
Bolivia	Germany
Tunisia	Norway
Jamaica	Luxembourg
Colombia	Switzerland
Guyana	
Turkey	
Costa Rica	
Barbados	
Peru	
South Korea	
Brazil	
Chile	
Ecuador	

Partition based on tariff regression without controls in table 2.

without controls to 0.55 for the *IMPORT DUTY* regression with controls.

In table 4, using the tariff regression without controls presented in table 2, we categorize the countries in our sample into those that exhibit a negative relationship between protection and left-wing ideology (those with a low capital-labor ratio) and those that exhibit a positive relationship (those with a high capital-labor ratio). The critical (turning point) capital-labor ratio in this case is roughly 9.9, which is slightly lower than the capital-labor ratio for Ecuador. Adding controls increases the number of countries that exhibit a negative relation between left-wing ideology and trade protection and diminishes the number of countries that exhibit a positive relation.

A partial derivative of trade restrictions with respect to the capital-labor ratio in the regressions [using the notation from equation (1)] yields

$$\frac{\partial TR_i}{\partial(K/L)_i} = \alpha_3 + \alpha_2 Ideology_i. \quad (4)$$

Our regression results show that  $\alpha_3 < 0$  and  $\alpha_2 > 0$  and that their estimates are statistically significant. Plugging in the

values of *Ideology<sub>i</sub>* into the expression for the above partial derivative, we find a negative sign for all countries in our sample. These results are in line with the findings of Magee et al. (1989). Tariffs are a dependable and important source of revenues in developing countries (countries with a low capital-labor ratio). Moreover, developing countries have used infant-industry reasoning to justify protecting domestic industries.

We now look at the coefficients of our control variables in tables 2 and 3. Our controls are an inverse index of democracy (the Gastil index of political rights),<sup>33</sup> and regional effects using regional dummies. The inclusion of democracy is motivated by several factors. First, if we believe the evidence that openness stimulates economic growth, then dictatorships, which are more concerned with the size of the pie than with its distribution, are more likely to be open. Second, because unemployment is a major issue in most elections, democracies are also more likely to provide import protection to inefficient domestic firms and to public-sector firms that might not survive foreign competition. Furthermore, Fernandez and Rodrik (1991) show that in the presence of individual-specific uncertainty regarding the costs of moving to the export sector, trade reforms that are beneficial to the majority ex post may require a dictator to implement them in the first place.<sup>34</sup> However, as tables 2 and 3 show, we fail to find any evidence that democracies are more protectionist. The relationship between democracy and the partisan model is addressed in more detail in later sections. Finally, in terms of regional effects, all we find is that quota coverage is lower for East Asian countries and that quotas and import duties are higher for sub-Saharan African countries.

*Two-Stage Least Squares:* In a dynamic context (for example, in a multisector Solow model), the capital-labor ratio may be endogenous with respect to trade policy. Protection, by affecting the production structure, can affect accumulation and the steady-state level of the capital stock. Because of the possible endogeneity of the capital-labor ratio and the interaction term, we performed a two-stage least squares estimation where we instrument the suspected endogenous terms by the log of the population growth rate and the log of the savings rate. In the case of the cardinal regressions we have two endogenous terms,  $K/L$  and  $Ideology \times (K/L)$ , and so the above two instruments are enough to ensure that the estimating equation is identified. For the ordinal regressions, there are three endogenous terms, and so we use both the first-order and second-order terms in the

<sup>33</sup> Note that this index increases with the extent of dictatorship and decreases with increasing degree of democracy. The results with the polity measure of democracy are qualitatively extremely similar (which is not surprising, in view of the high correlation between the two measures).

<sup>34</sup> Also, Rodrik (1997) has argued that rising labor demand elasticities, brought about by more open trade, may hurt workers (the majority of the population). This may generate some demand for protection, to which democracies may be more responsive.



TABLE 5.—EASTERLY-LEVINE (AGGREGATE) 2SLS REGRESSION CARDINAL AND ORDINAL

	Cardinal Interpretation				Ordinal Interpretation			
	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP	TARIFF	QUOTA	IMPORT DUTY	(X + M)/GDP
<i>Ideology</i>	-1.057*** (0.417)	-1.493*** (0.581)	-45.591*** (19.793)	165.015*** (73.004)				
<i>Ideology</i> × capital-labor ratio	0.109*** (0.044)	0.147*** (0.061)	4.773*** (2.133)	-17.23*** (7.739)				
Capital-labor ratio	-0.315*** (0.107)	-0.41*** (0.153)	-15.795*** (4.963)	55.277*** (19.917)	-0.214*** (0.058)	-0.312*** (0.107)	-11.177*** (3.520)	35.183*** (12.180)
<i>left</i>					-2.141*** (0.658)	-3.267*** (1.292)	-90.469*** (41.017)	285.685*** (142.102)
<i>left</i> × capital-labor ratio					0.218*** (0.067)	0.321*** (0.135)	9.396*** (4.291)	-29.445*** (14.895)
<i>Center</i>					-1.456* (0.956)	-4.062*** (1.332)	-61.115 (62.491)	208.762 (228.266)
<i>Center</i> × capital-labor ratio					0.150** (0.092)	0.393*** (0.131)	6.390 (6.072)	-20.899 (22.003)
Constant	3.239*** (1.034)	4.347*** (1.504)	162.79*** (47.407)	-501.897*** (192.246)	2.266*** (0.583)	3.333*** (1.074)	118.340*** (34.296)	-309.886*** (119.224)
No. of observations	64	63	62	79	64	63	62	79
R <sup>2</sup>	0.27	0.18	0.3	0.26	0.25	0.17	0.25	0.24
F-statistic	9.75***	3.93***	16.74***	13.07***	4.48***	2.65***	6.88***	6.25***
Critical capital-labor ratio	9.7	10.2	9.6	9.6				

The R<sup>2</sup>s reported in this table are the coefficients of determination between the actual and the predicted values of the dependent variable. The instruments used for the cardinal regressions are the natural logs of the saving rate and the population growth rate; for the ordinal regression the squares and the cross product of the log of saving rate and the population growth rate are additionally used as instruments. Standard errors in parentheses; \*\*\*significant at 5% level, \*\*significant at 10% level, \*significant at 15% level.

saving rate and the population growth rate (levels, squares, and cross products) as instruments to ensure the identification of the equation.<sup>35</sup>

As table 5 shows, across all measures of protection the prediction of the partisan model is supported. The relevant terms are all significant, and the critical capital-labor ratios are again very close to the mean and the median. These results are also robust to the inclusion of controls.

*Panel Regressions:* We also test our model using cross-sectional time series data available for two measures of protection—*IMPORT DUTY* and  $(X + M)/GDP$ . We use a fixed-effects model with time and comprehensive region-specific effects.<sup>36</sup> In general, time-specific shocks seem more reasonable because historically the world as a whole has exhibited a pattern, where either all countries have tended to become more protectionist (e.g., the interwar years), or they all have tended to become less protectionist (the mid-1990s, following the Uruguay Round). Further,

<sup>35</sup> In fact, with the levels, their squares, and the cross product of the saving rate and the population growth rate, the estimating equation is overidentified, so that we were able to perform the appropriate tests for overidentifying restrictions and confirm that our instruments are valid and of good quality. We also performed these tests, using extra instruments, in the case of our 2SLS regressions with the cardinal ideology measure, where we could again confirm the high quality and validity of the instruments. The regression results are very similar to those with only levels as instruments.

<sup>36</sup> A fixed-effects model with country-specific effects, on the other hand, will not be able to identify the estimates for some of our variables that do not vary within a country over time. Moreover, with 50–60 countries in each regression, such an approach uses up many degrees of freedom and results in high multicollinearity between the country-specific effects and some of the right-side variables (especially the more time-invariant ones), making the interpretation of the coefficients difficult.

there has been a tendency for countries within a region to organize themselves into free-trade areas or customs unions—an effect that should be captured by our comprehensive region-specific effects. Finally, due to the endogeneity of the capital-labor ratio with respect to tariffs, we use instrumental variables—the log of the savings rate and the log of the population growth rate. Even though one would expect that the preferences of the government and those of the interest groups influencing it would take time to affect the level of protection, our predictions are borne out here as well in the case of *IMPORT DUTY*, the only direct measure of protection in our data set that has a time dimension. The following panel regression result with time-specific and very comprehensive region-specific effects (with *K/L* and *Ideology* × *K/L* instrumented by the log of the saving rate and the log of the population growth rate) has the expected signs for the relevant variables whose coefficients are significant at the 1% level:

$$IMPORT DUTY = -63.35***Ideology \quad (12.82)$$

$$+ 6.31***Ideology \times K/L \quad (1.26)$$

$$- 19.84***K/L + \text{fixed effects}, \quad (3.79)$$

$$R^2 = 0.22, \quad N = 610.$$

The critical *K/L* is 10, again very close to the mean and the median value. A left versus nonleft regression based on the ordinal measure gives us similar results:

$$\begin{aligned}
IMPORT\ DUTY &= -105.26^{***}left + 10.42^{***}left \\
&\quad (19.63) \quad (1.93) \\
&\times K/L - 11.08^{***}K/L + \text{fixed effects}, \\
&\quad (1.94) \\
R^2 &= 0.26, \quad N = 610.
\end{aligned}$$

Note that the *center* intercept and interaction slope dummies, when added to the above regression, are individually and jointly insignificant. Our indirect measure that has a time dimension;  $(X + M)/GDP$  produces the correct signs but insignificant coefficient estimates.

*Regression in Differences:* In section III, we saw that the partial derivative of protection with respect to ideology can be written as  $\partial TR_i / \partial Ideology_i = \alpha_1 + \alpha_2(K/L)_i$ , which as an approximation can be written as  $\Delta TR_i / \Delta Ideology_i = \alpha_1 + \alpha_2(K/L)_i$ , where we use  $\Delta$  to represent changes in the relevant variables (the difference between the decade average for the 1980s and that for the 1970s). Moving  $\Delta Ideology$  to the right-hand side and accordingly running regressions, we obtain the following results:

$$\begin{aligned}
\Delta IMPORT\ DUTY &= -6.00^{***} \Delta Ideology \\
&\quad (2.61) \\
&+ 0.55^{***} (K/L) \Delta Ideology, \quad R^2 = 0.03, \quad N = 63, \\
&\quad (0.25) \\
\Delta [(X + M)/GDP] &= 28.68^{***} \Delta Ideology \\
&\quad (13.39) \\
&- 3.09^{***} (K/L) \Delta Ideology, \quad R^2 = 0.02, \quad N = 80. \\
&\quad (1.28)
\end{aligned}$$

Again, we have the signs predicted by our theory, and our coefficient estimates are significant at the 5% level.<sup>37</sup>

*Dictatorship versus Democracy:* Next we investigate whether partisan concerns are more important in democracies or in dictatorships. Democratic governments, to ensure their reelection, may adopt policies that benefit their electoral base (groups that provide large blocks of votes and/or provide campaign contributions)—capitalists (business groups) for right-wing parties, and labor (trade unions) for left-wing parties. Dictatorships on the other hand face few such incentives. On the other hand, dictatorships are less constrained in their redistributive attempts.

In order to investigate the relationship between partisan concerns and the extent of democracy, we generate residuals from our main regressions and then regress the absolute values of these residuals on the democracy dictatorship (political rights) variable. These regressions show that for

all our direct measures of trade policy (*TARIFF*, *QUOTA*, and *IMPORT DUTY*), the absolute residuals are higher for dictatorships. Next, we generate predicted values of protection from our coefficient estimates, using our regressions without controls, and find that their correlation with the actual values is considerably lower for the dictatorship sample (Gastil measure above 4) than for the democracy sample (the rest). Both findings suggest that our model fits democracies better. Finally, we run regressions with additional interaction terms (*Ideology*  $\times$  *Democracy* and *Ideology*  $\times$   $(K/L) \times$  *Democracy*) to investigate whether prolabor redistribution through trade policies is stronger in democracies or in dictatorships. These interaction terms are significant at the 5% level for tariffs, import duty and  $(X + M)/GDP$  (but not for the quota regressions). For the regression with controls, the cross-partial derivative is

$$\begin{aligned}
\frac{\partial^2 TARIFF}{\partial Democracy \partial Ideology} &= 0.04 - 0.004(K/L), \\
\frac{\partial^2 IMPORT\ DUTY}{\partial Democracy \partial Ideology} &= 3.01 - 0.322(K/L), \\
\frac{\partial^2 [(X + M)/GDP]}{\partial Democracy \partial Ideology} &= -6.4 + 0.814(K/L),
\end{aligned}$$

so that dictatorships reinforce the negative (positive) relationship between ideology and trade protection in capital-scarce (–abundant) countries, predicted by the partisan model.<sup>38</sup>

Thus the partisan model fits the data better for democracies, but the magnitudes of the effects are smaller in democracies. This may mean that dictators who have consolidated their position may not face any electoral threats and may have fewer incentives to formulate trade policies according to their ideological affinities. However, if they do decide to favor their core constituent groups, they are likely to face lesser constraints in implementing redistributive trade policies.

#### B. Regressions Using a More Comprehensive Trade Barrier Measure

Hiscox and Kastner (2002) have created two alternative measures of protection, using the importing-country-specific and time-specific effects in two versions of the gravity model, one being the standard gravity model and the other being an amended one with relative factor endowment differentials used as additional variables to capture factor-proportions effects. The advantage of such a measure is that it captures the implicit protection through substitutes (including domestic policies adopted)

<sup>37</sup> These regressions are equivalent to running a panel regression with country-specific fixed effects with two observations (the 1970s average and the 1980s average) for each country.

<sup>38</sup> For more detailed results, see our working paper version, Dutt and Mitra (2002). Our results regarding the model fit and the size of the partisan effect go through with the polity measure of democracy as well, and are extremely similar.

TABLE 6.—EASTERLY-LEVINE (AGGREGATE) REGRESSION WITH HISCOX-KASTNER MEASURE AS DEPENDENT VARIABLE

	Cross-Sectional Results					Panel: Instrumented; Region and Time Fixed Effects	
	Ordinal (One Dummy)	Ordinal (Two Dummies)	Cardinal (1–3)	Cardinal (Controls)	Cardinal (2SLS, Controls)	Ordinal (One Dummy)	Cardinal (1–3)
<i>left</i> (or <i>Ideology</i> )	−54.318*** (19.023)	−74.268*** (26.084)	−40.863*** (11.858)	−29.157** (17.003)	−124.074*** (58.131)	−195.075*** (34.19)	−119.562*** (22.455)
<i>left</i> (or <i>Ideology</i> ) × capital-labor ratio	5.475*** (1.885)	7.484*** (2.585)	4.264*** (1.201)	3.112** (1.655)	12.754*** (5.911)	19.131*** (3.309)	11.748*** (2.174)
<i>center</i>		−48.999* (33.007)					
<i>center</i> × capital-labor ratio		4.842* (3.176)					
Capital-labor ratio	−6.766*** (1.698)	−8.775*** (2.447)	−13.309*** (3.237)	−9.484*** (4.354)	−33.255*** (14.059)	−12.441*** (2.823)	−28.646*** (5.776)
Political rights (Gastil)				1.286** (0.787)	0.288 (1.548)		
Sub-Saharan Africa				−5.173 (6.949)	6.696 (12.215)		
East Asia				0.194 (3.462)	−10.156 (9.907)		
Oil				3.517 (4.232)	−1.676 (6.467)		
Constant	99.859*** (17.543)	119.808*** (24.983)	162.35*** (32.815)	120.19*** (45.916)	360.43*** (143.478)	156.338*** (30.462)	323.04*** (61.018)
No. of observations	57	57	57	56	55	490	490
$R^2$	0.26	0.29	0.31	0.34	0.21	0.3	0.29
$F$ -statistic	7.12***	4.5	8.66***	6.97***	3.5***		
Wald statistic (Chi-squared)						37.50***	35.74***
Critical capital-labor ratio	9.9		9.6	9.4	9.7	10.2	10.1
Joint test for cardinality ( $f$ -statistic)		0.89					

Standard errors in parantheses; \*\*\*significant at 5% level, \*\*significant at 10% level, \*significant at 15% level.

of standard trade policy measures that governments use once they have committed to tariff levels in international agreements. We certainly believe that even if trade policy is determined through multilateral negotiations, domestic ideological orientations can be an important determinant of what kind of trade policy a country commits to in these negotiations. For those who do not buy this argument, the use of these new measures (as alternatives to actual trade policy) in our regressions will be useful. Table 6 provides those estimates using the Hiscox-Kastner measure generated from their basic gravity equation (our results using their measure from the amended gravity model are no different). Note that all the different kinds of regressions we ran for the conventional trade policy measures are also run for the Hiscox-Kastner measure. Again, in both the cross-sectional and the panel regressions (in our cardinal as well as ordinal versions), we get very strong results in the direction predicted by the theoretical model in section II. All our relevant variables have the correct signs and are highly significant (at the 1%–5% levels), both individually and jointly. The critical capital-labor ratios are in the range of 9.4 to 10.2, again very close to the mean and the median. As in the case of conventional measures, we cannot reject the null hypothesis of cardinality.

## VI. Robustness Checks

### A. International Comparability and Quality of the DPI Ideology Measure

Some readers may question the comparability of our ideology measure across nations, supposing that leftist and rightist orientations may be relative to the country-specific and not international notions of the center. Because the inclusion of country-specific dummies is clearly impossible in the case of cross-sectional regressions, we created nine very comprehensive *region-specific* dummies.<sup>39</sup> We consider it very plausible that countries from the same region have a common notion of a center around which party and government ideologies are classified. As before, we instrument the capital-labor ratio and its interaction with the ideology variable. (The measurement error of the interaction term is corrected by the instrumentation.) Our results remain qualitatively unchanged in coefficient signs, significance, and the estimate of the critical capital-labor ratio.

Furthermore, based on discussions with some regional experts, we decided to experiment with some adjustments to

<sup>39</sup> For our region-specific effects we use the following regional categories: east Asia, the rest of Asia, Oceania, eastern Europe, western Europe, north America, Latin America (excluding Mexico), oil-producing countries, sub-Saharan Africa, and the rest of Africa.

our ideology measure. We increase the magnitude of the scale, 1 being the most right-oriented and 5 the most left-oriented. For the United States, the Republicans and Democrats remain at 1 and 3, respectively, as before. For Latin America, right is coded as 1, center as 3, and left as 5. The left-wing governments of China and eastern Europe are coded as 5. For western Europe (excluding Ireland and the United Kingdom), right, center, and left are coded as 2, 3, and 4, respectively. All other countries are coded the same as before. Again, our results survive this adjustment.

We also verify the quality of the DPI ideology measure by checking whether it is a good predictor of inequality after controlling for the Kuznets effect (captured by per capita GDP and its square). We find that the coefficient of the ideology variable is negative and highly significant. Because this is a long-run relationship, we believe that finding this relationship with data that are decade-wide averages clearly shows that our measures are fairly comparable across countries. We also find that the ideology measure is a good predictor of public health and education expenditure as a proportion of GDP, controlling for per capita GDP. We also constructed a revealed ideology measure (using the principal-components method) from the residuals of the regressions of the ratios of health and education expenditure to GDP on per capita GDP. When our DPI measure is replaced by this revealed measure in our original regressions, our results remain unchanged [detailed results in Dutt and Mitra (2002)].

Finally, the Swank data, available only for the OECD countries but considered to be of higher quality, provide us with two substitutes of the DPI measure: the percentage of cabinet portfolios by left parties, and left governing party seats as a percentage of all legislative seats. The correlations of these with our ideology measure (on limiting the data to OECD countries) are over 0.7, and rise to approximately 0.9 if the Swank data, like our DPI data, are classified on a 1, 2, 3 scale (the Swank ideology measure). Running panel regressions using the Swank measure give us exactly the result for capital-abundant OECD countries predicted by our model—protection is increasing in left-wing ideology. Regressions using a new ideology measure (which equals the Swank measure for OECD countries and DPI for the rest) produce exactly the same nonmonotonic results as with the DPI.

#### *B. Controlling for the Endowments of Other Factors and the Level of Development*

Next we control for the size of the endowment of land. We introduce the land-labor ratio and the interaction of ideology with it as additional variables. Our original results with respect to the capital-labor ratio and its interaction with ideology remain qualitatively unaffected. However, the derivative of protection with respect to ideology is increasing (decreasing) in capital (land) abundance, suggesting that the government's weight on land relative to other factors com-

bined generally increases as the government becomes more left-oriented. We also ran several regressions where we included only the capital-land ratio and its interaction with the ideology variable (in addition to the ideology variable itself), and some others where we had the land-labor ratio in place of the capital-labor ratio. All these regressions seem to indicate that there is a possibility that land and labor generally tend to form coalitions against capital [details in Dutt and Mitra (2002)].<sup>40</sup>

Instead of using the capital-labor ratio and/or the land-labor ratio in the regressions, we use the per capita GDP (by itself and in its interaction with ideology) to allow for the relative abundance (scarcity) of capital, human capital, and productive assets in rich (poor) countries. The results are very similar to the ones obtained with the  $K/L$  ratio, thereby indicating that in countries abundant (scarce) in such factors and/or assets, a more left-wing (right-wing) government raises protection.

We also tried using both the per capita GDP and the capital-labor ratio in the same regression. Given that there is a serious multicollinearity problem associated with the simultaneous use of both these variables (the correlation between per capita GDP and the capital-labor ratio being very high, around 0.9), such regressions result in each of these variables (their levels and their interactions with the ideology variable) being individually insignificant but jointly very significant. For each of these two variables, a very small proportion of the variation is independent of the variation in the other, and therefore inserting both of them simultaneously fails to yield separate and precise identification of the effect of each on protection. Therefore, we then regressed per capita GDP on the capital-labor ratio, thereby generating both the predicted value and the residual to be inserted simultaneously in our main estimating equation. Whereas, the residual and its interaction with ideology turned out to be insignificant, the predicted value of per capita GDP and its ideology interaction were generally very significant and had the correct signs. Thus, it is mainly the part of per capita GDP, fully explained by the capital-labor ratio, that drives our results. The unexplained part does not seem to have any significant role to play. Finally, we also used principal-component analysis to take care of the multicollinearity between per capita GDP and the capital-labor ratio. Using the first component (which captures 71% of the variation) qualitatively preserves our main results.

#### *C. The Role of GATT Bindings*

In this subsection, we address the concern that some countries may have committed to GATT bindings several years earlier. We argue here that this is not a problem with our analysis. Firstly, in addition to doing our analysis with

<sup>40</sup> Note that in the context of this analysis for the third factor, land, the classification of parties into left, right, and center is independent of their classification into rural and urban. The correlation between the two classifications is only 0.05.

the nontariff barrier (NTB) measure, we have done it with the Hiscox-Kastner measure which captures other policies (industrial, labor, etc.) that can implicitly act as trade barriers; and our results are strong here as well. Secondly, we also find that the correlation of the ideology measure across decades turns out to be 0.8, which is very high. Thirdly, it turns out that only for eight countries in our data set would the GATT bindings have been binding constraints, that is, most other countries either had not bound their tariffs by early 1980s or had actual tariffs that were below their GATT commitments. The countries for which past bindings would have mattered in the 1980s are the United States, Japan, Canada, and (by the 1970s) the members of the European Union. When we throw away these countries or use a dummy for them, our results are qualitatively the same.<sup>41</sup> Finally, bindings do not rule out contingent tariffs, and the GATT did not have an effective dispute settlement mechanism of the type the WTO has.

#### D. Other Robustness Checks

Here we simply list all the other robustness checks. Firstly, we performed weighted least squares regressions using different weights, namely, GDP, GDP per capita, capital-labor ratios, population, and capital (both in levels and squares). Our results remain unchanged and sometimes become even stronger. Secondly, our results also survive the use of inflation (a macro variable that affects capitalists and workers differently) as a control.<sup>42</sup> Guided by the theory of tariff-jumping foreign direct investment (FDI), we also tried using FDI (alternatively in logs and levels) as a control. FDI does not seem to be significant except for  $(X + M)/GDP$ , whereas all our earlier results remain unchanged for all protection or openness measures. Our results are also robust to the use of dummy variables representing crisis and international organization interventions. A final robustness check (based on results from our recent research) shows that both partisan effects and the distribution of factor ownership (possibly through its effect on voting and/or lobbying outcomes) are important at the same time in the determination of protection levels. In other words, our results here are robust to controlling for the distribution or inequality variable.

<sup>41</sup> As expected, the correlation between the actual and model-predicted protection values is much higher for the countries which either had not committed to GATT bindings or had actual tariffs below the GATT bindings. We thank Will Martin of the World Bank (an expert on tariff bindings) for very useful discussions on this issue.

<sup>42</sup> We also try using unemployment as an additional control (simultaneously with inflation). The signs of our relevant variables still remain the same, but their significance falls. This is not surprising, in that, due to the limited availability of data on unemployment for developing countries, our sample size for this regression gets reduced to 32, with only three labor-abundant countries. Moreover, (a) developed and developing countries have different types of unemployment and therefore are not comparable, and (b) the relevant unemployment rate (for this analysis) itself will depend on the prevailing inflation rate for given expected inflation.

## VII. Conclusion

In this paper, we empirically investigate how the ideology of the government in power affects trade policy. The prediction of a partisan, ideology-based model (within a two-sector, two-factor Heckscher-Ohlin framework) is that left-wing governments will adopt more protectionist trade policies in capital-rich countries, but adopt more protrade policies in labor-rich ones. The data strongly support this prediction in a very robust fashion. There is some evidence that this relationship may hold better in democracies than in dictatorships, though the magnitude of the partisan effect seems stronger in dictatorships.

Of late, economic policy reforms that foster growth, reduce inequality, and alleviate poverty have been attracting increasing attention from both academicians and policy-makers. Simultaneously, there is a growing recognition that political institutions matter for these economic goals as well. In order to design effective economic policies to achieve these goals, it is critical that we have a thorough understanding of the interrelationship between policy variables and political institutions. Although the theoretical and empirical results in this paper are positive rather than normative, this paper takes a step in that direction by delineating the role of political ideology in trade policy determination.

## REFERENCES

- Adsera, Alicia, and Carles Boix, "Trade, Democracy and the Size of the Public Sector," *International Organization* 56:2 (2002), 229–262.
- Alesina, Alberto, "Macroeconomic Policy in a Two Party System as a Repeated Game," *Quarterly Journal of Economics* 102 (1987), 651–678.
- Alesina, Alberto, and Nouriel Roubini, "Political Cycles in OECD Economies," *Review of Economic Studies* 59 (1992), 663–688.
- Alt, James, "Political Parties, World Demand and Unemployment: Domestic and International Sources of Economic Activity," *American Political Science Review* 79 (1985), 1016–1040.
- , "Party Strategies, World Demand, and Unemployment: The Political Economy of Economic Activity in Western Industrial Nations," *American Economic Review (AEA Papers & Proceedings)* 76:2 (1986), 57–61.
- Baldwin, Robert, and Christopher Magee, "Is Trade Policy for Sale? Congressional Voting on Recent Trade Bills," NBER working paper no. 6376 (1998).
- Balistreri, Edward J., "The Performance of the Heckscher-Ohlin-Vanek Model in Predicting Endogenous Policy Forces at the Individual Level," *Canadian Journal of Economics* 30:1 (1997), 1–17.
- Barro, Robert J., and Jong-Wha Lee, "Sources of Economic Growth," *Carnegie-Rochester Conference Series on Public Policy* 40 (1994), 1–46.
- , "Factor or Industry Cleavages in Trade Policy? An Empirical Analysis of the Stolper-Samuelson Theorem," Department of Economics, University of Calgary, mimeograph (2001).
- Beaulieu, Eugene, "The Stolper-Samuelson Theorem Faces Congress," *Review of International Economics* 10:2 (2002), 343–360.
- Beaulieu, Eugene, and Christopher Magee, "Campaign Contributions and Trade Policy: Simple Tests of Stolper-Samuelson," Department of Economics, University of Calgary, and Department of Economics, Bard College, Mimeograph (2000).
- Beck, Thorsten, George Clarke, Alberto Groff, and Philip Keefer, "New Tools and New Tests in Comparative Political Economy: The Database of Political Institutions," *World Bank Economic Review* 15:1 (2001), 165–176.

- Downs, Anthony, 1957, *An Economic Theory of Democracy* (New York: Harper Collins, 1957).
- Dutt, Pushan, and Devashish Mitra, "Political Ideology and Endogenous Trade Policy: An Empirical Investigation," NBER working paper no. 9239 (2002).
- Easterly, William, and Ross Levine, "It's Not Factor Accumulation: Stylized Facts and Growth Models," *World Bank Economic Review* 15:2 (2001), 177–219.
- Fernandez, Raquel, and Dani Rodrik, "Resistance to Reform: Status-Quo Bias in the Presence of Individual-Specific Uncertainty," *American Economic Review* 81:5 (1991), 1146–1155.
- Garrett, Geoffrey; *Partisan Politics in the Global Economy* (New York: Cambridge University Press, 1998).
- Glazer, Amihai, and Bernard Grofman, "Why Representatives Are Ideologists though Voters Are Not," *Public Choice* 61:1 (1989), 29–39.
- Grossman, Gene M., and Elhanan Helpman, "Protection for Sale," *American Economic Review* (September 1994), 833–850.
- "Electoral Competition and Special Interest Politics," *Review of Economic Studies* 63 (1996), 265–286.
- Hibbs, Douglas A., "Political Parties and Macroeconomic Policy," *American Political Science Review* 7 (1977), 1467–1487.
- Hibbs, Douglas A., and Nicholas Vasilatos, "Economic Outcomes and Political Support for British Governments among Occupational Classes: A Dynamic Analysis," *American Political Science Review* 76:2 (1982), 259–279.
- Hibbs, Douglas A., R. Douglas Rivers, and Nicholas Vasilatos, "The Dynamics of Political Support for American Presidents among Occupational and Partisan Groups," *American Journal of Political Science* 26:2 (1982), 312–332.
- Hillman, Arye L., *The Political Economy of Protection* (London and New York: Harwood Academic, 1989).
- Hiscox, Michael J., *International Trade and Political Conflict: Commerce, Coalitions and Mobility* (Princeton, NJ: Princeton University Press, 2001).
- "Interindustry Factor Mobility and Technological Change: Evidence from Wage and Profit Dispersion across U.S. Industries, 1820 and 1990," *Journal of Economic History* 62:2 (2002a), 383–416.
- "Commerce, Coalitions, and Factor Mobility: Evidence from Congressional Votes on Trade Legislation," *American Political Science Review* 96:3 (2002b).
- Hiscox, Michael J., and S. Kastner, "A General Measure of Trade Policy Orientations: Gravity-Model-Based Estimates for 82 Nations, 1960–1992," Harvard University mimeograph (2002).
- Irwin, Douglas, "Industry or Class Cleavages over Trade Policy? Evidence from the British General Election of 1923" (pp. 53–75), in R. Feenstra, G. Grossman, and D. Irwin (Eds.), *The Political Economy of Trade Policy: Papers in Honor of Jagdish Bhagwati* (Cambridge, MA: MIT Press, 1996).
- Kalt, Joseph P., and Mark A. Zupan, "Capture and Ideology in the Economic Theory of Politics," *American Economic Review* 74:3 (1984), 279–300.
- Kau, James B., and Paul H. Rubin, "Self Interest, Ideology and Logrolling in Congressional Voting," *Journal of Law and Economics* 22:2 (1979), 365–384.
- Leamer, Edward "The Structure and Effects of Tariff and Non-tariff Barriers" (pp. 224–260), in R. Jones and A. Krueger (Eds.), *The Political Economy of International Trade: Essays In Honor of Robert E. Baldwin* (Cambridge MA: Basil Blackwell, 1990).
- Lipset, Seymour M., and Stein Rokkan, *Party Systems and Voter Alignments: Cross-National Perspectives* (New York: Free Press, 1967).
- Magee, Stephen P., "Three Simple Tests of the Stolper-Samuelson Theorem," in P. Oppenheimer (Ed.), *Issues in International Economics* (Stockfield, U.K.: Oriel Press, 1978).
- Magee, Stephen P., William Brock, and Leslie Young, *Black Hole Tariffs and Endogenous Policy Theory* (Cambridge and New York: Cambridge University Press, 1989).
- Mayda, Anna M., and Dani Rodrik, "Why Are Some People (and Countries) More Protectionist Than Others?" NBER working paper no. w8461 (2001).
- Nehru, Vikram, and Ashok Dhareshwar, "A New Database on Physical Capital Stock: Sources, Methodology, and Results," *Rivista de Analisis Economico* 8 (1993), 37–59.
- O'Halloran, Sharyn, *Politics, Process and American Trade Policy* (Ann Arbor: University of Michigan Press, 1994).
- Peltzman, Sam, "Constituent Interest and Congressional Voting," *Journal of Law and Economics* 27:2 (1984), 181–210.
- Persson, Torsten, and Guido Tabellini, *Political Economics: Explaining Economic Policy* (Cambridge, MA: MIT Press, 2000).
- Ray, Edward J., "The Impact of Special Interests on Preferential Tariff Concessions by the United States," *Review of Economics and Statistics* 69:2 (1987), 187–193.
- Rodrik, Dani, "Political Economy of Trade Policy," (pp. 1457–1494), in G. Grossman and K. Rogoff, (Eds.), *Handbook of International Economics*, vol. 3 (Amsterdam: North-Holland, 1995).
- *Has Globalization Gone Too Far?* (Washington, DC: Institute for International Economics, 1997).
- "Why Do More Open Economies Have Bigger Governments?" *Journal of Political Economy* 106:5 (1998), 997–1032.
- Rogowski, Ronald, "Political Cleavages and Changing Exposure to Trade," *American Political Science Review* 81:4 (1987), 1121–1137.
- Scheve, Kenneth, and Matthew Slaughter, "What Determines Individual Trade Policy Preferences?" *Journal of International Economics* 54:2 (2001), 267–292.
- Schonhardt-Bailey, Cheryl, "Specific Factors, Capital Markets, Portfolio Diversification and Free Trade," *World Politics* 43:4 (1991), 545–569.
- Swank, Duane, *Global Capital, Political Institutions and Policy Change in Developed Welfare States* (New York: Cambridge University Press, 2002).
- Van Long, Ngo, and Neil Vousden, "Protectionist Responses and Declining Industries," *Journal of International Economics* 30:1–2 (1991), 87–103.